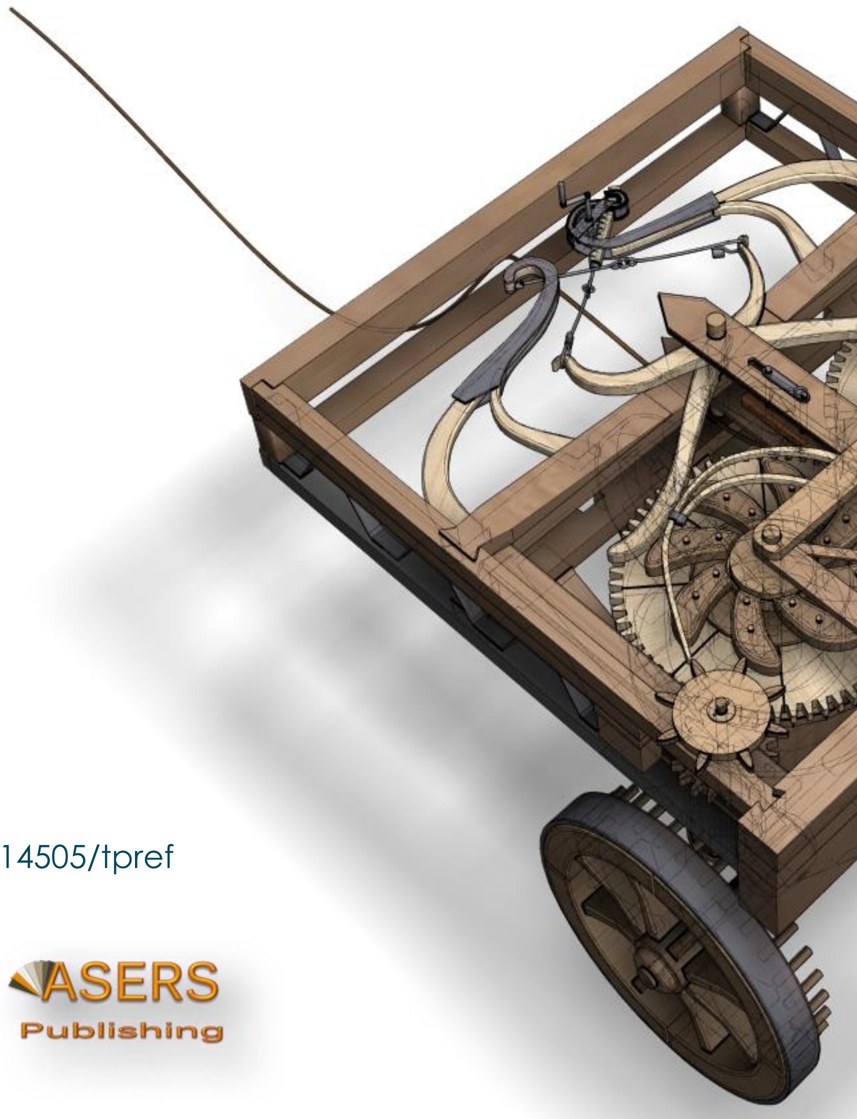
Theoretical and Practical Research in Economic Fields

Special Issue



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Call for Papers
Fall Issue 2024
Theoretical and Practical Research in Economic Fields

Many economists today are concerned by the proliferation of journals and the concomitant labyrinth of research to be conquered in order to reach the specific information they require. To combat this tendency, **Theoretical and Practical Research in Economic Fields** has been conceived and designed outside the realm of the traditional economics journal. It consists of concise communications that provide a means of rapid and efficient dissemination of new results, models, and methods in all fields of economic research.

Theoretical and Practical Research in Economic Fields publishes original articles in all branches of economics – theoretical and practical, abstract, and applied, providing wide-ranging coverage across the subject area.

Journal promotes research that aim at the unification of the theoretical-quantitative and the empirical-quantitative approach to economic problems and that are penetrated by constructive and rigorous thinking. It explores a unique range of topics from the frontier of theoretical developments in many new and important areas, to research on current and applied economic problems, to methodologically innovative, theoretical, and applied studies in economics. The interaction between practical work and economic policy is an important feature of the journal.

Theoretical and Practical Research in Economic Fields is indexed in SCOPUS, RePEC, ProQuest, Cabell Directories and CEEOL databases.

The primary aim of the Journal has been and remains the provision of a forum for the dissemination of a variety of international issues, practical research, and other matters of interest to researchers and practitioners in a diversity of subject areas linked to the broad theme of economic sciences.

At the same time, the journal encourages the interdisciplinary approach within the economic sciences, this being a challenge for all researchers.

The advisory board of the journal includes distinguished scholars who have fruitfully straddled disciplinary boundaries in their academic research.

All the papers will be first considered by the Editors for general relevance, originality, and significance. If accepted for review, papers will then be subject to double blind peer review.

This Special Issue was created at the request of a group of researchers from Ukraine. It is a response to the challenging situation of Ukrainian scholars due to the Russian invasion as well as the growing demand for knowledge on Ukrainian issues.

We would like to express our endless thank to our colleagues, scholars from Ukraine who are working amid the war on topics that are important for all. Also, we thank all our international authors for their valuable contributions to this Issue.

Deadline for submission of proposals:	10th August 2024
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Editorial. Economic and Social Impacts of the Russian Invasion on Ukraine

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As all of us know, on February 24th, 2022, Russia launched an unprovoked full-scale military invasion of Ukraine. The human toll has been staggering, with thousands of civilians killed, cities reduced to rubble, and over 8 million Ukrainians fleeing the country as refugees. Beyond the immense human suffering, Ukraine's economy has been decimated by the destruction of infrastructure, disruptions to agriculture and manufacturing, and the reorientation of resources towards the war effort (Vereshchahina 2023).

Needs to say that since its independence in 1991, Ukraine has undergone a hard transformation, shifting from a centrally planned economy to a market-oriented system and facing various challenges, such as the aftermath of the Chornobyl disaster and the 2008 global financial crisis. Despite the challenges, Ukraine has established itself as an emerging economy with significant potential, due to the abundant natural resources, its strategic location between Europe and Asia, and the quality of its well-educated workforce. The nation had established itself as a major global exporter of grains, sunflower oil, and other agricultural products, leveraging its fertile soils. Its industrial production focused on steel, machinery, chemicals, and equipment manufacturing, while the services sector accounted for over 60% of GDP, encompassing IT, finance, and tourism (Gavrysh *et al.* 2024).

However, the massive infrastructure damage, disruptions to agriculture and manufacturing, population displacement, and the need to divert resources towards defense and humanitarian relief have led to a contraction in economic output estimated between 30-50% in 2022-2023 (Kucherenko *et al.* 2023).

In these harsh times, it is imperative for the academic community to contribute to a deeper understanding of the challenges Ukraine are facing now and its path to recovery. In these pages you will find a wide range of academic work that explores the multiple impacts of the ongoing conflict. From historical perspectives on tackling unemployment and social exclusion in times of crisis to innovative methods for managing non-financial assets in times of war, these articles offer invaluable insights and practical recommendations.

In addition, this issue focuses on the central role of innovation and investment, recognising their importance in driving economic modernisation, digital transformation and global competitiveness – all of which are crucial for Ukraine's post-conflict reconstruction and growth. By drawing insights from different countries that have faced and overcome similar challenges through different approaches, this issue aims to provide a comprehensive understanding of best practices that Ukraine could adapt to its unique circumstances.

The articles collected here are not mere academic exercises, but rather a call for collective action and support. They represent the voices of Ukrainian scholars who have witnessed first-hand the devastation wrought by this unjust invasion, and who seek to contribute to the nation's rebuilding efforts through rigorous research and analysis.

We hope that this special issue will serve as a catalyst for further discourse, collaboration and policy-making aimed at mitigating the economic and social impact of the conflict. The road to recovery is arduous, but with the collective efforts of academics, policymakers and the international community, Ukraine can emerge stronger and more resilient.

We extend our deepest gratitude to the authors, reviewers and editorial team who have made this special issue a reality. Their dedication and commitment to advancing knowledge in the face of adversity is truly inspiring.

References

[1] Gavrysh, O., Gavrysh, Y., Matiukhina, A., and Vasylets, I. 2024. The first year's impact of the full-scale war on Ukrainian business. *Economics of Development* 23(1): 18-29. DOI:https://doi.org/10.57111/econ/1.2024.18

[2] Kucherenko, S., Levaieva, L. and Krasnozhon, A. 2023. Financial and security factors of competitiveness of agricultural enterprises under martial law. *University Economic Bulletin* 18(3): 68-73. DOI:https://doi.org/10.31470/2306-546X-2023-58-68-73

[3] Vereshchahina, K. 2023. Problems of Legal Regulation of Bankruptcy during Armed Conflict. *Social and Legal Studios* 6(3): 201-8. DOI: https://doi.org/10.32518/sals3.2023.201

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Comparative Analysis of the Squeeze-Out Procedure in Ukraine and the EU

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Abstract: The introduction of the squeeze-out procedure into Ukrainian law took place several years ago. It was due to the implementation of Directive 2004/25/EC of the European Parliament and of the Council of April 21, 2004 on takeover bids as part of the implementation of the Association Agreement between Ukraine and the European Union. However, the resonance of this institution in Ukrainian legislation has not only continued to grow but is also gaining momentum. The purpose of squeeze-out is to balance the interests of majority and minority shareholders. However, there are ongoing discussions in the legal profession regarding the possibility of a possible violation of the subjective rights of minority shareholders in the event of forced deprivation of their ownership of shares, the setting of the share price, and the compliance of the procedure for the compulsory sale of minority shareholders' shares with the principle of inviolability of property rights. The institute of compulsory redemption of minority shareholders' securities at the request of a person (group of persons) holding a dominant controlling stake is new to the theory and practice of domestic corporate law. In the legislation of other countries and legal doctrine, the institute of public offer is a mechanism that guarantees shareholders' rights in the process of redistribution of corporate control and takeovers and ensures a balance of private and public interests in a joint-stock company. It is characteristic of a public company's exit from the public securities market. Given the relative novelty of the relevant procedure in Ukraine, as well as its controversy, it is advisable to study it in more detail. In particular, the author believes that it is advisable to consider the squeeze-out procedure in Ukraine in comparison with the EU for a deeper study. The purpose of the article is to analyze the history of the emergence and development of the squeeze-out institute in selected countries of the world, the mechanism of its implementation in national legislation, law enforcement practice, and to identify proposals for improving legal regulation and implementation. The leading scientific method used by the author in this study is the comparative method. The main objective of the article is to compare squeeze-outs in the EU and Ukraine. The author used the comparative method to obtain the results disclosed in the article and its conclusions. It was the application of the comparative method that made it possible to identify common and distinctive features in Ukrainian and European legislation, as well as to identify differences in the implementation of forced buyouts in EU member states.

Keywords: squeeze-out; corporate law; share redemption; joint stock companies.

JEL Classification: O57; P51; K33; A12.

Introduction

The conflict between the interests of minority and majority shareholders is one of the main elements that constitute the core of the problems studied by corporate law theory. Compulsory buyout of shares at the request of a shareholder is a classic example of such a conflict. It should be noted that the bulk of the discussions traditionally held around the institution under study, both in the legal literature and when discussing political and legal issues in higher courts or when considering the next legislative amendments, are limited to the economic justification of the compulsory buyout of shares, and it seems appropriate to start the study of the compulsory buyout of shares with this.

In general, the interests of minority and majority shareholders may differ significantly. The divergence of interests is one of the main reasons why corporate conflicts occur. Despite the fact that majority shareholders have more rights, this does not in any way limit minority shareholders. They can significantly influence the company's management. Under conditions of high corporate control, situations arise when major shareholders have virtually no chance of buying out all shares even if they are offered a favorable price. On the other hand, small shareholders are practically unable to sell their shares on the public market at favorable prices. It is worth noting that this problem can be typical for any country. However, most European countries have faced this problem before and have developed effective mechanisms to address such situations. One of these measures is the forced buyout of shares. In Europe, attempts to harmonize the squeeze-out procedure began in the 1970s. In the United States, it was introduced even earlier – in the 1920s.

For Ukraine, the relevance of this issue is extremely high. Unlike European countries, where the relevant procedure has been in place for a long time, Ukraine has only recently begun discussing it. To be more precise, in 2017, the Law of Ukraine 'On Amendments to Certain Legislative Acts of Ukraine on Improving Corporate Governance in Joint Stock Companies' was adopted. It proposed to amend another national legal act - the Law of Ukraine 'On Joint Stock Companies' (new version adopted in 2023) (Law of Ukraine, № 1983-VIII, 2017). At the time of its adoption, Ukraine completely lacked regulation of the right to squeeze-out, as well as mechanisms for its application. The authors of the draft law considered its provisions to be relevant in the context of Ukraine's European integration and approximation of legislation to EU standards. The need to implement the requirement for the existence of a squeeze-out right in Ukrainian legislation as provided for in Directive 2004/25/EC of the European Parliament and of the Council on takeover bids is related, in particular, to the need to implement the EU-Ukraine Association Agreement (Explanatory Note to the Draft Law of Ukraine 'On Amendments to Certain Legislative Acts of Ukraine on Improving Corporate Governance in Joint Stock Companies', 2015).

The introduction into the national legislation of the institution of a public offer in the course of a takeover of a joint-stock company through the use of the squeeze-out procedure at the request of the owner(s) of the dominant controlling stake, their affiliate, or an authorized person of a group of persons acting jointly with a view to acquiring, directly or indirectly, ownership of 100% of shares, and the problematic aspects of the practice of applying this procedure, requires the creation of an effective mechanism for legal regulation of such relations which ensures a balance of private and public interests (Kolohoida and Stafiichuk 2018).

Squeeze-out is actively used in international corporate law practice. Moreover, this procedure has long been known in the world. However, in Ukraine, there are both supporters of the procedure and those who criticize it. Among the advantages of squeeze-out are the economic feasibility of the buyout procedure and the possibility of preventing corporate conflicts. The disadvantages are usually identified as violations of minority shareholders' ownership of shares, based on the lack of state control over this procedure and effective judicial protection of shareholders' rights (Doroshenko and Pylyavets 2020).

It is worth noting that there are also scholars among American researchers who criticize the procedure of forced buyout of shares. According to V. Khanna and U. Varottil, squeeze-out is a visible and tangible manifestation of the controlling shareholder's brute force in the corporate mechanism. This is manifested in the ability to openly force minority shareholders to leave the company by agreeing to a certain price for their shares. At the same time, a squeeze-out can help to increase the value of a company due to the advantages that the controller has in being able to acquire the entire company. Perhaps because of this rather controversial and dramatic background, squeeze-out regulation takes on different shades in different jurisdictions (Khanna and Varottil 2015).

Scholars from Singapore C. Chen, W. Zhang, W. Wan also emphasize that squeeze-out is a controversial phenomenon. This controversy stems from the fact that majority shareholders can force minority shareholders to sell their shares against their will. In addition, the purchase price may seem unfair and too low. In addition, the shares of the company on the stock exchange may have a higher value and generate more profit than the price at which they were purchased from the minority shareholders (Chen *et al.* 2018).

Nevertheless, the use of squeeze-outs in many countries shows that it has found many supporters. Moreover, it is regulated at the level of EU law. Taking into account the approximation of Ukrainian legislation to the EU, we believe it is advisable to consider the specifics of squeeze-out in Ukraine and selected EU member states in order to understand the advantages and disadvantages of different regulation of the same procedure and to determine in which direction Ukraine should move in order to achieve European standards in corporate law.

1. Methodological Framework

Given the novelty and insufficient level of development of squeeze-out issues in the national legal doctrine, the authors of the study have chosen simple but clear methods of scientific research of the issue. The main method used for the study is the comparative method. With its help, the author was able to explore the common and distinctive features of the squeeze-out procedure in Spain, Germany, Poland and Ukraine. The author concludes that the procedures are very similar, which is due to the common legal framework that has been incorporated into the legislation of the countries. The author also emphasized certain peculiarities inherent in the legislation of each of the countries under consideration.

The author also actively used the formal legal method. This method is used to study legal texts and circumstances, as well as to interpret the relevant texts in their logical sequence using special legal terminology and legal constructions. The use of the formal legal method made it possible to analyze legal texts. In particular, the author has studied Directive 2004/25/EC of the European Parliament and of the Council of April 21, 2004 on takeover bids and the provisions governing squeeze-outs. In addition, the formal legal method was used to analyze the legislation of selected EU member states that have implemented the relevant Directive and the specifics of squeeze-outs under their laws. This method was applied to the analysis of Spanish, German and Polish legislation. This method was also used to analyze Ukrainian legislation on compulsory buyout of shares, in particular, current laws and draft laws in this area, in particular, the Law of Ukraine 'On Amendments to Certain Legislative Acts of Ukraine on Improving Corporate Governance in Joint Stock Companies', the Law of Ukraine 'On Joint Stock Companies', etc.

In studying the formation of squeeze-out, the author used the historical method. Its peculiarity lies in the study of the chronology of the emergence and development of the objects of research. In this article, the author applies the historical method to study the development of squeeze-out in the world and Europe from its inception to the current state. Thus, squeeze-out first appeared in the USA and the UK and was later adopted by other countries. Squeeze-out was introduced into the law of many EU member states after the implementation of Directive 2004/25/EC. In Ukraine, the squeeze-out procedure has also been influenced by European norms, namely as a result of the implementation of the aforementioned Directive 2004/25/EC.

The author draws conclusions regarding the problems existing in the Ukrainian squeeze-out procedure and the ways to overcome them using the method of analysis and synthesis. Analysis is a method of cognition, the content of which is to dismember the subject of research into its constituent parts for the purpose of their detailed and comprehensive study. The constituent parts of an integral object are its sides, features, properties, relations, etc. Synthesis is a method of cognition opposite to analysis, the content of which is to combine previously dismembered parts of the subject into a single whole. Analysis and synthesis mutually presuppose and condition each other. The results achieved by the author using this method are widely reflected in the conclusions to the article.

The author used the systematic approach to systematize the information obtained. Its use is extremely important in identifying the signs of compulsory buyout of shares in the individual countries considered in the article.

2. Results

2.1. General Characteristics of the Squeeze-Out Procedure

First of all, let's find out what this procedure is. Squeeze-out is aimed at exercising the legal right of the owner of a controlling shareholding to compulsorily buy out shares from minority shareholders. To do so, the former must send a special request to the company concerned. As noted by the American researcher F. Hodge O'Neal, squeeze-out means the use of a strategic position, management powers, or legal device by some owners in a business enterprise to eliminate other owners (Hodge O'Neal 1961).

As noted by Ukrainian scholars O. Kolohoida and V. Stafiichuk, squeeze-out is a mechanism for the mandatory sale of ordinary shares by minority shareholders on the basis of an impersonal public irrevocable demand of a person (persons acting jointly) who owns a dominant controlling stake (Kolohoida and Stafiichuk 2018).

Instead, L. Martin, a researcher from Spain, emphasizes that squeeze-out is a forced sale and purchase of one's share in the share capital of companies to make takeovers more transparent (Martin 2018).

Thus, the author of the article proposes to define squeeze-out as a procedure regulated by law, which consists in the mandatory sale of securities (or redemption of shares) at the request of the owner of a shareholding that is dominant in comparison with others. It should be noted that a dominant shareholding is a shareholding that is equal to or exceeds 90% of the total amount of ordinary shares. This percentage may differ from country to country.

The squeeze-out procedure has a number of significant advantages. For example, majority shareholders who own a dominant shareholding have the opportunity to facilitate easier and more efficient management of the company and improve the liquidity of shares. They have the right to initiate a compulsory buyout of shares and legally exclude shareholders who do not participate in management and do not influence the state of affairs in the company. In addition, many of them may have already changed their place of residence, inherited their rights, or even lost the documents confirming their share ownership. On the other hand, minority shareholders can expect to be reimbursed for their assets in the amount corresponding to the market value (Le Bars and Guyon 1998).

Historically, the procedure of mandatory takeover bids was first introduced in Europe after the Second World War in the United Kingdom. However, even before the formalization of takeover rules governing public offerings, market participants adhered to certain business standards and guidelines developed by them, which created the preconditions for the emergence of the public offer institution. In particular, the acquirer of a controlling stake was required to send an offer to other shareholders of the target company to purchase shares on the same terms (Carney 2000).

Dispersed share capital began to prevail in the UK at the beginning of the XX century, which necessitated the introduction of a special legal regime for the acquisition of significant blocks of shares. The adoption of public takeover rules in the 50s and 60s in this country, which contained rules on the mandatory submission of a public offer for the sale of all shares of the target company and disclosure of information on the public offer, taking into account the rule on a mandatory offer to buy back shares. The adoption of these acts was aimed at overcoming the conflict of interest between the owners of significant blocks of shares and minority shareholders, as well as protecting the rights and legitimate interests of the latter (Franks *et al.* 2005).

In 1972, the City Code on Takeovers and Mergers was adopted, which set out six fundamental principles of proper behavior of an acquirer when making a buyout offer: the principle of equal treatment of all shareholders:

1. equal conditions and a fair price for the shares;
2. providing the necessary time (not less than two and not more than 10 weeks) and information to make an informed decision;
3. the rule of non-interference of the company's board of directors in the decision-making of shareholders;
4. prevention of artificial underestimation or overestimation of the value of shares;
5. making a public offer only if the acquirer is confident in its ability to pay for the shares to be acquired;
6. prohibition of restrictions on the target company's activities beyond what is necessary in connection with the public offer (The City Code on Takeovers and Mergers, 1970).

With the adoption of Directive 2004/25/EC, 2004, its provisions were incorporated into the Companies Act, 2006, and the rules set out in The Panel on Takeovers and Mergers on takeovers and mergers became law (Companies Act, 2006). Next, we will consider the specifics of squeeze-outs in the EU.

2.2. Conducting a Squeeze-Out Procedure under the Laws of Selected EU Countries

First of all, it should be noted that the issue of squeeze-out is raised at the EU level in Directive 2004/25/EC of the European Parliament and of the Council of April 21, 2004, on takeover bids, 2004. In this document, the concept of squeeze-out is regulated by Article 15. Member States shall ensure that the offeror can require all holders of the remaining shares to sell those securities to him/her at a fair price. Member States shall introduce this right in one of the following situations: if the shareholder holds securities representing at least 90% of the voting capital and 90% of the voting rights in the company receiving the offer or if, after acceptance of the offer, he/she has acquired or entered into an agreement to acquire securities representing at least 90% of the voting capital of the company receiving the offer and 90% of the voting rights contained in the offer. In addition, the Directive states that Member States may set a higher threshold, which, however, may not exceed 95% of the capital and 95% of the voting rights. If the offeror wishes to exercise the squeeze-out right, it must do so within three months after the expiration of the time allowed for acceptance of the bid (Directive 2004/25/EC, 2004).

All developed corporate legal orders eventually came to the need for legislative regulation of the procedure for buying out shares from minority shareholders in case of concentration of a shareholding by one person, which usually exceeds 90%. EU legislation has two approaches to determining the size of the shareholding that triggers the acquirer's obligation to make an offer: 1) linking it to control over the company or 2) fixing it at the level of a blocking minority. For example, in Austria, Poland, Hungary, the Czech Republic, Slovenia, Spain, the threshold for squeeze-outs and sellouts is 90% of the company's voting shares, and in Germany, France, Bulgaria, Romania, Croatia, Italy and Slovakia, it is 95% of the company's voting shares (Kolohoida and Stafiichuk 2018).

Displacement and redemption of shares at the request of the remaining shareholders are possible only if a voluntary offer to acquire all shares of the company (offer) has been previously made to the joint-stock company or if a mandatory offer (demand) has been made and the acquirer, as a result of acquiring securities on the basis of such an offer, has exceeded the threshold value indicating the concentration of the absolute majority of corporate control rights.

Let's take a closer look at several EU countries. For example, in Spain, squeeze-outs were actively regulated in 2007. At that time, the legislator implemented Directive 2004/25/EC into its own law. Royal Decree 1066/2007 of July 27, 2007 was adopted on the rules governing takeover bids for securities. It is important to note certain key provisions contained in this Decree. Pursuant to Article 47 of the Decree, any person who has made a public offer in respect of all securities may, upon completion of the offer, require the remaining holders of shares or other securities affected by the offer to sell them at a fair price. Similarly, any of the holders may require the offeror to purchase all of its securities at a specified price. The above rights will be subject to the following two circumstances occurring as of the date of settlement of the offer: that the offeror holds securities representing at least 90 percent of the voting capital of the target company; and that the previous public offer was accepted by holders of securities representing at least 90 percent of the voting rights of the target company. A fair price will be deemed to be a price that is consistent with the consideration of the public offer.

It also provides for a squeeze-out procedure. The maximum period for demanding a compulsory sale or redemption will be three months from the date of the end of the acceptance period. The explanatory brochure of the offer will indicate whether the offeror intends to demand a compulsory sale if the conditions specified in Article 47.

The offeror shall notify the National Securities Commission within three business days after publication of the results of the offer if the conditions specified in Article 47 are met. The offeror shall notify the National Securities Commission whether it requests a compulsory sale as soon as the decision is made, but no longer within the period specified in Section 1. If he does so, he must set the date of the transaction between 15 and 20 business days after the notification of his decision to the National Securities Market Commission, which will be published. The offeror's decision will be irrevocable.

Prior to the date of the transaction, the offeror must prove to the National Securities Commission the availability of guarantees ensuring the fulfillment of obligations arising from the exercise of the right of compulsory sale. The transaction will be liquidated within the same period set forth in the explanatory brochure of the offer, counted from the date of the transaction.

The offeror will publicly and generally disseminate the characteristics of the compulsory sale by the means provided for in Article 22 within a maximum of 5 business days after the date of publication by the National Securities Market Commission.

The holders of the securities affected by the compulsory sale will notify the offeror through the depository institutions of their securities before the date of the transaction of the nature of the remuneration they have chosen, if possible. In the absence of communication and when such an alternative exists, it will be understood that they choose to pay in cash.

Requests for compulsory purchase received by the offeror will be settled within the same timeframe as that set out in the explanatory brochure for settlement of the offer, counting from the receipt of each request.

The guarantee may be withdrawn after the liquidation of the operation is accredited by the National Securities Market Commission. The completion of the forced sale transaction will determine the exclusion of the affected securities from trading. This exclusion will take effect from the moment the transaction is settled. If, as a result of the compulsory purchase transaction, the offeror becomes the owner of all securities, they will also be excluded from trading after the settlement of the last transaction, if the National Securities and Stock Market Commission, at the request of the non-offeror, provides it with one month to restore compliance with the distribution and liquidity requirements of the relevant security. Upon expiration of the specified period, without such restoration, the securities will be automatically excluded from trading (Royal Decree 1066/2007 on the regime for public takeover bids for securities, 2007).

Thus, having analyzed the squeeze-out in Spain, we can distinguish three main elements that characterize it:

1.the shareholder must hold a stake equal to or greater than 90 %;

2.no more than three months have passed since the expiration of the deadline for acceptance of the takeover offer (squeeze-out in the case of an acquisition);

3.the party offering the takeover must pay a fair price to minority shareholders.

Let's look at another example - Germany. Under German law, the squeeze-out procedure is triggered when the threshold of 95% of shares is reached. German law provides for three different squeeze-out procedures, namely: under the Takeover Act, 2001, the Stock Corporation Act, 1965 and under the Transformation Act, 1994 (a so-called merger squeeze-out) (Securities Acquisition and Takeover Act, 2001; Stock Corporation Act, 1965; Transformation Act, 1994).

An independent appraiser is commissioned by the majority shareholder to evaluate the buyout. After that, the issue of compulsory repurchase of shares is submitted to the general meeting of shareholders, which is a formality in the case of consolidation of the dominant controlling stake. The share buyback price cannot be lower than the market value for the last three months. However, this rule does not ensure adequate protection of minority shareholders' rights, as the share price of a joint-stock company is significantly reduced during the takeover. The share buyback price may be appealed to the court, which may appoint another appraiser to determine the reliability of the appraisal (Binder and Riehmer 2020).

If, as a result of a takeover bid, a participant (together with persons with whom it acts jointly) holds at least 95% of all voting rights, it may initiate a squeeze-out procedure under the Takeover Act. The key advantage of a squeeze-out under the law stems from the ability to pay minority shareholders a value equal to the offer price (Securities Acquisition and Takeover Act, 2001).

A squeeze-out under the Stock Corporation Act is a more complicated procedure than under the Takeover Act. First of all, under this law, the majority shareholder must prepare a special report for the general shareholders' meeting. The price and 'fairness' of the compensation must be verified by an auditor appointed by an authorized court. If minority shareholders do not agree, they can block the squeeze-out through a lawsuit and demand payment of a larger amount of compensation (Stock Corporation Act, 1965).

A squeeze-out under the Transformation Act has its advantages. First of all, a majority shareholder can carry out a squeeze-out by holding only 90% or more of the authorized capital. According to the Transformation Act, a squeeze-out is permitted provided that it is carried out in connection with a merger between the majority shareholder and the target. The relevant decision must be made within three months from the date of signing the merger agreement (Transformation Act, 1994).

It is worth noting that German researcher F. Follert, there are some drawbacks in the German squeeze-out practice. First of all, he mentions the procedure for valuation of the company's shares/ In Germany, the concept of the relevant standard (standard 1) 'Institut der Wirtschaftsprüfer in Deutschland IDW', which contains guidelines for company valuation, dominates. It proposes a valuation model for squeeze-out cases that can be compared to the 'equity approach' of discounted cash flow methods. In particular, the equilibrium capital asset pricing model based on finance theory is regularly used to determine the risk premium as part of the present value calculation. Numerous studies have shown the incompatibility of the concept of objective cash flow calculation proposed by IDW S 1 and the financial-theoretical CAPM with minority shareholder protection. The main issue concerns the definition of full value. Despite this incompatibility, these models are becoming increasingly popular in court practice in Germany (Follert 2020).

Thus, despite certain drawbacks emphasized by F. Follert emphasizes, the squeeze-out procedure has been effective and has long been in place in Germany.

For example, let's also consider the legislation of Poland. This country borders Ukraine and has many common economic, cultural and political ties. Accordingly, its experience will be particularly interesting for Ukraine. Squeeze-out in Poland is regulated by the Commercial Companies Code, 2000. The essence of this institution is that the majority shareholder, being the owner of the part of the authorized capital of a joint-stock company provided for by the Code, may demand that minority shareholders sell their shares in the company. In general, the main objective of many provisions of the Commercial Companies Code is to protect the rights of minority shareholders in a joint-stock company. However, it should be emphasized that the provisions of Art. 418 introduce a relatively new solution aimed at eliminating minority shareholders from the company (Żaba 2020).

Under the Commercial Companies Code, if a shareholder of a public company holds 90% of the total voting rights in the company, it may compulsorily purchase the shares of minority shareholders at a price set in accordance with the rules applicable to the establishment of a minimum price in a tender offer. The compulsory buyout procedure may be initiated within three months after the 90% threshold is reached, which in the case of a takeover bid means three months after the completion of the takeover bid (Commercial Companies Code, 2000).

The procedure for the compulsory redemption of shares in private joint stock companies requires the simultaneous consideration of many preconditions. In the Polish doctrine, such preconditions are divided into general preconditions (defining the scope of the compulsory buyout by specifying the shares that may be bought out, *i.e.* shares in private joint stock companies) and special preconditions (referring to the conditions for the buyout of only those shares that are subject to the decision on compulsory buyout). The general prerequisites relate primarily to the provision of Article 418 § 4 of the Commercial Companies Code, which does not allow for the buyback of shares in public joint stock companies. In addition, the compulsory buyout provision does not apply to shares of the State Treasury of Poland in companies that were created through commercialization. The Polish representatives of the doctrine also emphasize that it is not possible to compulsorily buy out shares of those shareholders who have so-called personal rights in the company. These rights are related to the shareholder's personality, not to his or her shares. An example of this right is the right to appoint members of the management or supervisory board.

The redemption procedure is initiated by a resolution on compulsory redemption, which must be adopted subject to the conditions of majority and voting method. In addition, the resolution must set the buyout price. Polish law stipulates that minority shareholders selling their shares must submit the share documents or other documents on their ownership to the company within 1 month of the announcement of the decision to buy back the shares. After that, the company is obliged to buy back the shares at the expense of the majority shareholders. The company's management is obliged to repurchase the shares for up to 1 month from the expiration of the deadline for drawing up the documents for the shares. In addition, Polish regulation provides that the above period may not expire earlier than after the payment of the entire amount by the majority shareholders (Rodzynkiewic 2012).

The peculiarities of legal regulation of the squeeze-out procedure under Polish law are:

1) inability to apply in public joint stock companies;

2) the basis for the general meeting's decision to compulsorily redeem shares is the need to protect the company's interests from abuses and actions of minority shareholders that make it impossible for the company to function properly;

3) squeeze-out may be initiated by no more than five persons who jointly own at least 90% of the authorized capital;

4) 90% of the shareholders' votes are required to pass a resolution on the compulsory redemption of shares;

5) the decision may apply to shareholders holding less than 5% of the authorized capital;

6) the share repurchase price determined by the appraiser is the minimum price at which the shares should be repurchased;

7) the appraiser is independent of both the company and the shareholders;

8) the law provides for the right of a minority shareholder to appeal against the redemption price to the corporate court (sąd rejestrowy);

9) the law provides for the right of a minority shareholder to appeal to the court against the decision of the general meeting on the compulsory redemption of shares (squeeze-out) on the grounds provided for by law for such an appeal (Kolohoida $ Stafiichuk 2018).

2.3. Practice of Courts of European Countries on Squeeze-Out Procedure

It should be noted that, given the controversy of the squeeze out procedure and the sharply opposite attitude to it among scholars and society, it is not surprising to see court practice in courts of different countries on the relevant issue. First of all, let's pay attention to the German court proceedings. Thus, in its judgment of January 12, 2016 (case No. II ZB 25/14), the German Federal Court of Justice commented on the expediency of a monetary settlement in a squeeze out case. In its commentary, the court referred to the decision of the Federal Constitutional Court of Germany (Bundesverfassungsgericht). According to this case law, in the event of a squeeze-out, a minority shareholder must receive full compensation for the loss of its participation in the company. Such compensation should reflect the *real* and *true* value of the property expressed in the form of shares. This raises a reasonable question: is the value of shares limited to dividends and does this valuation really reflect the *real* price? (Cash settlement in case of squeeze-out, 2016).

The decision states that compensation payments are only temporary fixed compensation for dividends otherwise received. If the dependent (and transferring) company develops positively after the profit and loss transfer agreement is entered into and if the dividends are higher than the compensation under such an agreement after the internal agreement is terminated, the (outside) shareholder may benefit from the decision to remain in the company after the compensation is paid. This decision is beneficial for minority shareholders, because until now the Federal Court has only ruled that the stock exchange price is the lower limit of the monetary settlement when calculating the market value (company valuation). Now, the valuation based on compensation for loss of profit and the transfer agreement provides another lower limit (Case law, BGH, 12.01.2016 - II ZB 25/14, 2016).

In addition, after analyzing other decisions of German courts, in particular, Feldmühle case, 1962 (Case law, BVerfG, 07.08.1962 - 1 BvL 16/60, 1962) and Moto Meter AG, 2000 (Case law, BVerfG, 23.08.2000 - 1 BvR 68/95, 1 BvR 147/97, 2000), the following defining ideas regarding the exclusion of minority shareholders can be distinguished: the law governing the squeeze out procedure itself does not provide for the deprivation of minority shareholders of their property, and the legislator himself did not in any way imply a hidden intention to disadvantage the minority shareholders. Moreover, as stated in Moto Meter AG 2000, compensation to minority shareholders must be full and fair. The respective squeeze-out process should be very clearly and understandably regulated and based on the constitutional principles of justice, equality, freedom and the rule of law. Thus, it can be stated that the German case law supports squeeze outs, emphasizing the benefits of the procedure for minority shareholders. In addition, it emphasizes the importance of respecting the constitutional rights and freedoms of such persons in the process of compensating them for the value of their shares.

The practice of the Polish court should also be taken into account. For instance, in its judgment in case 65/6/A/2005, the Polish Constitutional Court came to a number of conclusions. First of all, squeeze out is not expropriation in the literal sense. It only has consequences similar to this phenomenon. This is due to the fact that the process of deprivation of property itself should lead to compensation, regardless of its form. The squeeze out procedure creates a situation with the transfer of property between private entities against the will of the owner, which should result in certain compensation from the acquirer. The court also defined what can be considered ‘adequate compensation’. According to its decision, adequate compensation is compensation that allows the owner to reproduce the lost thing or restore the property status that existed before the deprivation of property. In relation to minority shareholders subjected to squeeze out procedure, compensation that reflects the fair and real market value of their shares can be considered as appropriate (Court sentence, №65/6/A/2005, 2005).

Thus, similarly to the German proceedings, the Polish court recognizes squeeze out as a legitimate procedure if the process of proper valuation of shares is followed, which it also regulates in its decision.

2.4. The Use of Squeeze-Out in Ukraine

The use of the squeeze-out mechanism in Ukraine, even after the change in legislation in this area, can be characterized as extremely cautious. According to the statistics as of 2022, the practice of applying the squeeze-out procedure in Ukraine was isolated. Thus, since the introduction in 2017 of the procedure for mandatory redemption of shares at the request of a person holding a dominant controlling stake of 95%, only 417 joint-stock companies have gone through this procedure (National Depository of Ukraine, 2023).

On June 4, 2017, the Law of Ukraine ‘On Amendments to Certain Legislative Acts of Ukraine on Improving Corporate Governance in Joint Stock Companies’ came into force, which regulated two methods of consolidation by a majority shareholder owning more than 95% of shares, all shares of such a company - the institution of mandatory acquisition of shares by the majority shareholder at the request of a minority shareholder (sell-out procedure) and the institution of a public request by the majority shareholder to sell minority shares to him (squeeze-out procedure) by amending the Law of Ukraine ‘On Joint Stock Companies’ (Law of Ukraine, № 2465-IX, 2023).

The Law grants a person who owns a dominant controlling stake (95% or more of the ordinary shares of a joint-stock company), or any affiliate or authorized person of a group of persons acting jointly, the right to send to the company a public irrevocable request to purchase shares from all holders of the company's shares together with a certified copy of the escrow account agreement. In case of submission of a public irrevocable demand to the company, all shareholders of the company, except for persons acting jointly with such person and its affiliates, and the company itself are obliged to unconditionally sell their shares in the company to the claimant.

The Law of Ukraine ‘On Joint Stock Companies’ defines squeeze-out as a competitive offer as a tool for balancing the positions of the parties in the course of a mandatory share buyback at the request of a majority shareholder (group of shareholders). Pursuant to Article 96 of the Law, if the majority shareholder initiates the process of compulsory redemption of shares, the minority shareholder (shareholders) is entitled to submit a competitive demand for redemption of shares from all other shareholders in response to the public irrevocable demand of the majority shareholder. The main conditions for the latter are:

1.the applicant shareholder must send a notice to the company and the National Securities and Stock Market Commission of its intention to exercise this right within 20 business days after receiving the public irrevocable demand;

2.within 5 business days from the date of notification, submit to the company an irrevocable competitive demand for the mandatory sale of shares;

3.the price of the mandatory sale of shares is at least 5 percent higher than the price in the public irrevocable request of the majority shareholder;

4.the fulfillment of obligations under the competitive bid must be secured by a bank guarantee;

5.any other shareholder (not only the owner of the dominant controlling stake) has the right to submit another competitive bid also at a rate at least 5% higher than the previous competitive bid (Law of Ukraine, № 2465-IX, 2023). This method is a worthy legal tool for overcoming the price set in the public irrevocable demand at the minority shareholder's request, as it will reduce the chances of manipulation of the price by the majority shareholder (towards lowering it), since the buyout may result in the loss of the entire shareholding (Polosenko, 2022).

If we compare squeeze-out procedures in the EU and Ukraine, we can note that they are generally quite similar. It should be borne in mind that there are certain differences even among EU countries. The key differences include the following. In EU countries, the public offer procedure is used as a mechanism for a public company to exit the public market. In Ukraine, the squeeze-out procedure can be applied to both public and private joint stock companies. In this case, the Charter of a private joint-stock company upon its establishment, as well as the decision of the general meeting of shareholders of a private joint-stock company to amend the company's charter adopted by more than ¾ of the votes of shareholders who have registered for participation in the general meeting, may provide that the requirements of the articles of the Law do not apply to such a company or apply with exceptions or peculiarities to be determined by the company's charter.

3. Discussion

In general, it can be stated that the issue of squeeze-out is not well researched in Ukraine, especially in the context of comparison with a similar procedure in the EU. Nevertheless, there are certain scientific works that have analyzed the procedure of forced buyout of shares. Among these works, it is worth noting the article by Ukrainian authors O. Kolohoida and V. Stafiichuk. In their work, the authors analyze the procedure of compulsory redemption of shares under Ukrainian law, comparing it with the European one. The authors confirm that the Ukrainian model of legal regulation of the forced sale of shares is based on the British squeeze-out model. They also consider some retrospectives of the development of squeeze-out in Europe and Ukraine. Among other things, O. Kolohoida and V. Stafiichuk also note that the Ukrainian model of compulsory redemption of shares needs to be improved (Kolohoida and Stafiichuk 2018).

The author of the article also referred to the work of Polish scholar M. Żaba, who described in detail the procedure of forced buyout of shares in Polish practice. He notes that squeeze-out is a relatively new institution of Polish law. It is regulated by the EU Directive, and its basis in Polish law is regulated by the Commercial Companies Code. Special attention is paid to the peculiarities and essence of squeeze-out. M. Żaba provides a detailed description of the squeeze-out procedure with its advantages and disadvantages and emphasizes that the possibility of buying out shares by majority shareholders from minority shareholders at a price determined in accordance with the provisions of the Polish Commercial Companies Code is provided for by Polish law (Żaba 2020).

Despite the fact that squeeze-out has been known in many countries for quite some time, it is a relatively new concept for some EU countries. Accordingly, it is quite new for Ukraine as well. In addition, despite the existence of some works on squeeze-outs, we still believe that there are not enough scientific sources on this topic. This is especially noticeable in those countries where this procedure has appeared quite recently. Ukraine also does not yet have a large number of scientific studies on the relevant procedure. With this in mind, the author of this article identifies several areas for improvement of Ukrainian legislation in the squeeze-out procedure. The conclusions in this regard are based on the information analyzed above, as well as on a comparison of the Ukrainian squeeze-out and similar procedures in certain EU member states. First of all, it should be noted that in Ukrainian realities, there may be situations when a squeeze-out is difficult to perform. For example, a problem may arise when the remaining 5% of the shares subject to redemption may be distributed among a large number of shareholders. It should also be borne in mind that many joint-stock companies in Ukraine were created under the influence of privatization of state-owned enterprises during the years of independence, where a large number of ordinary citizens became shareholders. Therefore, it is possible that this tool will remain unused for objective reasons. In our opinion, in order to avoid such situations, the state has yet to develop effective mechanisms for the practical application of squeeze-out or to develop appropriate court practice on this issue over time.

In addition, another relevant question arises. If we take into account the requirements stipulated in the Law of Ukraine 'On Joint Stock Companies' (any shareholder who does not agree with the price of a public irrevocable claim may submit a competitive claim), how to regulate the issue if several counter-competitive proposals are submitted simultaneously by shareholders who do not act in concert, whether based on priority, price or other criteria. This issue should also be regulated.

In addition, one of the key points is the amount to be paid to the minority shareholder, which should correspond to the price for 95% or more of the shares and an additional 5% of the price for each share. Then there is the question of whether the minority shareholder will be able to pay such an amount at all, since in any case the majority shareholder is the financially stronger party. Even if one considers the possibility of finding a financial partner, such as a competitor, 20 business days seems to the author to be an insufficient period.

It is also worth noting that certain provisions of the Law on compulsory buyout of shares are somewhat retrospective, in particular in terms of their application to legal relations that arose before the Law came into force, in terms of granting the right to shareholders who acquired a dominant controlling stake before the Law came into force. This approach is contrary to Article 58 of the 1996 Constitution of Ukraine, which states that laws and other regulatory legal acts shall not have retroactive effect, except in cases where they mitigate or cancel the liability of a person (Constitution of Ukraine, 1996). To address this gap, we suggest that the Law provide that the provisions do not apply to persons (groups of persons) who directly or indirectly acquired ownership of a dominant controlling stake before the law came into force, in particular, in the course of privatization.

In terms of determining the share buyback price, the Law does not specify any special requirements for appraisers or the mechanism (method and method) for assessing the market value of a share. We believe that for the purpose of buyout, the market value should be assessed by a separate group of qualified appraisers and based on the value of one ordinary registered share in a 100% shareholding.

To ensure transparency, the financial and business status of the target company and information on the buyout procedure, the grounds and procedure for determining the price should be made public. The right to apply the squeeze-out procedure by non-public companies – PrJSCs – causes difficulties for shareholders in obtaining information about the company.

Conclusion

Thus, a squeeze-out is a procedure regulated by law, which consists in the mandatory sale of securities (or redemption of shares) at the request of the owner of a shareholding that is dominant in comparison to others. It should be noted that a dominant shareholding is a shareholding that is equal to or exceeds 90% of the total amount of ordinary shares.

The author has established that in Europe, the squeeze-out procedure first appeared in the UK in the middle of the last century and spread to other European countries. In the Member States, the basic provisions for the compulsory purchase of shares are established by Directive 2004/25/EC, which is why the procedure contains many similarities in the EU member states. The procedure has a lot in common in Ukraine and the EU, as the squeeze-out provisions were incorporated from the Directive. At the same time, all countries have their own peculiarities, which are allowed by the Directive. They reflect the peculiarities of each country related to its corporate law, economic and historical characteristics.

Based on the results of the study, it can be concluded that the Ukrainian legislator has proposed a progressive tool, given its successful application in European countries that can be used by a minority shareholder as opposed to the forced redemption of its shares

by the majority. Since squeeze-out always means depriving a shareholder of his shares against his will, it is one of the ways to defend his rights to shares during such a procedure. At the same time, the regulation of the application of a competitive squeeze-out requires improvement and clarification, which can be done both by the legislator and through the development of judicial practice. In particular, this applies to: overcoming the situation of simultaneous submission of several competitive demands; extending the time limits for providing notice and submitting a competitive demand; ensuring the availability of sources for payment of the share price by a minority shareholder. All of this will help the competitive demand not to remain an abstract possibility but to become a real tool in the hands of minority shareholders.

In order to ensure a mechanism for establishing a fair market redemption price and avoid abuse, we propose to provide for provisions in the Law that would provide for the following in the event of a public irrevocable demand the right of a minority shareholder or any investor, including the state, to redeem the shares owned by the claimant and all its affiliates (persons acting jointly) at the price specified in the public offer the right of a minority shareholder or any investor, including the state, to initiate an open auction for the entire minority stake with a 10% discount to the redemption price; in case of a minority shareholder's written disagreement solely with the assessment of the market value of shares determined by the Public Request, the redemption price should be determined by a commission consisting of a representative of the dominant owner, the minority shareholder and the State Property Fund of Ukraine.

Declaration of Competing Interest

The author declares that he has no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Declaration of Use of Generative AI and AI-assisted Technologies

The author declares that he has not used generative AI and AI-assisted technologies during the preparation of this work.

References

[1] Binder, U., and Riehmer, K. (2020). Public takeovers in Germany. Available at: https://www.mayerbrown.com/-/media/files/perspectives-events/publications/2020/03/ger-whitepapercorporate- public-takeovers.pdf

[2] Carney, W. J. (2000). *Merger and Acquisitions: Cases and Materials*. United States: Foundation Press.

[3] Chen, C., Zhang, W., and Wan, W. (2018). Regulating squeeze-out techniques by controlling shareholders: The divergence between Hong Kong and Singapore. *Journal of Comparative Law Studies, 18* (1): 185-216.

[4] Doroshenko, L., and Pylyavets, V. (2020). Determining the fair price of mandatory sale of shares. *Journal of Kyiv University of Law*, *3:* 156-162.

[5] Follert, F. (2020). Squeeze-Out and Business Valuation in Germany – A Law and Economics Analysis of Judicial Decision-Making. *Accounting, Economics, and Law: A Convivium*. Available at: https://www.degruyter.com/document/doi/10.1515/ael-2020-0118/html

[6] Franks, J., Mayer, C., and Rossi, S. (2005). Spending less time with the family: the decline of family ownership in the United Kingdom. In Randall K. Morck, *A History of Corporate Governance around the World: Family Business Groups to Professional Managers* (pp. 581-611). Chicago: University of Chicago Press.

[7] Hodge O'Neal, F. (1961). Arrangements which protect minority shareholders against squeeze-outs. *Minnesota Law Review*, *1294*: 537-557.

[8] Khanna, V., and Varottil, U. (2015). Regulating squeeze-outs in India. *The American Journal of Comparative Law*, *63* (4): 1009-1051.

[9] Kolohoida, O., and Stafiichuk V. (2018). Procedure for the compulsory sale of shares (squeeze-out): legislation and law enforcement practice. *Law of Ukraine*, *6:* 111-131.

[10] Le Bars, B., and Guyon, Y. (1998). Les associations de défense d'actionnaires et d'investisseurs. Paris: LGDJ, 544p.

[11] Martin, L. (2018). Shareholders' guide: What are squeeze-out and sell-out rights? *BBVA*. Available at: https://www.bbva.com/en/shareholders-guide-squeeze-sell-rights/

[12] Polosenko, K. (2022). Compulsory sale of shares at the request of the majority under the new rules. *New Ukrainian Law*, *6*: 118-120.

[13] Rodzynkiewicz, M. (2012). *Code of Commercial Companies and Partnerships. Commentary*. Warszawa: REA, 1368 p.

[14] Żaba, M. (2020). The squeeze-out regulation in the Polish Code of Commercial Companies. *International Journal of Law and Society*, 49-56.

[15] Case law, BGH, 12.01.2016 - II ZB 25/14. (2016). Available at: https://dejure.org/dienste/vernetzung/rechtsprechung?Gericht=BGHandDatum=12.01.2016andAktenzeichen=II%20ZB%2025%2F14

[16] Case law, BVerfG, 07.08.1962 - 1 BvL 16/60. (1962). Available at: https://dejure.org/dienste/vernetzung/rechtsprechung?Gericht=BVerfGandDatum=07.08.1962andAktenzeichen=1%20BvL%2016%2F60

[17] Case law, BVerfG, 23.08.2000 - 1 BvR 68/95, 1 BvR 147/97. (2000). Available at: https://dejure.org/dienste/vernetzung/rechtsprechung?Gericht=BVerfGandDatum=23.08.2000andAktenzeichen=1%20BvR%2068/95

[18] Cash settlement in case of squeeze-out. (2016). Available at: https://www.simmons-simmons.com/en/publications/ck0ajxlrqnebo0b33qu63yy0p/22-cash-settlement-in-case-of-squeeze-out

[19] Commercial Companies Code. (2000). Available at: https://isap.sejm.gov.pl/isap.nsf/download.xsp/WDU20000941037/T/D20001037L.pdf

[20] Companies Act (2006). Available at: https://www.legislation.gov.uk/ukpga/2006/46/contents

[21] Constitution of Ukraine, No. 254k/96-BP. (1996). Available at: https://zakon.rada.gov.ua/laws/show/254%D0%BA/96-%D0%B2%D1%80?lang=en#Text

[22] Court sentence, №65/6/A/2005, File P 25/02. (2005). Available at: https://isap.sejm.gov.pl/isap.nsf/download.xsp/WDU20051241043/T/D20051043TK.pdf

[23] Directive 2004/25/EC of the European Parliament and of the Council of 21 April 2004 on takeover bids. (2004). Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32004L0025

[24] Explanatory Note to the Draft Law of Ukraine 'On Amendments to Certain Legislative Acts of Ukraine on Improving Corporate Governance in Joint Stock Companies'. (2015). Available at: https://ips.ligazakon.net/document/GH1RY68A?an=3

[25] Law of Ukraine, № 1983-VIII 'On Amendments to Certain Legislative Acts of Ukraine on Improving Corporate Governance in Joint Stock Companies'. (2017). Available at: https://zakon.rada.gov.ua/laws/show/1983-19#Text

[26] Law of Ukraine, № 2465-IX 'On joint stock companies'. (2023). Available at: https://zakon.rada.gov.ua/laws/show/2465-20#top

[27] National Depository of Ukraine. (2023). Squeeze-out: copies of public irrevocable claims. Available at: https://www.csd.ua/index.php?option=com_easytableandview=easytabl%20eandid=48andItemid=342andlang=ua

[28] Royal Decree 1066/2007 on the regime for public takeover bids for securities. (2007). Available at: https://www.boe.es/buscar/act.php?id=BOE-A-2007-14483

[29] Securities Acquisition and Takeover Act. (2001). Available at: https://www.gesetze-im-internet.de/wp_g/BJNR382210001.html

[30] Stock Corporation Act. (1965). Available at: https://www.gesetze-im-internet.de/aktg/

[31] The City Code on Takeovers and Mergers. (1970). Available at: https://www.thetakeoverpanel.org.uk/wp-content/uploads/2023/02/The-Take-Over_Bookmarked_20.2.23.1.pdf?v=20Feb2023

[32] Transformation Act (UmwG). (1994). Available at: https://www.gesetze-im-internet.de/umwg_1995/

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Innovation and Investment Model for the Development of Small and Medium-Sized Businesses in Ukraine

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Abstract: The research topic, related to the use of an innovation and investment model in entrepreneurship, is relevant because it will contribute to the modernisation and digitalisation of the economy, which would facilitate more efficient use of information technologies and allow automating business processes. In addition, the introduction of an innovative investment model will help to create new markets and promising areas of development, which will support Ukraine's competitiveness in the international market. The purpose of this study is to analyse innovative approaches and investments that can contribute to the growth and competitiveness of small and medium-sized businesses in Ukraine. The analytical method, statistical method, functional method, system analysis, deduction, synthesis, and comparison were used. The current state of entrepreneurship in Ukraine was analysed, including its size, structure and volume of production. Various innovative approaches and technologies that can be used by small and medium-sized enterprises for their development are revealed. The investment environment for small and medium-sized businesses is considered, including an overview of available sources of financing, the quality of the financial market, the availability of state support and other investment instruments. The main challenges faced by small and medium-sized enterprises in Ukraine in the context of the innovation and investment model are highlighted, and development prospects are considered. The practical significance lies in the use of the identified results, solving issues related to the use of an innovation and investment model in order to bring entrepreneurship to a new level.

Keywords: development strategy; digitalisation; production volumes; state support; competitiveness.

JEL Classification: O30; D24; D00.

Introduction

Small and medium-sized businesses in Ukraine play an extremely important role in the development of the country's economy, job creation, and social prosperity. This sector is a source of innovative solutions, economic growth and support for entrepreneurial activity. However, to achieve sustainable economic growth and maintain the competitiveness of small and medium-sized businesses, innovative approaches and investment support are required. Successful creation and development of small and medium-sized businesses in Ukraine depends on a proper innovation and investment model that encourages the introduction of new technologies, advanced processes, and increased competitiveness. Innovation is becoming a key factor determining the success and survival of enterprises in today's conditions of rapid technological change and growing competition (Shtal *et al.* 2021; Chernetska and Chernetskyi 2023). In addition, access to finance plays a critical role in promoting the development of small and medium-sized businesses. Insufficient financial support can be an obstacle to expanding operations, innovating, and developing new products or services (Lemishovska 2023). Innovative approaches allow enterprises to introduce new ideas, technologies and developments that contribute to improving their efficiency and competitiveness in the market. Moreover, investment support provides financial resources necessary for the development and expansion of enterprises' activities.

Grechan and Babich (2019) point to the need to create a favourable investment environment for the development of small and medium-sized businesses in Ukraine. They emphasise that innovative approaches and investments in new technologies and developments are key factors for the successful development of this sector. Andrusiak (2019) offers a model based on attracting investment from a variety of sources, including government support programmes, international investment, and private investors. The researcher emphasises the importance of creating a network of incubators and accelerators that would help small and medium-sized enterprises receive funding and expert support. Toporkov (2020) analyses the role of innovations in the development of small and medium-sized businesses in Ukraine. The researcher points out the need to encourage innovation, introduce new technologies, and develop new products and services. The author suggests strengthening interaction between business, scientific and research institutions to create innovation clusters.

Dmytro K. Semenda and Olha V. Semenda (2022) examines the role of state support in the development of small and medium-sized businesses in Ukraine. The researcher stressed the importance of establishing effective government support mechanisms, such as tax incentives, subsidies, access to finance and advisory support. Attention is also drawn to the need to improve the business climate and simplify administrative procedures. Bortnik (2022) considers the importance of human capital development in small and medium-sized businesses in Ukraine. He emphasises the need to train and develop skills in entrepreneurs and create a support and consulting system to improve managerial competence. The author also emphasises the importance of cooperation between educational institutions and the business community.

In general, innovation and investment are essential components for stimulating competitiveness, attracting foreign investment, creating new market opportunities, and improving enterprise productivity. The innovation and investment model for the development of small and medium-sized businesses in Ukraine will allow enterprises to effectively implement new ideas, technologies and processes that contribute to improving the quality of products and services. The purpose of the study is to create an objective and detailed picture of the innovation and investment model for the development of small and medium-sized businesses in Ukraine, which can serve as a basis for the development of strategies, policies and programmes for the development of this sector.

1. Materials and Methods

Official documents and reports, namely reports of the State Statistics Service of Ukraine, were used to study the topic. The topical issues of using the innovation and investment model for the development of small and medium-sized businesses in Ukraine were investigated using methods that reveal the content of the object. The analytical method was used to analyse and systematise available information about the innovation and investment model of entrepreneurship development in Ukraine. This method allowed analysing various aspects of this model, such as financing, research activities, and government support, and determined their impact on the development of entrepreneurship. Using the statistical method, it was possible to investigate data on the development of small and medium-sized businesses, the investment climate, the volume of financing and other indicators that reflect the state of the innovation and investment model in Ukraine.

The functional method was used to investigate the functions and roles of various subjects (state, business, academic institutions) in the development of the innovation and investment model. This method allowed considering what functions they perform, how they interact with each other, and what results can be achieved through their joint activities. The system analysis method helped to study the relationships and interactions of various elements of the innovation and investment model. This method approached the model as a complete system and revealed possible interdependencies, synergistic effects, and optimisation opportunities for the system. Due to the synthesis method, it was possible to combine individual aspects, ideas, and concepts into one common model, which helped to gain a deeper understanding and forecasting of the development of innovative entrepreneurship in Ukraine. The method of deduction helped to find out the patterns that underlie the understanding of the innovation and investment model of entrepreneurship development in the country. The comparison method was used to compare various elements of the innovation and investment model of entrepreneurship development in Ukraine. This allowed understanding the features and shortcomings of the Ukrainian model, highlighting ideas and practices that can be applied to improve the situation in the country.

The study was conducted with the disclosure of some aspects, including theoretical and practical components. During the analysis of the theoretical aspect, attention was focused on the investigation of the concepts of innovation and investment, as key elements that contribute to economic growth and competitiveness. This included the study of various theoretical approaches, models and concepts that determine the role of innovative entrepreneurship in the country's sustainable development. Another aspect of the study was the analysis of specific recommendations and tools that can help support and stimulate innovative entrepreneurship in Ukraine.

This included considering strategies, programmes, and tools that could be used by the government, business associations, and other stakeholders to support the development of small and medium-sized businesses.

Based on the results obtained, the necessary recommendations for identifying specific problems of implementing an innovation and investment model that will contribute to solving issues and developing entrepreneurship in Ukraine were considered. As a result, these actions were applied to consider the feasibility of implementing such a model for the successful development of the country.

2. Research Results

The role of innovations in the development of entrepreneurship is an important aspect of the innovation and investment model for the development of small and medium-sized businesses. Innovation involves introducing new ideas, technologies, products, or processes that enable businesses to create a competitive advantage, deliver sustainable growth, and adapt to changing market conditions. One of the key concepts is 'innovation activity'. This manifests itself in the ability of businesses to generate and implement new ideas and solutions to improve their products, processes, or services. Innovation activity contributes to the creation of new markets, increasing competitiveness and expanding the sphere of influence of the enterprise (Acs *et al.* 2013). In addition, the concept of 'innovative entrepreneurship' indicates the important role of entrepreneurs in promoting innovative development. Innovative entrepreneurs show entrepreneurial qualities such as creativity, risk-taking, the ability to sense market opportunities and develop new ideas. They encourage the development of innovative products and services, attract investment and contribute to the creation of new jobs (Autio *et al.* 2014). Another important concept is 'innovation system'. It involves interaction between various stakeholders, such as the government, business associations, scientific institutions and other organisations, in order to encourage innovative development. The innovation system provides knowledge exchange, technology development, access to funding and other resources necessary for the successful implementation of innovative projects (Huggins and Thompson 2015).

Innovation is a key factor in the development of entrepreneurship. The introduction of innovative ideas, the use of new technologies and the creation of innovative products allow enterprises to increase their competitiveness, enter new markets and achieve sustainable growth. The experience of many developed countries shows that the small and medium-sized business sector is both efficient and the most dynamic in economic activity. At the same time, large corporations, due to their significant financial, material and labour resources for implementing large innovative projects, have undoubted advantages in numerous industries and fields of activity (Eniola and Entebang 2015). However, in many industries, the most optimal and effective are small forms of organisation of economic activity, which are largely based on the development and implementation of innovations. Small and medium-sized businesses are characterised by flexibility, quick decision-making, and the ability to respond quickly to changes in the economic environment. These advantages allow them to effectively use limited resources and focus on innovative approaches to achieve success (Naradda Gamage *et al.* 2020). Through innovation, small and medium-sized enterprises can open up new markets, create unique products and services, improve their business processes, and increase efficiency.

Investment is crucial for the development of small and medium-sized businesses, as it promotes economic growth, creates new jobs and ensures the sustainability of entrepreneurship (Ziberi and Alili 2021). Through investment, small and medium-sized enterprises have the opportunity to introduce new ideas, technologies and innovative solutions, which allows them to improve the quality of their products and services, attract more customers and increase competitiveness in the market. In addition, investments help to expand the activities of enterprises, increase their production capacity and attract more employees, which has a positive impact on employment and social development. Investment resources available through investment, such as bank loans, venture capital, or investment funds, enable small and medium-sized enterprises to carry out significant projects, expand into new markets, modernise production, and improve infrastructure. In addition, small and medium-sized enterprises play an important role in regional development, and investment in this sector contributes to the creation of new jobs in remote areas, reduces economic inequality between regions, and contributes to overall economic development (Drobyazko *et al.* 2019; Gherghina *et al.* 2020).

Small and medium-sized enterprises have a unique opportunity to apply various innovative approaches and technologies to develop and strengthen their competitiveness in the market. The introduction of modern information systems, cloud technologies, and software allows optimising business processes, reducing costs, and improving productivity (Gregori and Holzmann 2020). The use of artificial intelligence allows analysing large amounts of data, predicting demand for goods and services, and personalising customer service. The use of advanced manufacturing technologies, such as 3D printing and the Internet of Things (IoT), helps speed up production, reduce costs, and improve product quality (Bican and Brem 2020). Focusing on innovation and developing new products that meet market needs and have competitive advantages helps small and medium-sized enterprises occupy new niches and attract new customers. The state of the innovation and investment environment in Ukraine is complex and requires attention for further development. During the analysis of the state of the innovation and investment environment in Ukraine, the following main aspects can be identified: legal environment, financing of innovations, scientific and technical potential, and infrastructure development.

In 2023, the innovation and investment landscape for small and medium-sized enterprises (SMEs) in Ukraine has been significantly shaped by international support and strategic initiatives to overcome the challenges posed by the ongoing conflict and its aftermath. The European Commission, recognizing the critical role of intellectual property in innovation, has extended the SME Fund to Ukrainian businesses. This initiative aims to bolster innovation and entrepreneurship by covering a substantial portion of the costs associated with trademark and design protection within the European Union, up to a certain limit, thereby providing valuable support for Ukrainian innovative SMEs and playing a part in rebuilding the economy.

Additionally, the European Investment Bank has launched the EU for Ukraine Fund, a part of the broader EU for Ukraine initiative, with an initial commitment of over €400 million by EU Member States. The fund's first project includes a €25 million investment in Ukraine's equity growth fund, which is specifically aimed at strengthening tech and export-oriented SMEs in Ukraine and Moldova. This marks a strategic focus on sectors such as IT services and products, e-commerce, innovative retail and consumer goods, and fintech.

However, despite these promising developments, the Organization for Economic Co-operation and Development (OECD) has highlighted that the war has exacerbated pre-existing challenges in Ukraine's innovation ecosystem, including under-investment in research and development, brain drain, and the destruction of scientific infrastructure. Moving forward, there's an emphasis on rebuilding a better innovation ecosystem by leveraging Ukraine's strengths in fields such as computer science, engineering, and information and communication technology services.

The legal environment in Ukraine plays an important role in the development of innovation and investment activities. Ensuring stable, transparent and progressive legal norms and legislation is a key factor in stimulating innovative entrepreneurship and attracting investment to the country. One of the most important aspects of the legal environment is the protection of intellectual property. Ukraine pays considerable attention to creating an effective system for protecting intellectual property rights, including patent legislation, copyrights and trademarks. This contributes to the protection of innovative developments and design, which increases investors' interest in financing innovative projects in Ukraine. Another important aspect is the regulation of innovation financing (Tkachenko *et al.* 2023). Ukraine is developing and improving legislation aimed at creating favourable conditions for attracting investment and financing for innovative projects. Legislative acts, such as the Law of Ukraine 'On Innovation Activity', establish benefits and support for investors who finance innovative projects. In addition, there are special state programmes and support funds that contribute to the financing of innovative enterprises. The 'Programme for the Development of the National Industry of Priority Areas of Science and Technology', the 'Innovation Development Fund', and the 'Small and Medium Enterprise Support Fund' can be distinguished. An important element of the legal environment is to simplify the procedures and registration of enterprises, reduce bureaucratic obstacles and facilitate doing business. Ukraine is working to improve the business climate and introduce electronic services that simplify the processes of doing business and attracting investment (Slobodian *et al.* 2022).

Table 1 shows the main indicators of innovation activity of industrial enterprises in Ukraine for the period from 2010 to 2022.

Approximately 15% of the total number of industrial enterprises in Ukraine introduce innovations related to both products and technological processes. In recent years, this indicator has fluctuated. The lowest level was recorded in 2010 – 11.5%, and the highest – in 2016, reaching 16.6%. At the same time, only 1.9% of the total sales of industrial enterprises in 2020 accounted for the volume of innovative products (goods, services) sold. Although from 2017 to 2020, there was a tendency to increase this indicator. Notably, the number of types of innovative products introduced in 2020 amounted to 4066 units, which shows a significant increase compared to 2010.

In 2021, due to the consequences of COVID-19, namely changes in the operating mode, lockdowns, changes in demand and consumption, restrictions on the movement of people and goods, difficult conditions for innovation occurred. Some businesses may have been forced to temporarily close or operate in a limited mode, which affected the development and implementation of new innovations. In 2022, due to a full-scale war, the country's innovation and investment situation also worsened. The situation causes distrust of investors and a decrease in their willingness to invest in unstable regions. This leads to a reduction in innovative projects and limited opportunities for the development of small and medium-sized enterprises. War contributes to changes in government policy priorities. The state is forced to redirect resources to military needs and respond to economic challenges associated with the situation. The war has significantly increased the degradation of innovative ecosystems in industrial sectors, in particular among small and medium-sized enterprises. The reasons for this are as follows: more than 40% of small and medium-sized enterprises have simply ceased operations, and those who continue to work are mainly focused on simple survival. Under such conditions, enterprise managers do not have the time and resources to develop innovations, and they consider this area of work as not a priority, but functional for obtaining at least a minimum volume of orders (Yurchak 2022; Gavrysh *et al.* 2024).

Table 1. Indicators of innovation activity of industrial enterprises in Ukraine

Year	Share of the number of enterprises that implemented innovations in the total number of enterprises, %	Number of types of innovative products introduced in the reporting year, units	Share of the volume of innovative products sold in the total volume of products sold by enterprises, %
2010	11.5	2408	3.8
2011	12.8	3238	3.8
2012	13.6	3403	3.3
2013	13.6	3138	3.3
2014	12.1	3661	2.5
2015	15.2	3136	1.4
2016	16.6	4139	1.1
2017	14.3	2387	0.7
2018	15.6	3843	0.8
2019	13.8	2148	1.3
2020	14.9	4066	1.9
2021	12.2	2952	1.6
2022	11.9	2451	1.8
2023	12.1	2611	1.7

Nowadays, small and medium-sized businesses are considered as the basis of the national economy, as the subjects of this sector create approximately 60% of gross domestic product (GDP) and provide 7 million jobs, which is almost 40% of tax revenues. During the war in Ukraine, the total losses of small and medium-sized businesses exceeded USD 85 billion (excluding lost profits), and more than 1 million employees were also reduced. More than 19% of enterprises were forced to relocate, most of which moved from the east of Ukraine. A significant part of them (72%) moved their business within the country, 11% moved abroad, and 17% chose to relocate both abroad and within Ukraine. The reasons for moving the business were different: 38% said that the main goal was to save their business, 30% had customer orders in new markets, and 28% moved because of solving logistics problems. Now there is a change in business strategies among small and medium-sized businesses, approximately 43% of them plan to actively develop exports. The rate of registration of new businesses at the end of 2022 was 63% of the same period in 2021 (Center for Innovation Development 2022).

The war significantly affected the country's economy and entrepreneurship, but nevertheless, some enterprises found ways to survive and develop, relocating and adapting to new conditions (Kucherenko *et al.* 2023). This indicates the resilience of Ukrainian entrepreneurship and readiness to search for new markets and opportunities outside the country. For further development of innovative entrepreneurship in Ukraine, it is important to ensure a favourable investment and innovation environment. Financing of innovative activities of enterprises in Ukraine depends on various sources, including the following: the state budget of Ukraine, local budgets, own and borrowed funds, investments of individuals and legal entities, and other sources not prohibited by law (Abbasova *et al.* 2023; Barabash *et al.* 2023). These sources of financing play an important role in the development of innovation activities in Ukraine, stimulating the attraction of capital and the development of innovative projects.

In 2023, Ukraine's economic landscape has been defined by the resilience and strategic redirection of its industries amidst the ongoing conflict. Despite significant challenges, the country has displayed unexpected economic growth. The National Bank of Ukraine estimated a real GDP growth rate of 5.7% for the year, which was substantially higher than initial forecasts. This growth was in contrast to the broader European economy, which experienced more subdued growth projections due to the war's impact.

The innovation and investment landscape in Ukraine has been shaped by the war and the adaptability of businesses. For instance, Ukraine leveraged open-source technology and public-private innovation to bolster its strategic resilience. The use of social media and communication technologies for reconnaissance and intelligence has been noteworthy, with platforms such as the Diia app playing a crucial role in collecting data on military activity.

In addition to adapting existing technologies for military and strategic purposes, Ukraine has shown commitment to public-private partnerships and innovative solutions to address the war's challenges. The 'Brave1' portal, launched in April 2023, is an example of Ukraine's dedication to facilitating innovation and supporting the development of such collaborative projects.

The rebuilding of Ukraine's economy and infrastructure is a significant challenge that will require substantial investment. Estimates from the World Bank in 2022 suggested that the cost of reconstruction could exceed Ukraine's pre-invasion GDP, highlighting the enormity of the task ahead. Financial aid and support from international allies, particularly in the form of military and humanitarian assistance, have been pivotal during this period.

Table 2 shows the sources of financing innovation activities of industrial enterprises in the country for 2010-2022.

Table 2. Sources of financing innovative activities of industrial enterprises

Year	Innovation costs, mln UAH	Own funds of the enterprise		Funds from the state budget		Funds of non-resident investors		Funds from other sources	
		mln UAH	%	mln UAH	%	mln UAH	%	mln UAH	%
2010	8045.5	4775.2	59.4	87	1.1	2411.4	30	771.9	9.6
2011	14333.9	7585.6	52.9	149.2	1	56.9	0.4	6542.2	45.6
2012	11480.6	7335.9	63.9	224.3	2	994.8	8.7	2925.6	25.5
2013	9562.6	6973.4	72.9	24.7	0.3	1253.2	13.1	1311.3	13.7
2014	7695.9	6540.3	85	344.1	4.5	138.7	1.8	672.8	8.7
2015	13813.7	13427	97.2	55.1	0.4	58.6	0.4	273	2
2016	23229.5	22036	94.9	179	0.8	23.4	0.1	991	4.3
2017	9117.5	7704.1	84.5	227.3	2.5	107.8	1.2	1078.3	11.8
2018	12180	10742	88.2	639.1	5.2	107	0.9	692	5.7
2019	14220.9	12474.9	87.7	556.5	3.9	42.5	0.3	1147	8.1
2020	14406.7	12297.7	85.4	279.5	1.9	125.3	0.9	1704.2	11.8
2021	9882.7	-	-	-	-	-	-	-	-
2022	6524.2	-	-	-	-	-	-	-	-

According to the data shown in Table 2, it can be concluded that the main source of financing for innovation activities of Ukrainian enterprises is mainly the own funds of business entities. In 2020, 85.4% of innovations were financed from enterprises' own funds, 1.9% – from the state budget, 0.9% – from non-resident investors, and 11.8% – from other sources. A similar trend has been observed in Ukraine since 2013. However, today the issue of increasing the share of state participation in financing innovation activities of Ukrainian enterprises remains relevant.

Crisis situations such as COVID-19 and the war have led to a decline in private investment in the economy. Investors are becoming more cautious and circumspect about investing in innovative projects due to the instability and risks associated with crisis conditions. The state redistributes its resources and changes priorities in supporting the innovation activities of enterprises. Funding for research, innovation programmes, grants, and other activities aimed at supporting businesses is being reduced. The state of financing small and medium-sized businesses in Ukraine during wartime has become extremely vulnerable due to the large number of uncertainties and risks associated with the impact of war on the economy. Reduced availability of loans, increased security costs, instability of the foreign exchange market, reduced consumer demand, lack of resources and changes in the legal environment – all this strongly affected the development of small and medium-sized businesses (Khodakivska *et al.* 2022; Samedova *et al.* 2022). However, it is worth noting that the war attracted a lot of attention and support from the European Union (EU) and the international community. This opened up new and concrete opportunities for Ukraine, such as receiving a grant of EUR 20 million specifically for 200 Ukrainian start-ups and innovative small and medium-sized enterprises (Delegation of the European Union to Ukraine 2022). To make the most of these opportunities, it is necessary to solve problems and create a favourable innovation environment for businesses and start-ups, provide access to funding and support, and develop infrastructure that will contribute to the country's innovative growth.

Ukraine has a significant scientific and technical potential, which can be used to change the state of innovation potential of small and medium-sized businesses. Scientific and research institutions, universities and other scientific organisations in the country are a source of innovative ideas, advanced technologies, and scientific developments that can be used to stimulate the innovative development of small and medium-sized businesses. Currently, there are 16 technology parks operating in Ukraine in various sectors of economy, which indicates some progress in the development of innovative infrastructure in the country. Technoparks are specialised centres where research and innovation projects meet the field of entrepreneurship, promoting the exchange of knowledge, technology, and the creation of new enterprises (Podra 2020). Continuing the development of innovative infrastructure and creating new technology parks in various sectors of the economy is an important task for Ukraine. This will help strengthen the country's innovation potential, accelerate technological progress, and support the development of small and medium-sized businesses.

Currently, in addition to all the negative consequences of a full-scale war that is taking place in Ukraine and has a negative impact on the country's economy, innovation also faces a range of problems. These problems include the following: inefficient and weak mechanism for introducing innovations into the economic sphere and their further commercialisation; insufficient level of state support for innovative projects and their financing, both from the state budget and at the expense of private investors; limited use of opportunities provided for by the association agreement between Ukraine and the EU, in particular, with regard to scientific and technological cooperation, entrepreneurship development and industrial policy; reduced funding for science, innovation and education; spread of corruption and political instability; insufficient level of cooperation between innovative enterprises and research institutions, and other problems (Madiyarova *et al.* 2019; Berdar *et al.* 2021; Kutsmus *et al.* 2024).

Considering all these challenges, it is important to focus on creating a favourable innovation and investment environment that will contribute to the development of the innovation sector in Ukraine and become a recovery factor in the post-war period. To achieve this goal, it is necessary to solve a number of problems that may limit the potential and competitiveness of small and medium-sized businesses in the country. One way to solve these problems is to provide access to financial resources for innovative enterprises. To do this, you can use government programmes and support funds that provide financial support through grants, loans, venture capital, and the creation of special investment funds. It is also important to strengthen cooperation between innovative enterprises and scientific institutions. For this purpose, it is possible to develop scientific and technical cooperation programmes, create technology parks and incubators that will facilitate the exchange of knowledge and technologies, as well as joint research and innovation projects. Protecting intellectual property is another important aspect of driving innovation. By improving the system of legal protection of intellectual property, it is possible to ensure the protection of intellectual property. In addition, businesses need support in commercialising their innovative products and technologies. Collaboration with start-ups, incubators, and accelerators can provide support in marketing, sales, introducing new technologies, and expanding sales markets. The development of education and training is also crucial for the development of innovative entrepreneurship. It is necessary to develop specialised educational programmes, trainings and master classes for entrepreneurs and specialists in the field of innovation.

In general, the development of the innovation sector and support for small and medium-sized businesses in Ukraine require joint efforts of the government, businesses, and the research community. Improving the innovation environment can be key to stimulating economic growth, creating new jobs, and improving a country's competitiveness.

3. Discussions

A scientific study conducted among entrepreneurs in Ukraine highlights the importance of applying an innovative and investment development model. This model provides for promoting innovation processes and attracting investment for the development of small and medium-sized businesses, which can become the main source of innovative solutions and innovative products. One of the main characteristics of the innovation and investment model is the support of innovative entrepreneurship. To achieve this goal, the state, business and the scientific community must cooperate to create a favourable innovation environment. An important element of such a model is the development of scientific and technical potential and infrastructure that supports innovative ideas and research. To provide financial support to small and medium-sized businesses, investment programmes and funds should create mechanisms for providing grants, loans, venture capital, and other investment instruments. Such events help enterprises implement innovative projects and expand their activities. Ensuring the protection of intellectual property is another important aspect of the innovation and investment model. The development of an effective system of legal protection of intellectual property provides enterprises with the protection of their innovative solutions, which contributes to their commercialisation and encourages further development.

The study shows that the development of an innovative and investment model for small and medium-sized businesses in Ukraine has the potential to significantly increase their competitiveness and create conditions for sustainable economic growth. Countries with a developed innovation and investment model can have strong small and medium-sized enterprises that successfully implement new ideas and technologies, which encourages the development of the economy as a whole. In addition, the development and implementation of such a model will help attract foreign investment, as investors are looking for a stable and favourable innovative environment for placing their funds. This can lead to an increase in financial support for innovative projects and an increase in investment in small and medium-sized enterprises. The successful implementation of such a model will also contribute to the development of an innovative culture and support the entrepreneurial spirit among young people. The creation of specialised training programmes and mechanisms for the dissemination of knowledge and skills in the field of innovation and entrepreneurship will help create a new generation of entrepreneurs who will be ready to implement their ideas and implement innovative projects.

Amorós *et al.* (2019) analyse the innovation and investment component of the motivational mechanism of entrepreneurship, focusing on the principles of activation of innovation and investment orientation of entrepreneurial activity, the functions of innovation and investment development of entrepreneurship and models of innovative entrepreneurship. The researchers point out that the world's leading countries use several basic forms of support and promotion of innovative development. These include direct financing of innovations, in particular, the provision of subsidies for the development and promotion of new technologies, goods and services. The paper also mentions the creation of venture capital companies with state participation, which is one of the most effective forms of promoting innovative entrepreneurship. This approach is appropriate and important for Ukraine, as it helps to stimulate the innovative activity of enterprises, accelerates the development of new technologies, and improves the country's competitiveness in the international market. It is important to use these approaches, providing a supportive innovation environment and support for small and medium-sized enterprises that will contribute to their success and development. The state should actively cooperate with businesses and the research community, ensuring coordination of innovation efforts and creating a favourable climate for the development of innovative entrepreneurship in Ukraine.

Qiu *et al.* (2021) investigate the analysis and role of factors of innovation and investment model of economic growth in the context of effective use of human resources during market transformation. They also explore the areas of innovative development in the scientific and technological sphere and suggest measures for the formation of production infrastructure of enterprises. Within the framework of the study, the researchers focus on the importance of developing theoretical problems related to the investigation of the impact of production intensification on the level of efficiency and competitiveness of products in a market economy. These studies are aimed at improving the economic efficiency of countries and developing their innovative potential. This research can be a valuable contribution to the development of scientific knowledge about the innovation and investment model of economic development. The solutions proposed by the author and the analysis of factors can serve as a basis for developing effective strategies and policies aimed at ensuring stable growth and increasing the competitiveness of the Ukrainian economy.

Demirel and Danisman (2019) focus on an important problem related to innovation and investment activities and its impact on the development of the economy. One of the key aspects is the substantiation of the need to create a single category of innovation and investment activities, which will coordinate and link the processes of investment and innovative development of business entities. The researchers analyse various scientific, theoretical, and organisational approaches to the definition of innovation and investment activities. Attention is drawn to the differences and shortcomings of existing concepts, highlighting the need to create a holistic and well-coordinated theoretical base. The presented mechanism can contribute to the effective implementation of innovative solutions, the development of new technologies and improving the competitiveness of the economy as a whole. However, the results of the study may also reveal its practical application in real-world conditions. For example, it would be possible to present specific measures and recommendations for improving the state's innovation policy, developing innovation clusters, and supporting start-ups and small businesses.

Dzwigol *et al.* (2020) analyse the areas of innovative development in the scientific and technological sphere and consider measures for the development of the production infrastructure of enterprises. The study considers the main factors influencing innovation and technological progress and examines the reasons for success and failure in implementing innovative projects. The introduction of new technologies and innovative solutions requires an efficient production infrastructure, including state-of-the-art equipment, research laboratories, and qualified personnel. Creating such an infrastructure is an important task for the successful innovative development of enterprises. The study provides an understanding of the problems and prospects of innovative development in the scientific and technological sphere. The results can be used to develop effective strategies and policies aimed at supporting innovation and creating a favourable environment for enterprise development and strengthening the country's competitiveness in the global economic space.

Rauter *et al.* (2019) investigate the role and impact of innovative entrepreneurship on sustainable economic growth and development of the country. Their research focuses on analysing the importance of innovative activity of enterprises in the context of achieving sustainable economic growth and ensuring the socio-economic well-being of the nation. Enterprises that actively implement innovative solutions have advantages over other players in the market, such as high competitiveness, increased production potential and the ability to adapt to changing market conditions. Creating new jobs, increasing the level of income of the population and improving the quality of life are key aspects that contribute to the sustainable development of the country. Innovative entrepreneurship determines the country's development trajectory and has great potential for achieving sustainable economic growth. For the success of this process, there is a need to develop education, science and culture, support and stimulate creative activity among entrepreneurs, scientists, and young people.

In general, the findings suggest that innovative entrepreneurship and the development of the innovation sphere in the country has a great potential for increasing competitiveness, attracting investment, expanding markets, and developing small and medium-sized businesses. An important factor in this process is the coordination of innovation and investment processes, development of effective strategies for financial regulation, and stimulation of scientific achievements in the field of innovation. This will help strengthen the economic potential of Ukraine and ensure stable development of the country in the international market.

Conclusions and Further Research

The study describes the role of innovations in the development of entrepreneurship and the importance of investment in small and medium-sized enterprises, analyses the state of the innovation and investment environment in Ukraine, and considers ways to improve it. The main aspects of the state of the environment in the country were described: legal environment, financing of innovations, scientific and technical potential, and infrastructure development. The most important aspects of the legal environment are the protection of intellectual property, regulation of innovation financing, simplification of procedures and registration of enterprises. Financing of innovative activities of enterprises is carried out by the following sources: the state budget of Ukraine, local budgets, own and borrowed funds, investments of individuals and legal entities, and other sources not prohibited by law. A number of problems that limit the development of the innovation sector were identified, such as insufficient funding, inefficient mechanisms for introducing innovations, insufficient cooperation between enterprises and scientific institutions, as well as problems in the field of legal protection of intellectual property. A number of measures that can be taken to improve the state of the innovation and investment environment in Ukraine are also highlighted. These include creating favourable conditions for attracting funding, supporting innovative enterprises through government programmes and funds, strengthening cooperation between enterprises and scientific institutions, protecting intellectual property, and developing innovation education.

Summing up, it can be noted that the development of small and medium-sized businesses requires a comprehensive innovative approach and cooperation between the state, business and the research community. To increase the country's competitiveness, it is important to develop new technologies, encourage investment in research projects, and create a favourable innovation environment. Further research in this line can be aimed at investigating effective mechanisms for financial support of innovations, analysing the role of state programmes and legislative acts in stimulating innovative entrepreneurship, and developing new methods and strategies for integrating innovative solutions in various sectors of the economy.

Credit Authorship Contribution Statement

Marharyta M. Berdar: Writing – original draft, Writing – review and editing, Methodology, Data curation, Validation;
Roman A. Yaremko-Hladun: Writing – original draft, Formal analysis, Visualization.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Declaration of Use of Generative AI and AI-assisted Technologies

The authors declare that they have not used generative AI and AI-assisted technologies during the preparation of this work.

References

[1] Abbasova, S., İsmayılov, V. and Trusova, N. (2023). Problems of Financing the State Budget Deficit. *Scientific Bulletin of Mukachevo State University. Series 'Economics'* 10(4): 9-19. DOI:https://doi.org/10.52566/msu-econ4.2023.09

[2] Acs, Z. J., Audretsch, D. B. and Lehmann, E.E. (2013) The Knowledge Spillover Theory of Entrepreneurship. *Small Business Economics* 41(4): 757-74. Available at: http://www.jstor.org/stable/43552897

[3] Amorós, J.E., Poblete, C. and Mandakovic, V. (2019). RandD Transfer, Policy and Innovative Ambitious Entrepreneurship: Evidence from Latin American Countries. *The Journal of Technology Transfer* 44: 1396-415. DOI: https://doi.org/10.1007/s10961-019-09728-x

[4] Andrusiak, N. O. (2019). Innovative Investment Tools to Stimulate Economic Development of the Regions. *Bulletin of the Cherkasy National University named after Bohdan Khmelnytskyi. Economic Sciences Series* 1: 4-10. DOI: https://doi.org/10.31651/2076-5843-2019-1-4-10

[5] Autio, Erkko, Martin Kenney, Philippe Mustar, Don Siegel, and Mike Wright. (2014). Entrepreneurial Innovation: The Importance of Context. *Research Policy* 43(7): 1097-108. DOI:https://doi.org/10.1016/j.respol.2014.01.015

[6] Barabash, O., *et al.* (2023). The Impact of the Relocation of Enterprises in Ukraine and Abroad on the Realization of Socio-Economic, Cultural and Labour Rights. *Social and Legal Studios* 6(4): 28-37. DOI:https://doi.org/10.32518/sals4.2023.28

[7] Berdar, M. M., *et al.* (2021). Innovation and Investment Development of Entrepreneurship. *International Journal of Agricultural Extension* 9 (Special Issue 2): 29-38. Available at: https://esciencepress.net/journals/index.php/IJAE/article/view/3959

[8] Bican, Peter M., and Brem, A. (2020). Digital Business Model, Digital Transformation, Digital Entrepreneurship: Is There a Sustainable 'Digital'? *Sustainability* 12(13): 5239. DOI:https://doi.org/10.3390/su12135239

[9] Bortnik, S. (2022). Functioning of Small and Medium-Sized Enterprises in Ukraine: Current State and Development Prospects. *Economy and Society*, 36. DOI: https://doi.org/10.32782/2524-0072/2022-36-46

[10] Chernetska, O., and Chernetskyi, D. (2023). Enterprise Management System Analytical Tools. *Economics, Entrepreneurship, Management,* 10(2): 8-16. DOI: https://doi.org/10.56318/eem2023.02.008

[11] Demirel, P., and Danisman, G. O. (2019). Eco-Innovation and Firm Growth in the Circular Economy: Evidence from European Small- and Medium-Sized Enterprises. *Business Strategy and the Environment* 28(8): 1608-18. DOI: https://doi.org/10.1002/bse.2336

[12] Drobyazko, S., *et al.* (2019). Model for Forming of Optimal Credit Portfolio of Commercial Bank. *Journal of Management Information and Decision Sciences,* 22(4): 501-6.

[13] Dzwigol, H., Dzwigol-Barosz, M. and Kwilinski, A. (2020). Formation of Global Competitive Enterprise Environment based on Industry 4.0 Concept. *International Journal of Entrepreneurship,* 24(1): 1-5. Available at: https://abacademies.org/abstract/formation-of-global-competitive-enterprise-environment-based-on-industry-40-concept-9079.html

[14] Eniola, A. A., and Entebang, H. (2015). Government Policy and Performance of Small and Medium Business Management. *International Journal of Academic Research in Business and Social Sciences,* 5(2): 237-48. Available at: https://hrmars.com/papers_submitted/1481/Government_Policy_and_Performance_of_Small_and_Medium_Business_Management.pdf

[15] Gavrysh, O., Gavrysh, I., Matiukhina, A. and Vasylets, I. (2024). The First Year's Impact of the Full-Scale War on Ukrainian Business. *Economics of Development* 23(1): 18-29. DOI:https://doi.org/10.57111/econ/1.2024.18

[16] Gherghina, Ș. C., Botezatu, M. A., Hosszu, A. and Simionescu, L. N. (2020). Small and Medium-Sized Enterprises (SMEs): The Engine of Economic Growth through Investments and Innovation. *Sustainability,* 12(1): 347. DOI: https://doi.org/10.3390/su12010347

[17] Grechan, A., and Babich, L. (2019). Innovative-Investment Activity as a Basic Precondition for the Sustainable Development of Business Entities. *Scientific Bulletin of the Kherson State University, Series: Economic Sciences*, 34: 27-32. DOI: https://doi.org/10.32999/ksu2307-8030/2019-34-5

[18] Gregori, P., and Holzmann, P. (2020). Digital Sustainable Entrepreneurship: A Business Model Perspective on Embedding Digital Technologies for Social and Environmental Value Creation. *Journal of Cleaner Production* 272: 122817. DOI: https://doi.org/10.1016/j.jclepro.2020.122817

[19] Huggins, R., and Thompson, P. (2015). Entrepreneurship, Innovation and Regional Growth: A Network Theory. *Small Business Economics* 45(1): 103-28. Available at: http://www.jstor.org/stable/43553080

[20] Khodakivska, O., *et al.* (2022) Sustainable Development of Regions: Modeling the Management of Economic Security of Innovative Entrepreneurship. *International Journal of Advanced and Applied Sciences,* 9(3).

[21] Kucherenko, S., Levaieva, L. and Krasnozhon, A. (2023). Financial and Security Factors of Competitiveness of Agricultural Enterprises under Martial Law. *University Economic Bulletin,* 18(3): 68-73. DOI:https://doi.org/10.31470/2306-546X-2023-58-68-73

[22] Kutsmus, N., *et al.* (2024). War in Ukraine: Impact on Global Agri-Food Trade. *Scientific Horizons* 27(3): 130-142. DOI: https://doi.org/10.48077/scihor3.2024.130

[23] Lemishovska, O. (2023). Methodological Tools in the Processes of Income and Expenditure Accounting: Contemporary Discussions and Developments in Galicia at the Turn of the Century. *Economics, Entrepreneurship, Management,* 10(2): 35-47. DOI: https://doi.org/10.56318/eem2023.02.035

[24] Madiyarova, D., Łuniewski, A. and Ibraeva, A. (2019). Advancing Competitiveness and Developing the Innovation and Investment Potential of Industrial Enterprises Using Cluster Strategies. *Journal of Advanced Research in Law and Economics,* 10(8): 2417-28.

[25] Naradda G., *et al.* (2020). A Review of Global Challenges and Survival Strategies of Small and Medium Enterprises (SMEs). *Economies* 8(4): 79. DOI: https://doi.org/10.3390/economies8040079

[26] Podra, O. P. (2020). Innovative Development and Human Capital of Ukraine: Trends, Problems and Prospects. *Management and Entrepreneurship in Ukraine: The Stages of Formation and Problems of Development,* 2(2): 133-44. DOI: https://doi.org/10.23939/smeu2020.02.133

[27] Qiu, W., *et al.* (2021). The Role of Innovation Investment and Institutional Quality on Green Total Factor Productivity: Evidence from 46 Countries along the 'Belt and Road'. *Environmental Science and Pollution Research* 29: 16597-611. DOI: https://doi.org/10.1007/s11356-021-16891-y

[28] Rauter, R., Globocnik, D., Perl-Vorbach, E. and Baumgartner, R. J. (2019). Open Innovation and its Effects on Economic and Sustainability Innovation Performance. *Journal of Innovation and Knowledge,* 4(4): 226-233. DOI: https://doi.org/10.1016/j.jik.2018.03.004

[29] Samedova, E., *et al.* (2022). Exchange Rate Regime in a Crisis: The Case of Azerbaijan. *Journal of Eastern European and Central Asian Research,* 9(4): 679–90.

[30] Semenda, D. K, and Semenda, O.V. (2022). The Role of the State in the Development of Entrepreneurship in Ukraine. *Scientific Innovations and Advanced Technologies* 4(2): 230-239. Available at: http://lib.udau.edu.ua/handle/123456789/9147

[31] Shtal, T. V., *et al.* (2021). Digitalization as a Tool for Ensuring Innovative Development of Restaurant Business. *Estudios de Economia Aplicada* 39(5). DOI: https://doi.org/10.25115/eea.v39i5.4898

[32] Slobodian, N., Levchenko, Y. and Slobodian, V. (2022). Legal Regulation of the Implementation of Innovative Strategies at the Enterprise. *Ukrainian Journal of Applied Economics and Technology,* 7(3): 114-21. DOI:https://doi.org/10.36887/2415-8453-2022-3-16

[33] Tkachenko, A., *et al.* (2023). Modified Assessment Methodology ESG Competitiveness of Enterprises to a New Generation of Investors. *IOP Conference Series: Earth and Environmental Science,* 1254(1): 012126.

[34] Toporkov, O. R. (2020). The Role of Innovations in the Development of Small and Medium Enterprises. *International Relations. Economic Sciences Series*, 22.

[35] Yurchak, O. (2022). *Innovative Development in Industry – What Should War Change?* Available at: https://www.industry4ukraine.net/publications/innovaczijnyj-rozvytok-v-promyslovosti-shho-maye-zminyty-vijna/

[36] Ziberi, B., and Zulfiu Alili, M. (2021). Economic Growth in the Western Balkans: A Panel Analysis. *South East European Journal of Economics and Business,* 16(2): 68-81.

[37] Center for Innovation Development. (2022). Regional Results of the Study of the State and Needs of Business in the Conditions of War. Available at: https://cid.center/regional-results-of-the-study-of-the-state-and-needs-of-business-in-wartime/

[38] Delegation of the European Union to Ukraine. (2022). EU Sets Up €20 Million Support for Ukrainian Start-Ups through European Innovation Council. Available at: https://www.eeas.europa.eu/delegations/ukraine/eu-sets-%E2%82%AC20-million-support-ukrainian-start-ups-through-european-innovation_en?s=232

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Leveraging Technology: Enhancing Operations and Boosting EBITDA in Private Equity Owned Portfolio Companies

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Abstract: The aim of the study is to determine how private equities increase the earnings before interest, taxes, depreciation and amortization (EBITDA) of their portfolio companies via tech-enabled improvement of operations. The paper analyses how private equity (PE) firms can optimize their existing business products and services to reduce non direct IT related costs. It also breaks down the application of system enhancements which increase automation and drive improvement in the PE firm context. The skillsets and involvement of C-suite managers are analysed in-depth in tandem with the role of the value creation strategy in process reengineering. Cumulatively, the paper calls on the need to initiate tech-enabled improvement of operations so as to improve revenue which is positively correlated with an influx in the EBITDA rates. In order to explore the role of tech-enabled improvement of operations in the creation of value in PE firms, the researcher relied on the use of two research paradigms namely positivism and interpretivism. The two informed the qualitative design which adopted semi-structured interviews with 29 respondents from 3 private equity firms. The data analysis process involved the identification of themes through thematic analysis. Using the constant comparative method, the researcher was able to determine the specific themes that were correlated to the responses provided and subsequent classification into the aforementioned 3 categories. The qualitative data reveals that most PE firms rely on tech-enabled improvement of operations to increase their EBITDA and value.

Keywords: IT-cost reduction strategies; tech-enabled improvement; automation; reengineering concept; long-termism.

JEL Classification: F21; M15; L21; L32; G11.

Introduction

At the core of the private equity business and operating model is the need to generate revenues. Historical research and contemporary reports adumbrate that revenue is a vital cog as it helps private equity (PE) firms determine their value through the use of the equities increase the earnings before interest, taxes, depreciation and amortization (EBITDA) and enterprise value. The most successful PE firms are those which can increase the value of their investments EBITDA through an influx in the revenue rates.

F. Barber (2008) opines that the ability of PE firms to achieve high returns is oft attributed to a number of factors such as provision of incentives, aggressive use of debt financing as well as a determined focus on the cash flow and margin improvement. For the purpose of this paper, the factor of cash flow and margin improvement serves as the crux with a quick breakdown revealing the role played by technologies in divestment contexts. At the turn of the century came an increase in concern about the role played by technologies in influencing the value of PE firms. Congruent denotations from research highlight those technologies serve as a double-edged sword that not only improves business operations but also accentuates the costs incurred. Historically, a good number of PE firms viewed investments as a pure numbers game with little focus being drawn on hands-on operational changes.

In lieu of this, researchers raised questions on how tech-enabled improvement of operations can serve as value creation strategies. By definition, tech-enabled improvements refer to a set of frameworks that permit the optimization of existing systems by reducing cost through productivity improvements as well as efficiency gains. The tech-enabled improvements have been touted by J.P. Fidrmuc *et al.* (2012) as effective in shifting the historic lens of PE firms that focus solely on numbers towards new perspectives that emphasize on operational changes.

Companies have initiated a myriad of tech-enabled improvements which drive change and increase the EBITDA percentage a great deal. What is not known is that the tech-enabled improvements play a major role in increasing the sale value of a company (Osisanwo *et al.* 2024). This is down to the fact that the improvements update and streamline technologies which improve performance levels. The improvements are part and parcel of the digital transformation model which involves the adoption of technologies that transform services and businesses. The adoption permits the replacement of non-digital or manual processes with digital processes (Moszoro 2014; Loi 2023). Moreover, digital transformation enhances process reengineering with the existent systems being reviewed in order to identify loopholes that undermine value creation. The loopholes are then controlled or managed so as to improve productivity.

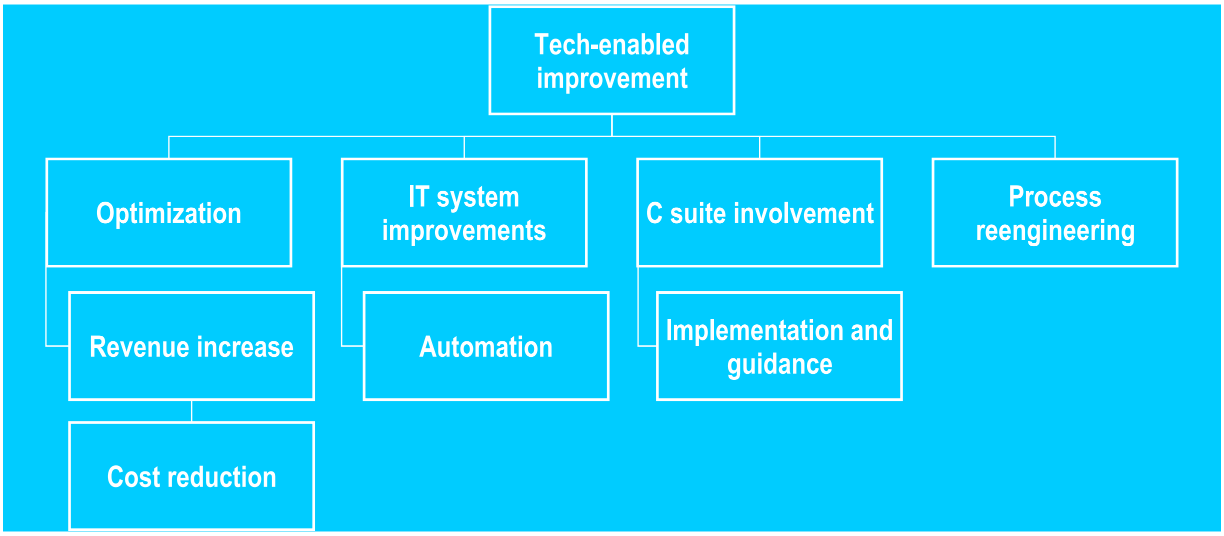
The success of digital transformation towards tech-enabled improvement comes is determined by whether the technologies can optimize existing business products and services. J.P. Fidrmuc *et al.* (2012) argues that optimization must be comprehensive and tailored with the focus being drawn on the planning, management and maintenance of operational efficiency on a day-to-day basis. Furthermore, the optimization prong of the tech-enabled improvement strategy requires the setting up of mission-driven Standard Operating Procedures (SOPS) which are guided by the aim of increasing EBITDA as well as the sale value of an organization (Scharfman 2020; Verbouw *et al.* 2021; Wetzer 2017).

Another vital prong of tech-enabled improvement strategies is IT system enhancements which increase automation as well as drive improvement. Current research pays less focus on IT system enhancements in the private equity context due to the fact that most practitioners emphasize numbers (da Fonseca Pinto Cardoso *et al.* 2022; Farman 2019; Kosarchyn 2023). With system enhancement comes the advantage of automation with firms being able to cut expenses and increase revenue through the minimization of manual tasks. J.P. Fidrmuc *et al.* (2012) opine that automation improves accuracy in the PE context as it streamlines a broad cornucopia of tasks through the integration of results and subsequent translation into data that can be used to define investment strategies. The system enhancements improve forecasting and planning with timely financial reports being generated through automation and advanced analytics. K. Lee *et al.* (2018) back this disposition by citing that the technologies support broader finance transformation goals with the errors emanating from manual processes being reduced in tandem with the setting up of a central data repository. The data repository is substantial in the provision of a single version of truth which drives effective decision-making processes (Leslie and Oyer 2009).

The third prong in the model is the role and responsibility of the C-suite managers in the PE firm. There is an apparent dearth of knowledge with regards to how C-suite managers such as chief executive officer (CEOs), chief financial officer (CFOs), chief operating officer (COO) and chief information officer (CIOs) can influence the EBITDA levels through the adoption of technologies. The tech-enabled improvements dole out information that improves decision making and the effective running of the PE firm. Through design thinking, C-suite managers are able to modernize the finance function of the PE firms while optimizing the deployment of the workforce. Furthermore, their involvement permits the development of a scalable technology backbone that connects the company and fund levels in the PE firm structure (Acharya *et al.* 2013; Gutierrez and Sastron 2017). The right skills are however required from the C-suite managers for the implementation and optimization of the tech-enabled improvements in a bid to improve EBITDA, cut on costs as well as increase revenue (Kapoor and Teece 2021; Tanklevska *et al.* 2023; Zhang *et al.* 2021).

The final prong is process reengineering with the aim of aligning the fund and company levels of the PE environment with the new system functionalities. The process reengineering prong involves the radical redesigning of the PE firms' business processes at all levels in order to achieve dramatic improvements in quality, cycle times as well as productivity (Bakhtiyari 2019). The introduction of technologies permits companies to rethink their existing processes and determine how they can deliver more value to the investors or stakeholders. Typically, the PE firms have to adopt a new value system that places emphasis on the needs of limited partners. The aforementioned gaps in knowledge are filled in this paper which conglomerates the four prongs of tech-enabled improvement of operations into a single value creation strategy (Figure 1).

Figure 1. Tech-enabled improvement value creation strategy



Source: compiled by the author.

The paper recommends that the adoption of tech-enabled improvement strategies is vital in increasing access to data, analytics and tools which will open up opportunities for the PE firms. Furthermore, the strategies are momentous in increasing revenues, expanding margins, and pursuing new revenue streams with divergent business models that are tailored to fit the needs of the limited partners or stakeholders.

1. Materials and Methods

In order to explore the role of tech-enabled improvement of operations in the creation of value in PE firms, the researcher relied on the use of two research paradigms namely positivism and interpretivism. With positivism, the researcher wanted to define how the C-suite managers in the selected firms explored the world. The research paradigm adumbrates that most people see the world as either objective or external while using observable and measurable data to formulate decisions. The paradigm adheres to the notion that factual knowledge can be garnered through measurements ergo it is trustworthy (Karupiah 2022). The interpretivism paradigm, on the other hand, was based on a naturalistic approach to data collection with the selected tool (interviews) permitting the researcher to approach the participants as experts in their own experiences. The interpretivism paradigm is touted as momentous in business research due to the fact that it takes into account cross-cultural differences in organizations, issues of ethics, leadership as well as the various factors that can influence value creation strategies (Darby *et al.* 2019; Zahle 2021).

Complementing the positivist paradigm with the interpretivism strategy was important in exploring variations in the different case studies based on the situation, leadership, and time frame. In lieu of this, the two-pronged model explores general dispositions of value creation strategies as well as specific insights on the same. A qualitative research design was used in the paper which involved interviewing the employees from 3 PE firms. The qualitative research design was chosen because it involves the collection and analysis of non-numerical data in order to understand the experiences, opinions, and concepts in the PE firm environment (Astalin 2013; Cohn *et al.* 2022).

For the interviews/qualitative research, a sample of 29 respondents was derived from the 3 companies with 10/10/9 coming from each. The inclusion criteria for the employees focused on their experience in the industry, position in the company as well as knowledge of value creation strategies using technologies. The interviews used in the qualitative research design were conducted in a semi-structured fashion thereby allowing the researcher to ask extra questions. The consent forms used in the interview process are shown in Appendix A. The interview questions in Appendix B were distinguished into 4 sections that focused on the 4 strategies namely:

1. Optimization of existing business products and services.
2. IT system enhancements.
3. C-suite managers involvement.
4. Process re-engineering.

Despite its efficiency, the qualitative research design chosen was marred by a myriad of limitations. The topmost limitation is that the sample size of 29 respondents was quite small ergo meaning that the results could not be generalized. The second limitation was the apparent bias in the sample selection with the researcher solely choosing employees and managers who were well-versed on value creation in the PE firm context. The third limitation is that the qualitative research design is time-consuming with every interview with the 29 respondents lasting between 1 and 2 hours.

2. Results

Conventional research on private equity adumbrates a myriad of methods through which firms can add value to their portfolio companies. As per D.J. Teece (2018), PE firms can create value if the return on capital exceeds the weighted cost of value. In most instances, value creation is defined by short-term traps that allow for the management of earnings as well as maximization of share prices. The short-termism strategies emphasize on trading with the PE firms often focusing on how they can better price their portfolio. On the contrary, short-termism has been criticized in recent years due to the fact that it has the potential to undermine future creation of value for organizations.

The affliction of short-termism has created a viable environment for the introduction of long-termism value-oriented strategies which are distinguished based on industry-specific and sustainability metrics (Teece 2018). The long-termism strategies that revolve around sustainability are key in improving the competitive nature of the portfolios with primal emphasis being drawn on long-term organic growth. The long-term organic growth is further perpetuated by internal resources which play a role in improving the competitiveness of a firm. Using a resource-based view, one can understand the manner through which firms utilize their resources and capabilities to create value. T. Zhang *et al.* (2020) allude that most private equity investors create a group or set of distinct resources and organizational structures which are unique to the firms.

The resources developed in the PE firms tend to be novel since they result from close relationships between the deal target businesses, limited partners as well as PE investors. Therefore, the PE firms are viewed as repositories of valuable tangible and intangible resources which are quite hard to imitate (Jules *et al.* 2021; Kaplan and Strömberg 2008; Krysta *et al.* 2023). Through operational improvements, PE firms are capable of improving their competitiveness and generate long-term growth. This is attributed to the fact that the operational improvements smoothen the modus operandi of PE firms while allowing them to generate profits and revenues. Financial pressure pushes firms to engage in efficiency-enhancing activities with the aim of retrieving profit from the declining performance levels. The divestiture permits companies to raise the necessary levels of cash in a bid to satisfy creditor demands as well as structure firm operations (Acharya *et al.* 2013; Casalino *et al.* 2019; Hersh 2018). The reactive response to divestiture can be detrimental as it will inflict costs on the fund and portfolio levels. Furthermore, it can discourage the PE firm to abstain from generating new and high-growth opportunities.

Companies that perform proactive divestiture with a long-term perspective are bound to generate positive results compared to those using reactive forms. T. Zhang *et al.* (2020) highlight that technology and innovative activities are however influenced by previous divestiture experiences owing to the fact that they cause organizational inertia. The inertia prompts companies to carry out things normally or shift to modernized versions that can improve their operational efficiency. What is more, the divestiture and long-termism ensure that the sole focus of the PE firms is on the creation of value. As per T. Zhang *et al.* (2020), private equity firms are required to maintain a laser-like focus on value creation beyond cost-cutting and financial engineering. A good number of PE deals are characterized by substantive operational improvements which emanate from the utilization of deep industry and functional enterprise. The PE firms serve the portfolio companies by investing in core operations more in tandem with minimizing the negative impact of extraneous costs on their operations. Moreover, the value creation process in PE firm contexts is marked by due diligence. The general partners in the fund level are required to carefully choose every target company while defining how to create incremental value and by when (Hege *et al.* 2005; Lahmann *et al.* 2017; Leleux *et al.* 2015a). The identification process should be based on the private equity lifecycle which determines the right time to invest in the portfolio companies.

The private equity lifecycle is characterized by 4 stages with due diligence coming in second. The deal origination precedes due diligence as it involves the development of optimal target search criteria (Caselli 2010). During this stage, the PE firm managers are required to identify the right target for the platform and how they can fill operational gaps that are crucial to value creation. Moreover, the stage is marked by enhancing the performance levels of the platform with key focus being drawn on maximizing the platform company growth while focusing resources on value targets. The due diligence stage is marked by the validation of an investment thesis. This involves understanding the supply chain and how improving value can enhance confidence, competitiveness and time-to-value creation in the long-term run (Davis *et al.* 2014). S. Caselli (2010) highlights that the due diligence stage requires PE firms to capitalize on the growth opportunities, reduce costs as well as improve the EBITDA.

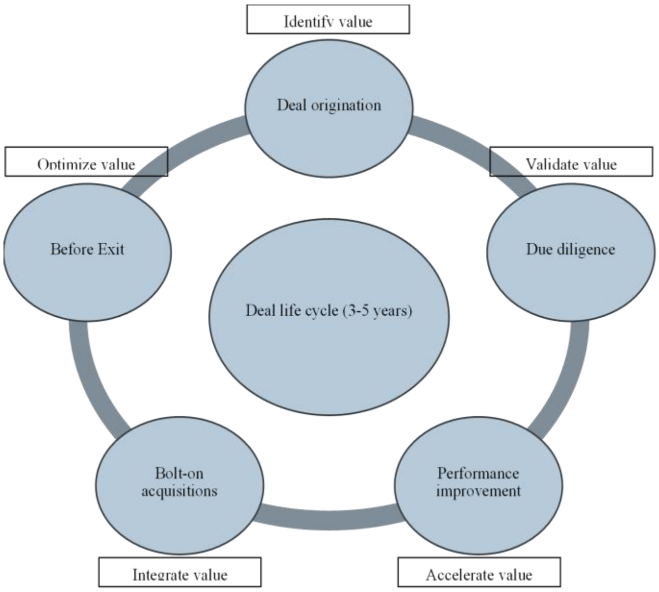
During the due diligence stage, a thorough approach is implemented which increases the competitive stature of the PE firm. The approach accelerates the time-to-close while optimizing the realization of value creation opportunities (Caselli 2010). It is quite imperative to note that due diligence should not be a stand-alone activity rather it is continuous by nature. The stage is vital as it provides a solid foundation for the integration plan implemented after the closure of deals. Therefore, managers are able to establish a road map for the timing and resources useful in delivering the investment thesis. The due diligence is integrated into the value creation process through expert overview, data analysis, exclusivity, confirmatory analysis, and value creation as shown in Figure 2.

Figure 2. Due diligence stages

Source: compiled by the author

Following due diligence, the PE firms are required to create value through long-termism strategies that align the management and organization to drive quick wins. The initiatives put in place should sustain step-change improvements all over the organization. The performance improvement stage is key in accelerating value as increases process consistency and maturity (Caselli 2010; Mehdiyev 2024). Furthermore, it ensures that there are sustainable platforms for growth using the two value prongs namely increasing functional capabilities and accelerating or sustaining EBITDA, cash and revenue. The next stage is marked by bolting-on acquisitions wherein the PE firms have to capture the quick wins while integrating and optimizing operational value. During this stage, the managers and employees have to identify the synergies and work toward standardizing all operations on both levels of the PE firm context (Caselli 2010). There is a need for the firm to reduce the selling, general, and administrative expenses (SGandA) costs as well as the working capital requirements while realizing any prospects of growth. The end result in most instances is the acceleration of the EBITDA cash and revenue as well as the consolidation of the organizational resources. The final stage is value creation before exit whereby the PE firms have to maximize investment returns. The timing is oft set between 12 and 18 months prior to exit with accelerated benefit capture as well as long-term improvement plan (Caselli 2010). The optimized market value with demonstrable long-term value results being generated. Furthermore, the stage requires a supportive management team with the sale price being maximized (Figure 3).

Figure 3. Private equity lifecycle



As opined prior, the 29 respondents used for this research were sourced from 3 private equity companies. The results from the responses highlight that 23 of the respondent's viewed optimization as a vital strategy that helps in the creation of value in the PE firm context. One of the employees defined optimization as 'the initiation of processes that ensure that our technologies are being used to their utmost capabilities'. This assertion was confirmed by another respondent who argued that the optimization process 'focuses on reshaping information technology by emphasizing on the delivery of the best possible value to the business using the fewest costly resources'. For question 3 in the optimization category, 27 of the respondents cited that the specific style of optimization they use is the consolidation of data enterprise centres. The consolidation process is touted by the respondents as key in helping in the collection of data which informs decision-making for most of the managers. 15 of the respondents cited that the strategies conform to the long-term principle whereby they create value in the long-term period by reducing non direct IT related costs ergo increasing the EBITDA levels.

The results for the second category reveal that most of the employees were not cognizant of IT system enhancements. On the contrary, 22 of them effectively defined the strategies used for IT system enhancements such as automation. One of the respondents alluded that 'we use automation to cut on costs that would have been incurred through manual processes'. Another respondent opined that automation is key in the PE firm context as it focuses on analytics which fuel private equity EBITDA. This is because intelligent automation allows for tactical decision making which drives tangible growth and performance.

24 respondents cited that their organizations use IT system enhancements to drive performance with the long-term benefits including profitability tracking. 5 of the respondents noted that the profitability tracking allowed the general partners to exercise due diligence for their limited partners by identifying portfolios that were profitable. This would in turn increase EBITDA by reducing the risk of investing in non-profitable ventures (Candasamy and Jugurnath 2015; Zhang *et al.* 2020). Furthermore, the automation improved performance by increasing insight on capital distribution. 14 of the respondents cited that their firms are wholly successful since the digital technologies track spending and reduce costs while improving the management of portfolios as well as individual companies.

In the third section, all respondents cited the involvement of C-suite managers in value creation as substantial. The respondents opined that the CEO/CFO/CIO have to be actively involved in driving tech-enabled improvement of operations. This is because they act as the lynchpin between the organization and the employees by providing guidance on specific changes as well as modus operandi. One of the respondents alluded that the involvement levels should be distributed all through the 5 stages of the lifecycle. She cited that 'C-suite managers have to engage in due diligence whereby they validate the investment thesis. Their ability to lead is key in the performance improvement stage as they align the management with the organization. This in turn increases functional capabilities and the implementation of processes that cut on non-direct IT related costs and improve the EBITDA'.

Finally, most of the respondents were not cognizant of process re-engineering with 2 of them citing that the concept or idea was beyond their level of comprehension. On the contrary, 5 of them highlighted that process re-engineering is the 'redesigning of vital business processes with the aim of improving quality and productivity'. This definition correlates with the third stage of the value creation lifecycle whereby performance improvement involves the alignment of the management with the organization. Furthermore, one of the respondents noted that the process re-engineering strategy used involves the identification and capturing of synergies which falls under the 4th stage of the value creation lifecycle. The respondent went further to highlight that the re-engineering strategy is key in 'integrating and consolidating all standards in the organization which reduces the costs and accelerates EBITDA levels'. The respondents all confirmed that the process reengineering creates value by reorganizing the organization into cross-functional teams with information technology improving business processes.

3. Discussion

Based on the preceding results, it is vital to note that PE firms can create value through information technology system enhancements that increase automation and drive operational improvement. For instance, the adoption of enterprise's resource planning (ERP) improves business performance and operational efficiency during proactive divestment. Operating efficiency helps PE firms determine the ratio of the business output and input ergo gaining insight on the overall system performance (Bratton 2008; Ebrahimi 2019; Leslie and Oyer 2009). In light of this, PE firms are able to allocate set resources which optimize the portfolio outcome. They are also able to reduce the resources that are required in a bid to execute proficient functions.

With optimization comes the need to find the right solution which saves on costs and improves savings. The implementation of the optimization strategy has to be conducted in the due diligence phase whereby the business requirements are identified in tandem with the selection of technology solutions (Åstebro 2021; Aziz 2019; Chen and Tieju 2017). Furthermore, researchers allude that optimization helps businesses to identify and prioritize the initiatives that they want to focus highly on. This cuts on non-direct IT related costs that come with investing in risky ventures.

The IT system enhancement process provides PE firms with the opportunity of capitalizing on intelligent automation as well as analytics. The introduction of automation helps in boosting the value of portfolio companies through the modernization and reduction of costs. Furthermore, it lends greater visibility into the transactions on every level of the PE firm which improves EBITDA by cutting down on costs. L.P. Casalino *et al.* (2019) indicate that ERPs have phased out the burden of manual processes through automation. The automated workflows greatly reduce administrative overhead so that the organization can drop more to the bottom line. During the implementation process, however, firms have to keep in mind that the internal processes evolve in an organic manner and are highly reflective of the people at the helm (Hiebl 2015; Leleux *et al.* 2015b; Tsvyetkov *et al.* 2023). This correlates with the assertion made prior that the influence of the CFO/CIO and COO influences the cost reduction and operational improvement process.

Proactive divestment permits PE firms to conduct process re-engineering which aligns the entities with new system functionalities. The primary focus is to optimize the non-direct IT related costs which create a positive EBITDA for the organization. The CFO/COO/CIO is at the helm of the reengineering process as they place a high standard which helps promote efficiency and functionality. M. Bakhtiyari (2019) alludes that technological innovation has to be led by the right skill set at the C-suite level which helps in the transformation of private equity firms throughout the investment life cycle. The technologies merit the reengineering of processes in the PE firms with the aim of aligning them with new system functionalities. Spearheaded by the CFO/COO/CIO, the improvement allows PE firms to carefully manage costs during strong and weak economic periods (Teece 2018; Zhang *et al.* 2021). J.L. da Fonseca Pinto Cardoso *et al.* (2022) denote that most top PE firms are highly cost-conscious whenever the investment returns are soaring. Even though the non-direct IT related costs rise during the strong economic periods, the influxes are approximately equal to the investment returns. The variable costs are treated as fixed expenses with the CFO avoiding any strategies or pushes for more spending. During weak economic periods, the cost reduction efforts are accelerated by changing or reengineering the processes (Bratton 2008; da Fonseca Pinto Cardoso *et al.* 2022). The fixed costs are treated like variable costs which allow for the reduction of non-direct IT related costs. The emergence of Disruption 2.0 has added urgency to the need of managing costs. The integration of technology-enabled processes is momentous in generating productivity gains. J.L. da Fonseca Pinto Cardoso *et al.* (2022) cite that the automation of knowledge work addendum to the digitization of supply chains is key in improving EBITDA rates. What is more, the application of industrial IoT improves predictive maintenance which minimizes both variable and fixed costs in the future.

The improvement of core performance also requires measuring the absolute change in EBITDA not deltas in cost. The non-direct IT related costs have to be monitored with the focus being drawn on the unexpected headwinds (Kapoor and Teece 2021; Lubbers *et al.* 2015). The utilization of enterprise resource planning aids PE firms to manage and integrate their financials, supply chain, operations, commerce, manufacturing as well as reporting activities. Additionally, the management cross-examines operational costs with the peers in a bid to determine the position of the PE firm. Every system is assessed in terms of functionality and its role in increasing the non-direct IT related costs incurred (Lahmann *et al.* 2017). The determination allows for process reengineering whereby the business modus operandi is changed to fit the industry demands as well as conditions.

Conclusions and Further Research

Technological innovation can act as a value creation strategy. The relevance of the chosen topic is shown by the fact that the conducted research reveals ways in which PEs can optimize their existing business products and services, increasing EBITDA and, at the same time, reducing indirect costs related to IT. According to the results of the conducted interview, it can be noted that the majority of respondents consider optimization as a necessary strategy that contributes to the creation of value in the context of the firm's PE. The consolidation process is recognized by respondents as essential for gathering data that facilitates appropriate decision-making for most managers.

The results obtained for the second category indicate that most of the workers did not have sufficient knowledge about the improvement of the IT system. At the same time, the majority of respondents adequately identified the strategies being implemented to improve the IT system. Automation has been identified as an effective way to reduce costs, and with a focus on analytics, automation contributes to direct investment EBITDA. This can be explained by viewing automation as an effective tool for making tactical decisions that improve productivity and drive growth. In the third section, all respondents note the important role of managers in creating value through active participation in improving operations using technology. At the same time, it was found that many respondents do not have a sufficient understanding of the process reengineering concept. Those familiar with the strategy point to its importance in improving quality and productivity, and that the reengineering strategy helps reduce costs and accelerate EBITDA.

Summarizing the above, authors can testify that the preceding paper is a testament of the use of tech-enabled improvement of operations strategies in the creation of value in the PE context. The analysis shows that the use of optimization, IT system enhancements and process reengineering allows PE firms to improve their EBITDA by reducing non direct IT related costs. Congruent denotations indicate that the C-suite managers have to drive the improvement processes using their diverging skill sets. Furthermore, the implementation process has to be conducted all through the private equity and value creation cycle in order to record positive results. The managers and firms must adopt a long-term perspective that is guided by their exit strategies so as to capitalize on the benefits.

Credit Authorship Contribution Statement

Maximilian Liepert: Conceptualization, Project administration, Writing – original draft, Supervision, Validation, Visualization.

Declaration of Competing Interest

The author declares that has no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Declaration of Use of Generative AI and AI-assisted Technologies

The author declares that he has not used generative AI and AI-assisted technologies during the preparation of this work.

References

[1] Acharya, Viral V., Oliver F. Gottschalg, Moritz Hahn, and Conor Kehoe (2013). Corporate Governance and Value Creation: Evidence from Private Equity. *The Review of Financial Studies,* 26(2): 368-402.

[2] Astalin, Prashant K. (2013). Qualitative Research Designs: A Conceptual Framework. *International Journal of Social Sciences and Interdisciplinary Research,* 2(1): 118-24.

[3] Åstebro, Thomas (2021). An Inside Peek at AI Use in Private Equity. *Journal of Financial Data Science,* 3(3): 97-107.

[4] Aziz, Waleed A. (2019). Business Process Reengineering Impact on SMEs Operations: Evidence from GCC Region. *International Journal of Services and Operations Management,* 33(4): 545-62.

[5] Bakhtiyari, Mehrsa (2019). Business Process Management, Business Process Reengineering and Business Process Innovation. DOI: https://doi.org/10.22541/au.157255517.73053404

[6] Barber, Felix (2008). The Strategic Secret of Private Equity. *Strategic Direction,* 24(2). DOI:https://doi.org/10.1108/sd.2008.05624bad.003

[7] Bratton, William W. (2008). Private Equity's Three Lessons for Agency Theory. *Brooklyn Journal of Corporate, Financial and Commercial Law* 3(1). Available at: https://brooklynworks.brooklaw.edu/cgi/viewcontent.cgi?article=1132andcontext=bjcfcl

[8] Candasamy, Murugessen, and Bhavish Jugurnath (2015). An Empirical Analysis of the Determinants of the Performance of the Global Private Equity Funds Markets. *Journal of Modern Accounting and Auditing,* 11(11): 581-95.

[9] Casalino, Lawrence P., Rayhan Saiani, Sami Bhidya, Dhruv Khullar, and Eloise O'Donnell (2019). Private Equity Acquisition of Physician Practices. *Annals of Internal Medicine,* 170(2): 114-5.

[10] Caselli, Stefano (2010). Strategies, Business Models, and Perspectives Of Private Equity and Venture Capital. In: *Private Equity and Venture Capital in Europe: Markets, Techniques, and Deals* (pp. 279-96). Cambridge: Academic Press.

[11] Chen, Huayi, and Ma Tieju (2017). Optimizing Systematic Technology Adoption with Heterogeneous Agents. *European Journal of Operational Research,* 257(1): 287-96.

[12] Cohn, Jonathan B., Edith S. Hotchkiss, and Erin M. Towery (2022). Sources of Value Creation in Private Equity Buyouts of Private Firms. *Review of Finance,* 26(2): 257-85.

[13] da JLPF Cardoso, Rebentisch, E.S., Rhodes, D.H., and Soares, A.L. (2022). Value of Concept of Operations Analysis for Digital Transformation Using Digital Twins. *Product Management and Development,* 20(2). DOI:http://dx.doi.org/10.4322/pmd.2022.023

[14] Darby, Jessica L., Brian S. Fugate, and Jeff B. Murray (2019). Interpretive Research: A Complementary Approach to Seeking Knowledge in Supply Chain Management. *International Journal of Logistics Management,* 30(2): 395-413.

[15] Davis, Steven J., John Haltiwanger, Kyle Handley, Ron Jarmin, Josh Lerner, and Javier Miranda (2014). Private Equity, Jobs, and Productivity. *American Economic Review,* 104(12): 3956-90.

[16] Ebrahimi, Mahshid (2019). Adoption of New Technology: In Private and Public Organizations of Developing Countries. In: *Private Sector Innovations and Technological Growth in the MENA Region*. Pennsylvania: IGI Global. DOI: https://doi.org/10.4018/978-1-5225-7086-8.ch001

[17] Farman, Madeleine (2019). Long-Term Fund Strategies Gaining Ground in Private Equity. Available at: https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/long-term-fund-strategies-gaining-ground-in-private-equity-50645295

[18] Fidrmuc, Jana P Peter Roosenboom, Richard Paap, and Tim Teunissen (2012). One Size Does Not Fit All: Selling Firms to Private Equity Versus Strategic Acquirers. *Journal of Corporate Finance,* 18(4): 828-48.

[19] Gutierrez, Miguel, and Francisco Sastron (2017). Framework for a New Wave of IT-Enabled Business Process Transformations. In: *Closing the Gap Between Practice and Research in Industrial Engineering* (pp. 351-8). Cham: Springer.

[20] Hege, Ulrich, Stefano Lovo, Myron B. Slovin, and Marie E. Sushka (2005). What Is the Magic in Equity Deals? Theory and Evidence on the Means of Payment in Asset Sales. DOI:https://dx.doi.org/10.2139/ssrn.675944

[21] Hersh, Israel J. (2018). Private Equity Impact on Corporate Innovation. *European Journal of Business and Management Research,* 3(2): 5-11.

[22] Hiebl, Martin R.W. (2015). Agency and Stewardship Attitudes of Chief Financial Officers in Private Companies. *Qualitative Research in Financial Markets,* 7(1): 4-23.

[23] Jules, Claudy, Vik Krishnan, Vivek Pandit, and Jason Phillips (2021). A playbook for newly minted private equity portfolio-company CEOs. Available at: https://www.mckinsey.com/industries/private-equity-and-principal-investors/our-insights/a-playbook-for-newly-minted-private-equity-portfolio-company-ceos

[24] Kaplan, Steven, and Per Strömberg (2008). Leveraged Buyouts and Private Equity. *Journal of Economic Perspectives,* 23(1): 121-46.

[25] Kapoor, Rahul., and David J. Teece (2021). Three Faces of Technology's Value Creation: Emerging, Enabling, Embedding. *Strategy Science,* 6(1): 1-4.

[26] Karupiah, Premalatha (2022). Positivism. In: *Principles of Social Research Methodology* (pp. 73-82). Singapore: Springer.

[27] Kosarchyn, Mariya (2023). Global Financial Cycle: Impact on Ukraine. *Development Management,* 22(4): 16-24. DOI: https://doi.org/10.57111/devt/4.2023.16

[28] Krysta, Peter M., Janina Jauch-Degenkolb, and Dominik K. Kanbach (2023). Barbarians Inside the Gates: How Private Equity Firms Create Value. *Journal of Business Strategy,* 44(6): 344-53.

[29] Lahmann, Alexander D.F., Wiebke Stranz, and Vivek K. Velamuri (2017). Value Creation in SME Private Equity Buy-Outs. *Qualitative Research in Financial Markets,* 9(1): 2-33.

[30] Lee, Kyle, Konstantin Synetos, and Claudia Zeisberger (2018). The Emergence of Long-Term Capital in Private Equity. Available at: https://www.insead.edu/sites/default/files/assets/dept/centres/gpei/docs/insead-isp-the-emergence-of-long-term-capital-in-private-equity-jun-2018.pdf

[31] Leleux, Benoît, Hans van Swaay, and Esmeralda Megally (2015a). The Future of Private Equity. In: *Private Equity 4.0: Reinventing Value Creation* (pp. 235-46). Hoboken: John Wiley and Sons, Inc.

[32] Leleux, Benoît, Hans van Swaay, and Esmeralda Megally (2015b). Value Creation in Private Equity. In: *Private Equity 4.0: Reinventing Value Creation* (pp. 69-102). Hoboken: John Wiley and Sons, Inc.

[33] Leslie, Phillip, and Paul Oyer (2009). Managerial Incentives and Value Creation: Evidence from Private Equity. DOI: https://dx.doi.org/10.2139/ssrn.1341889

[34] Loi, Anna (2023). Identification of Investment Attraction Strategies to Increase the Economic Potential of a Trading Enterprise. *Economics, Entrepreneurship, Management,* 10(1): 8-16. DOI:https://doi.org/10.56318/eem2023.01.008

[35] Lubbers, Reinder, J. Henk von Eije, and Wim Westerman (2015). Does Private Equity Stir up European Industries? DOI: https://dx.doi.org/10.2139/ssrn.2626078

[36] Moszoro, Marian (2014). The Math of Private Equity: 2/20, 3-on-5, and 1-in-8. DOI:https://dx.doi.org/10.2139/ssrn.2017764

[37] Mehdiyev, Vugar (2024). Harmonization of Capital Accounting in Azerbaijan Commercial Enterprises in Accordance with IFRS Requirements. *Scientific Bulletin of Mukachevo State University. Series 'Economics',* 11(1): 40-49. DOI: https://doi.org/10.52566/msu-econ1.2024.40

[38] Osisanwo, Bukonla Grace, Olukayode Emmanuel Maku, and Felix Odunayo Ajayi (2024). Effects of Trade and Financial Openness on Inflationary Pressure in Nigeria. *Economics of Development,* 23(1): 30-37. DOI:https://doi.org/10.57111/econ/1.2024.30

[39] Scharfman, Jason (2020). Private Equity Operations. In: *Alternative Investment Operations: Hedge Funds, Private Equity, and Fund of Funds* (pp. 113-31). Cham: Palgrave Macmillan.

[40] Tanklevska, N. et al. (2023). Financing of Ukrainian Agricultural Enterprises: Correlation-Regression Analysis. *Scientific Horizons,* 26(8): 127-39. DOI: https://doi.org/10.48077/scihor8.2023.127

[41] Teece, David J. (2018). Profiting from Innovation in the Digital Economy: Enabling Technologies, Standards, and Licensing Models in the Wireless World. *Research Policy,* 47(8): 1367-87.

[42] Tsvyetkov, Andriy, Valeriy Polyukhovych, and Svitlana Bychkova (2023). Legal Regulation of Banks with Foreign Capital in EU Legislation. *Social and Legal Studios,* 6(4): 233-42. DOI:https://doi.org/10.32518/sals4.2023.233

[43] Verbouw, Jeroen, Miguel L.C.J. Meuleman, and Sophie Manigart (2021). The Real Effects of Private Equity Buyouts: A Meta-Analysis. *Academy of Management Proceedings* (1): 14309.

[44] Wetzer, Thomas (2017). *Papers on Value Creation in Private Equity*. Bamberg: University of St. Gallen.

[45] Zahle, Julie (2021). Interpretivism and Qualitative Research. In: *Stephen Turner and the Philosophy of the Social,* pp. 202-20, Leiden: Brill.

[46] Zhang, Peng, Enyi Zhou, Yuyan Lei, and Junsong Bian (2021). Technological Innovation and Value Creation of Enterprise Innovation Ecosystem based on System Dynamics Modeling. *Mathematical Problems in Engineering*: 5510346.

[47] Zhang, Tingting, Can Lu, Edwin Torres, and Cihan Cobanoglu (2020). Value Co-Creation and Technological Progression: A Critical Review. *European Business Review,* 32(4): 687-707.

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Features of the Development of the Microfinance and Credit Monitoring System in Kyrgyzstan and Ukraine

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Abstract: This research paper analyses the differences between banking and microfinance business models in the context of credit monitoring systems and funding sources. The purpose of this research was to show the differences in the context of these components of the activities of banks and microfinance organizations (MFOs) on the examples of Kyrgyzstan and Ukraine. The main research methods used were analysis, forecasting and abstraction. The study emphasized the importance of assessing the creditworthiness of clients, including assessment of their financial performance, credit history and other indicators. It was concluded that such analyses are crucial for financial institutions, as they enable them to assess the risk associated with lending and make informed decisions. The article also reviewed the regulatory framework of Kyrgyzstan in terms of credit monitoring of banks and MFOs, differences in their activities depending on the size of the loan, the financial capacity of the borrower, and the collateral assessment process. Also, an idea was formed about the process of financial monitoring in Ukraine, approaches applied in the country. In the process of comparing the two systems, a conclusion was made about their similarities (peculiarities of regulation, fundamental principles of creditworthiness assessment and risk management), but certain differences related to general approaches to monitoring were also noted. The study allows, based on the studied foreign experience, to increase the efficiency of credit monitoring of financial organizations' clients. It also generally brings new knowledge for the study of the banking and microfinance sectors.

Keywords: microfinance; banking system; credit monitoring; welfare assessment; risk management; asset management.

JEL Classification: G32; G21; O16.

Introduction

The credit system plays a key and multifaceted role in the economic development of developing countries. It provides the financial infrastructure for businesses and households by providing them with a variety of services, such as deposits, loans, or funds for investment. This helps to boost investment, expand entrepreneurship and create new jobs. It also remains an important link in the resource redistribution system, allowing funds to be collected from depositors and then made available in the form of loans to businesses and individual customers. This helps to stimulate economic growth and increase the turnover of funds in the country, as well as to ensure the stability and safety of the financial system and provide services for the storage and exchange of funds (Kovalenko *et al.* 2023; Loi 2023). Banks also contribute to the development of financial markets, which can lead to increased access to capital for companies through the issuance of shares and bonds (although this component of the role of these organizations is more relevant for developed countries). The development of the banking system remains particularly important for developing countries because they often face challenges such as financial and economic instability, so increasing the resilience of the banking sector can play a role in mitigating these risks through better governance and regulation.

Numerous scholars have worked on assessing the development of the banking system in Kyrgyzstan (Aseinov and Karymshakov 2018; Abbasi *et al.* 2020; Akomea-Frimpong *et al.* 2022; Niyazbekova *et al.* 2023). However, they focused more on the historical aspects of the development of the field rather than the current state of the industry's development. Karymshakov and Sulaimanova (2019) considered changes in the financial structure of Kyrgyzstan as a whole. Although they assessed the current state of the financial infrastructure in the country, they paid little attention to assessing the actions that could be taken to increase the efficiency of the system. Many scholars have also paid attention to assessing the current development of the country as a whole. Thus, Toktosunova *et al.* (2021) studied the problems associated with the growth of external public debt in the Kyrgyz Republic. They feared that the excessive increase in external debt could eventually lead to a loss of sovereignty, as donors, expecting loans, make specific demands of both economic and political nature (Trusova *et al.* 2018). However, they did not note valid recommendations to avoid such an outcome. Mehta *et al.* (2022), Al-Harbi (2019), Buallay and Al-Ajmi (2020), Nikolaychuk (2022) assessed the country's development characteristics with respect to sustainability trends. The scholars also highlighted the benefits that the country could gain from increased adoption of these technologies (taking into account its current state and near-term development prospects). Akbulaev and Aliyeva (2020), Branzoli *et al.* (2023), Patino and Gutierrez (2019) also focused their attention on the peculiarities of economic development in Kyrgyzstan as such, with special attention to certain demographic trends. Thus, since there are not so many works on analysing the development of the banking sector in Kyrgyzstan freely available, this study is also relevant.

The purpose of this study was to assess the differences between the functioning of banking and other organizations, in particular microfinance institutions, in individual countries in terms of their credit monitoring and sourcing.

1. Materials and Methods

The study utilized a part of the legal framework of Kyrgyzstan. In particular, the text of Regulation No. 52/4 'On the minimum requirements for credit risk management in commercial banks and other financial and credit institutions licensed by the National Bank of the Kyrgyz Republic' (2010), which describes the basic principles of credit monitoring in the country, was analysed. Since the comparison of financial monitoring systems in the country was conducted for Ukraine, the constituent parts of its legislative system were also assessed. In particular, the text of Law of Ukraine No. 25 'On Prevention and Counteraction of Legalization (Laundering) of Criminal Proceeds, Financing of Terrorism and Financing of Proliferation of Weapons of Mass Destruction' (2020), one of the clauses of which is financial monitoring conducted by the bank or any other responsible institutions to prevent any unfair actions on the part of enterprises.

The approach used during the study was systematic. It made it possible to assess individual factors in terms of their joint interaction within a single system, and to draw conclusions about the whole model based on these relationships. In its turn, the main method applied in the framework of the work was analysis due to the fact that, during the study, a considerable amount of information on the development of the non-banking banking sector of individual countries, their systems, and models of credit monitoring was used and considered. The historical method was also used to analyse data on the development of systems in the past, in retrospect. Abstraction, in turn, reduced the number of factors examined during the study by sorting them by level of significance and then abstracting out those that have no significant impact on the development of the banking system. Forecasting also played an important role, which made it possible to make assumptions about the future development of this sphere.

This study also has certain limitations. In particular, the paper focuses primarily on credit monitoring systems and financial practices in Kyrgyzstan and Ukraine, but it only indirectly mentions credit monitoring systems in other countries. Although the paper discusses the legal and regulatory framework and processes in terms of financial monitoring within countries, it lacks quantitative statistical data. The purpose of this study was only to assess the peculiarities of credit monitoring in these countries, not to quantify them, but such a study is also quite relevant in the current environment. In addition, the paper assumes that the similarity of the regulatory framework leads to similar results in credit monitoring systems, although this may not be the case because the analysis process itself is formed by different people, in different businesses and in completely different operating conditions. Therefore, it is also worth paying attention to this when assessing the material described in this paper.

2. Research Results

The analysis of the credit monitoring system and sources of funding itself is important for understanding the long-term sustainability and performance of any financial institution, be it a bank or a microfinance institution. It includes analysing the creditworthiness of clients, which is an analysis of their financial performance, credit history. In addition, such institutions should conduct collection activities in order to be able to manage debts and recover debts in case of non-repayment of loans (Drobyazko *et al.* 2019; Makhazhanova *et al.* 2022). This is important to minimize losses and ensure timely repayments. For developing countries, the use of alternative credit assessment methods is also relevant, as clients in these countries may not have extensive credit histories.

The functioning of financial monitoring systems may vary significantly from country to country. If considering the situation in Kyrgyzstan, the process is regulated by Laws, as well as Regulation No. 52/4 'On the minimum requirements for credit risk management in commercial banks and other financial and credit institutions licensed by the National Bank of the Kyrgyz Republic' (2010). Banks and microfinance institutions (MFOs) are required to regularly monitor the status of their loans. This includes analysing client payments, verifying compliance with loan agreement terms and conditions, and assessing the financial sustainability of borrowers. In addition, they should take into account changes in foreign currency exchange rates and assess their impact on loans exposed to currency risk (Vovchenko 2021). The frequency of such checks depends on the amount and type of loan, as well as the classification category: for large loans, monitoring is more frequent (up to once every six months), for others – less frequent (once a year). Thereafter, banks and MFOs are obliged to submit regular monitoring reports to the management with relevant proposals. In case of late loan payments or deterioration of loan classification, the bank and MFOs should intensify monitoring (at least once a month) and analyse the current financial situation of the borrower. The main purpose of such monitoring is to identify possible trends in the deterioration of the borrower's condition and, consequently, the loan condition.

During the evaluation process, the classification of loans should be carried out independently by persons who are not involved in the loan origination process. This prevents conflicts of interest and ensures the objectivity of the assessment. The bank and MFOs should conduct a thorough analysis of the financial condition of the guarantor (surety) if it is the only collateral for the loan, and regularly assess the safety of the collateral and its change in value. If problems with the lender begin, the bank and MFO should initiate appropriate procedures to deal with problem loans, including the possibility of loan restructuring. If there are only early indications of such problems, the bank and MFO should clarify the reasons for the problems and take the loan under special supervision (Cheremisina and Tomashuk 2023). This may include additional collateral verification, additional guarantees, suspension of repayments, loan classification, and other measures to protect the bank's interests. The bank and MFO should also document and keep records of all activities undertaken in relation to the loan, including records of telephone conversations, meetings with the client, and other activities.

One of the important stages in the work of banks and MFOs with clients on lending is the analysis of the customer's financial condition. It consists, in particular, of collecting documents: application (questionnaire), financial statements (if any), information on collateral, business plan. These stages are fairly standard for all countries and ensure such interaction between the Federal Treasury Institution and the borrower that the lender remains confident in the borrower's ability to repay the funds. The collateral valuation process itself can vary depending on what the collateral is. Most often it is real estate, including residential houses, commercial buildings, land plots and other immovable property. However, it can also be movable property (cars, machinery, equipment), securities (stocks or bonds), precious metals and stones (gold, silver, diamonds), bank deposit accounts. More rarely, intellectual property or future income (contracts for future payments) may be used as collateral (Trusova *et al.* 2021; Kalenyuk *et al.* 2022). The reason for this is both the comparatively higher risk associated with the use of these assets as collateral and the difficulty of valuing and relying on them. Accordingly, the bank has its own specialists to analyse each type of asset and form a fair price for it, on the basis of which collateral is formed and credit is granted. For example, the price of securities may be based on the market value (if they are freely traded on the stock exchange), while the valuation of buildings requires additional work on the part of Federal Credit Union employees or outsourcing (professionals outside the bank). If considering the national structures that are also involved in financial monitoring, it is necessary to mention credit bureaus, individual state bodies (National Bank of Kyrgyzstan, State Service for Regulation and Supervision of the Financial Market under the Ministry of Economy and Commerce of the Kyrgyz Republic, Ministry of Finance), tax authorities, individual companies (*e.g.* audit firms) and international organizations.

It is worth now considering how financial monitoring takes place on the example of another country, namely Ukraine. Thus, the state has Law of Ukraine No. 25 'On Prevention and Counteraction of Legalization (Laundering) of Criminal Proceeds, Financing of Terrorism and Financing of Proliferation of Weapons of Mass Destruction' (2020), which describes the system of financial monitoring in the country. Thus, according to the law, the objects of primary financial monitoring include financial institutions, such as banks, insurers, credit unions, payment system operators, stock exchanges and any other participants, in one way or another related to financial transactions and work with customers. Financial monitoring entities should adopt a risk-based approach, considering criteria such as customer profiles, their geographical location, and the types and ways in which services are provided to them. The extent to which monitoring will be carried out depends on the nature and scale of their activities. High-risk customers also include persons residing in jurisdictions that do not comply with international guidelines, sanctioned individuals or entities, and others as specified by law (Vereshchahina 2023). These clients are often not engaged at all and are denied any engagement. Non-profit organizations, including charities, must take measures to minimize the risk of being used for illegal activities, considering the recommendations of state financial monitoring bodies. Monitoring itself should be realized based on internal documents and recommendations of the relevant bodies of state financial monitoring. Risk criteria shall be determined by the subjects of financial monitoring themselves considering the instructions of the National Bank of Ukraine or other relevant state bodies; the subjects themselves shall also consider typological studies, national risk assessments and recommendations of the subjects of state financial monitoring (Furmanchuk 2023).

Financial monitoring entities in Ukraine are required to develop, implement and update internal financial monitoring documents, including rules and programmes for primary financial monitoring; in addition, they must register with the relevant authorities and notify them of any changes in key personnel or activities and ensure the effective organization and conduct of primary financial monitoring. In general, Law of Ukraine No. 25 'On Prevention and Counteraction of Legalization (Laundering) of Criminal Proceeds, Financing of Terrorism and Financing of Proliferation of Weapons of Mass Destruction' (2020) describes a significant number of both obligations of such companies and rights and prohibitions. In case of their violation, the management of the companies may receive both administrative and criminal penalties for their actions. As for the requirements for inspection of financial institutions in Ukraine, there are also quite a lot of them. Thus, financial institutions are prohibited from opening and maintaining anonymous accounts or entering into correspondent relationships with shell banks; they must apply due diligence measures and carry out identification and verification of the client in terms of how business relationships with other members are formed, and financial transactions are conducted. The conduct of any verification requires supporting documents from the organization or a third party. The verification of the persons to whom the financial monitoring is actually being conducted must also be carried out: their connection to different criminal groups. Based on the results of the verification, financial institutions can decide whether to follow up with the organization or individual, or what measures (if any) should be taken against them. Based on the data discussed above, a comparison of both financial monitoring systems can be constructed. This can be seen in the box in Table 1.

As can be seen in Table 1, there are significantly more similarities between countries in financial monitoring systems than differences. The reason for this is that this part of the work of enterprises and relevant authorities is quite standardized among all countries, while the differences may consist only of minor peculiarities. However, for effective monitoring, it is not the process described in the legal framework itself that plays a much higher role, but the extent to which companies adhere to it and how they are supervised by the state.

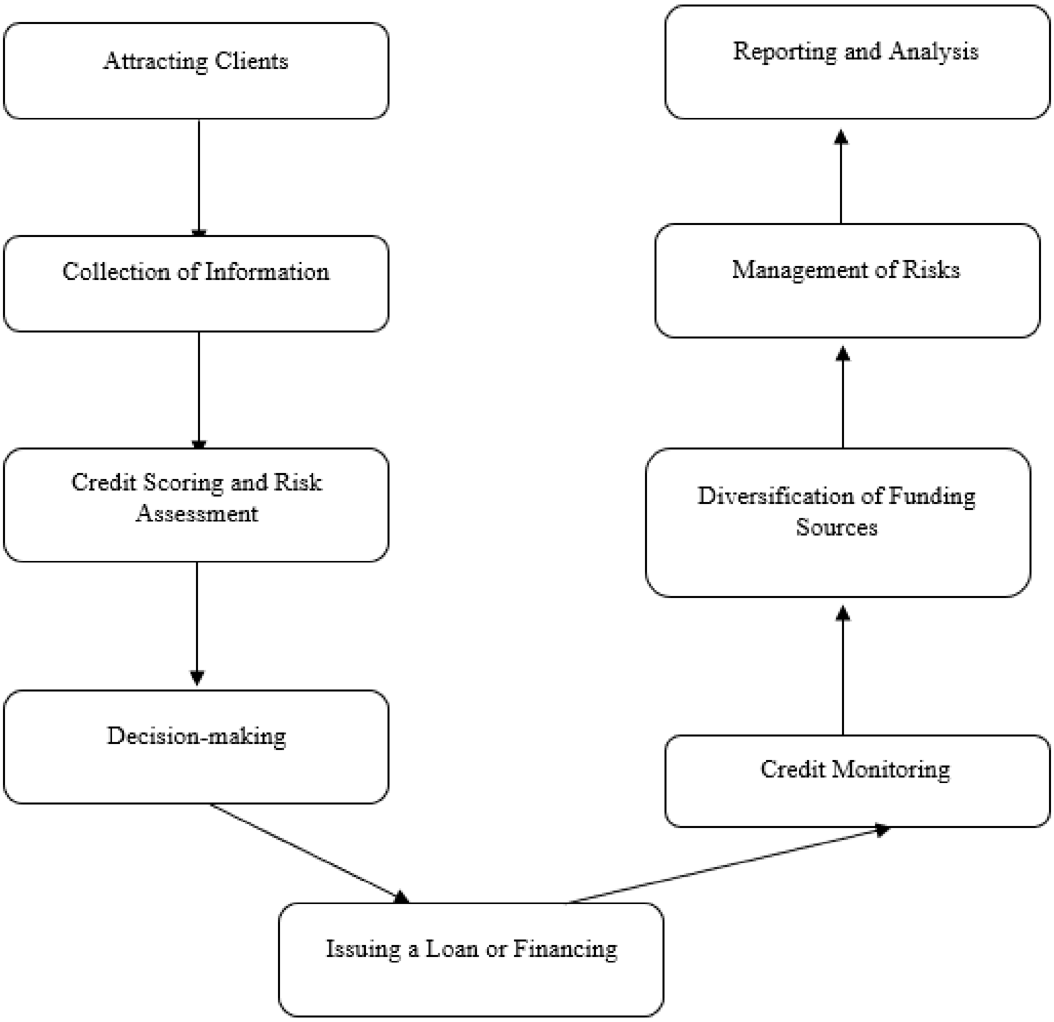
Table 1. Different and similar components of credit monitoring systems and sources of financing in Kyrgyzstan and Ukraine

No.	Similar components	Various components
1	Both Kyrgyzstan and Ukraine have established a legal and regulatory framework for financial monitoring and credit risk management. In Kyrgyzstan, this is regulated by Law of the Kyrgyz Republic No. 93 'On banks and banking activities' (2022) and Regulation No. 52/4 'On the minimum requirements for credit risk management in commercial banks and other financial and credit institutions licensed by the National Bank of the Kyrgyz Republic' (2010), while in Ukraine – Law of Ukraine No. 25 'On Prevention and Counteraction of Legalization (Laundering) of Criminal Proceeds, Financing of Terrorism and Financing of Proliferation of Weapons of Mass Destruction' (2020).	Within the legal and regulatory framework, in Kyrgyzstan the main focus is on commercial banks and financial and credit institutions licensed by the National Bank of the Kyrgyz Republic (MFOs, credit unions, credit union finance company (CUFC), credit bureaus, exchange bureaus, guarantee fund are licensed by the NBKR). In the Kyrgyz Republic, state regulation and supervision of the non-banking financial market (which includes the securities market, insurance activities, activities of non-state pension funds, pension asset management companies, pawnshops, and lottery activities), accounting and auditing activities is carried out by Law of the Kyrgyz Republic No. 249 'On the authorised state body in the sphere of supervision and regulation of the financial market' (2009). The payment system in the Kyrgyz Republic is regulated by Law of the Kyrgyz Republic No. 21 'On the Payment System of the Kyrgyz Republic' (2015). In Ukraine, a wider range of financial institutions are subject to financial monitoring, including insurers, credit unions, payment system operators and stock exchanges.
2	Both countries emphasize a risk-based approach to financial monitoring. In assessing the need for monitoring, they take into account client profiles, geographical location and types of services provided. High-risk clients are subject to more rigorous monitoring.	The specific responsibilities and penalties for financial institutions that violate the rules vary slightly.
3	Financial institutions in both countries are required to conduct due diligence on their clients. This includes collecting documents such as applications, financial statements and collateral information. The goal is to assess the client's ability to repay the funds.	
4	The frequency of monitoring depends on factors such as the amount and type of loan. In both countries, larger loans may require more frequent monitoring, while smaller loans are subject to less frequent checks.	
5	Financial institutions in both countries are required to regularly assess the safety and value of collateral. If there are problems with the loan, they may have to take actions such as additional checks or suspending payments.	
6	In both countries, financial institutions must document and keep records of all credit-related activities, including meetings, phone calls, and other interactions with customers.	

Source: compiled by the authors based on the data of the Regulation No. 52/4 'On the Minimum Requirements for Credit Risk Management in Commercial Banks and Other Financial and Credit Institutions Licensed by the National Bank of the Kyrgyz Republic' (2010) and the Law of Ukraine No. 25 'On Prevention and Counteraction of Legalization (Laundering) of Criminal Proceeds, Financing of Terrorism and Financing of Proliferation of Weapons of Mass Destruction' (2020), Law of the Kyrgyz Republic No. 249 'On the authorised state body in the sphere of supervision and regulation of the financial market' (2009), Law of the Kyrgyz Republic No. 21 'On the Payment System of the Kyrgyz Republic' (2015).

There is currently no publicly available information on the business models of banks (or other credit organizations) on how they conduct financial monitoring or assess their clients' sources of funding (Poyda-Nosyk and Noemi 2023). Nevertheless, based on the information analysed above, it is possible to draw conclusions as to what an 'average' business model of such an institution might look like. It can be described using the model shown in Figure 1.

Figure 1. Business model for working with clients of banking organizations



Source: compiled by the authors.

Each of the steps shown in Figure 1 has its own characteristics, which are generally described by their names. Therefore, it is worth describing only some of them in more detail. Thus, within the framework of 'credit scoring and risk assessment' the financial institution uses the information collected at the previous stage to calculate the client's credit rating and assess its creditworthiness, which may include analysis of payment history, income, debts, and other financial indicators. Based on this information, subsequent decisions are made on whether to grant a loan or financing. Once a loan is granted, the organization continuously monitors the customer and their financial position, which includes tracking payments, credit history and other changes that may affect the repayment of the loan. Often, banks may also use outside information for this purpose. If in the process of such monitoring, the client's credit risk becomes too high, the client is refused service and all interactions with the client are closed. It should be noted that this model may differ from bank to bank, and banks may use their own criteria for assessing customer risk and their own thresholds for starting or closing business relationships with them. Nevertheless, their essence and construction as a whole should remain unchanged and have a similar structure.

3. Discussions

The impact of banks on financial stability was also assessed by Mabkhot and Al-Wesabi (2022). Researchers analysed the impact of various macroeconomic factors on the financial stability of banks on the example of banks in the Gulf countries. The scholars analysed six key macroeconomic variables including GDP growth, inflation rate, exchange rate, government fiscal consolidation, oil prices and political instability, based on analysing the relationships between them, they showed that government intervention is important to stimulate economic growth, diversify the sources of oil revenues and mitigate the risks associated with macroeconomic factors that may affect the volatility of banks' earnings. Based on this information, the study recommends that Gulf banks should diversify their investments and financial activities beyond the oil sector. Such diversification will help to break the link between oil prices and the overall macroeconomic and financial system, which will ultimately improve financial stability and confidence in the banking system. It also emphasizes the importance of investment awareness and financial education. It is worth noting that these recommendations are also relevant for Kyrgyzstan. This is due to the fact that the country is also dependent on the export of labour force. In this case, it is important to diversify investments of banks and MFOs, which can improve their condition and thus make their development more efficient.

D'Orazio and Popoyan (2022) assessed the role of the financial system for a country's development in their study. They noted that it plays a critical role not only for economic stability and welfare of the population, but also for other goals such as climate goals. The study shows that the effectiveness of decision-making in financial stability governance structures in countries plays a critical role in ensuring the achievement of sustainable development goals in terms of climate. Jokipii and Monnin (2013) studied the relationship between banking sector stability, real output growth and inflation in 18 OECD countries. The researchers showed that there is a positive relationship between banking sector stability and real output growth, but there is no clear relationship between banking sector stability and inflation. In addition, they noted that the stability of the banking sector itself has a significant impact on welfare, and noted that depending on the sector, forecasts of future economic development may differ. Therefore, ensuring the sustainability of the sector is an important government objective, which, among other things, can be improved by improving the quality of financial monitoring in the country, among its financial organizations.

Cvetkoska *et al.* (2021) evaluated the efficiency of commercial banking in developing countries, in particular – Northern Macedonia, Serbia, and Croatia. Researchers noted that the stability of the financial system, especially in developing countries with banking systems, largely depends on the efficiency of banks, especially large banks. In case the development of these organizations is characterized by the state, it is relevant to formulate public policy objectives for such banks, offering ideas for strategic planning and decision-making on activities to improve their future state.

A study on how credit monitoring process and debt recovery strategies adopted by commercial banks in Kenya was conducted by Migwi (2013). Researchers noted the importance of the country having a clear policy in this regard, as well as a good asset base among banking institutions (their reasonably high level of diversification and quality). In addition, banks should have qualified staff to ensure that the loan recovery policy is well implemented and that customers receive high standard services. The scholar notes that for the sustainable development of the sector, banking institutions also carry out all relevant activities, as in Kyrgyzstan, in particular – controlling operations on customer accounts, conducting a thorough risk assessment, controlling loan repayment intervals and evaluating loan applications. Thus, such activities on the part of such institutions will significantly increase the sustainability of the system, as well as improve the efficiency of the economy as a whole (Horoshko *et al.* 2021).

Bhattacharyay and Nerb (2002) identified a core set of indicators that characterize market efficiency for monitoring financial stability in financial and asset markets. The scholars emphasized that identification is based on limited time-series data from participating countries with differences in data availability, frequency and time lag. They suggested that countries should conduct rigorous quantitative analyses based on longer time series and more data to identify leading indicators appropriate for their economic situation. In particular, they note the role of collaboration between statistical agencies and financial sector supervisors, including central banks and security commissions, to effectively monitor financial stability. Although market monitoring in general is different from credit monitoring by banks or other organizations, they are both very important for ensuring the sustainability of the economic system (Khodakivska *et al.* 2022). Moreover, credit monitoring data is used extensively in the analysis of financial institutions, so that the development of both systems should be conducted by both public and private organizations, in connection with legislation and in good faith.

Cotoc *et al.* (2021) discussed the impact of international money laundering regulations on anti-money laundering in their study. Their work was based on data from the reports of the financial intelligence units of the European Union member states. In particular, the scholars showed that the number of transactions received by national anti-money laundering authorities between 2018 and 2019 increased over time. However, as they also pointed out, the data, regarding this number of transactions, may in fact be inaccurate. Because of this, standardize methodologies for reporting statistics and case studies to more accurately assess the effectiveness of anti-money laundering efforts. Although this study was primarily focused on the European Union, this situation remains relevant for Kyrgyzstan. It is also important for the country to be more active in the fight against money laundering, including by better analysing and collecting data on the financial activities of its citizens. In particular, credit and financial monitoring by businesses can help.

Cincinelli and Piatti (2021) paid much attention to the credit risk taken by banks based on data from Italy. The researchers showed that there are several main factors that lead to an increase in the number of non-performing loans in countries. Most often, this is due to some kind of crisis, which reduces the ability of borrowers to repay their debts. In addition, the limited ability of banks to repay defaulted loans has also played a role. The factors determining the excess NPLs were found to be the following: return on assets, loan growth rate and business cycle. In addition, the activities of the authorities and their attitude towards both borrowers and banks during such periods also played an important role. Based on the research conducted by the researchers, it can be concluded that Kyrgyzstan should pay more attention to the sustainability of the credit system during crisis periods; in particular, the state authorities should support both banks and other credit organizations, as well as enterprises, to ensure their functioning.

Thus, all the main stages of credit monitoring in Kyrgyzstan and Ukraine have been described in detail. However, their existence does not guarantee that they will be adhered to by both banking institutions and MFOs, as well as by enterprises or companies. Therefore, how the government can make them adhere to the rules (how high the level of institutional development in the country is) also plays an important role in this context. This is also something that the authorities should pay attention to when setting public policy.

Conclusions and Further Research

Thus, analysing credit monitoring systems and funding sources is of paramount importance for the long-term sustainability and performance of financial institutions, be they large banks or microfinance institutions. This comprehensive assessment covers various important aspects such as assessing the creditworthiness of the client, effective debt collection and loss minimization to ensure timely repayment of loans.

The effectiveness of financial monitoring systems can vary significantly depending on the regulatory framework adopted in each country. The case study of Kyrgyzstan shows that the credit risk management process in this context is governed by Regulation 'On the minimum requirements for credit risk management in commercial banks and other financial and credit institutions licensed by the National Bank of the Kyrgyz Republic'. FCIs operating under this law are required to closely monitor their loan portfolios by scrutinizing customer payments, compliance with loan covenants and the financial strength of borrowers. The frequency of monitoring depends on factors such as the size and type of loan, with larger loans subject to more frequent scrutiny. The ultimate goal is to submit regular reports to management, especially in case of late loan payments or deterioration in loan classification. In comparison, Ukraine has its own legal framework: while there are similarities between the two countries' systems, such as the risk-based approach and due diligence requirements, Ukraine's scope extends to a wider range of financial institutions, including insurers, credit unions, payment system operators and stock exchanges. Notably, compliance with this regulatory framework is essential to ensure the integrity and financial health of institutions. Effective supervision and adherence to standardized procedures are key to protecting against financial risk and ensuring that financial institutions operate within the law.

It is relevant for the following studies to assess other components of banking development and microfinance sector in the countries of the Eurasian Economic Union or Commonwealth of Independent States. In addition, it is relevant to continue analysing the banking system of Kyrgyzstan, its weaknesses and strengths, as well as finding levers for development, especially in the current difficult conditions of economic development in the country.

Credit Authorship Contribution Statement

Renat Murzaibraim: Writing – review and editing, Methodology, Supervision;
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Svitlana Ivashyna: Writing – original draft, Conceptualization;
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Declaration of Competing Interest

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Declaration of Use of Generative AI and AI-assisted Technologies

The authors declare that they have not used generative AI and AI-assisted technologies during the preparation of this work.

References

[1] Abbasi, S. G. *et al*. (2020). HPWS and Knowledge Sharing Behavior: The Role of Psychological Empowerment and Organizational Identification in Public Sector Banks. *Journal of Public Affairs,* 21(3): e2512. DOI:https://doi.org/10.1002/pa.2512

[2] Akbulaev, Nurkhodzha, and Basti Aliyeva (2020). Gender and Economic Growth: Is There a Correlation? The Example of Kyrgyzstan. *Cogent Economics and Finance,* 8(1): 1758007. DOI:https://doi.org/10.1080/23322039.2020.1758007

[3] Akomea-Frimpong, Isaac, David Adeabah, Deborah Ofosu, and Emmanuel Jr. Tenakwah (2022). A Review of Studies on Green Finance of Banks, Research Gaps and Future Directions. *Journal of Sustainable Finance and Investment,* 12(4): 1241-64. DOI: https://doi.org/10.1080/20430795.2020.1870202

[4] Al-Harbi, Ahmad (2019). The Determinants of Conventional Banks Profitability in Developing and Underdeveloped OIC Countries. *Journal of Economics, Finance and Administrative Science,* 24(47): 4-28. DOI: https://doi.org/10.1108/JEFAS-05-2018-0043

[5] Aseinov, Dastan, and Kamalbek Karymshakov (2018). Development of the Banking System in Kyrgyzstan: An Historical Review and Current Challenges. *Sosyoekonomi,* 26(38): 71-86. DOI:https://doi.org/10.17233/sosyoekonomi.2018.04.05

[6] Bhattacharyay, Biswanath, and Gernot Nerb (2002). Leading Indicators for Monitoring the Stability of Assets and Financial Markets in Asia and the Pacific. *Asia-Pacific Development Journal,* 9(2): 17-50. Available at: https://www.unescap.org/sites/default/files/2%20Bhattacharyay%20and%20Nerb.pdf

[7] Branzoli, Nicola, Edoardo Rainone, and Ilaria Supino (2023). The Role of Banks' Technology Adoption in Credit Markets during the Pandemic. DOI: http://dx.doi.org/10.2139/ssrn.4463978

[8] Buallay, Amina, and Jasim Al-Ajmi (2020). The Role of Audit Committee Attributes in Corporate Sustainability Reporting: Evidence from Banks in the Gulf Cooperation Council. *Journal of Applied Accounting Research* 21(2): 249-64. DOI: https://doi.org/10.1108/JAAR-06-2018-0085

[9] Cheremisina, Svitlana, and Iryna Tomashuk (2023). Regional Aspect of the Efficiency of Lending to the Agricultural Sector of the Ukrainian Economy. *Ekonomika APK,* 30(5): 46-58. DOI:https://doi.org/10.32317/2221-1055.202305046

[10] Cincinelli, Peter, and Domenico Piatti (2021). How Inefficient is an Inefficient Credit Process? An Analysis of the Italian Banking System. *Journal of Risk Finance,* 22(3/4): 209-39. DOI: .1108/JRF-08-2020-0184

[11] Cotoc, Corina-Cristina, Maria Nitu, Mircea Constantin Scheau, and Adeline-Cristina Cozma (2021). Efficiency of Money Laundering Countermeasures: Case Studies from European Union Member States. *Risks,* 9(6): 120. DOI: https://doi.org/10.3390/risks9060120

[12] Cvetkoska, Violeta, Katerina Fotova Ciković, and Marija Tasheva (2021). Efficiency of Commercial Banking in Developing Countries. *Mathematics,* 9(14): 1597. DOI: https://doi.org/10.3390/math9141597

[13] D'Orazio, Paola, and Lilit Popoyan (2022). Realising Central Banks' Climate Ambitions through Financial Stability Mandates. *Intereconomics,* 57: 103-11. DOI: https://doi.org/10.1007/s10272-022-1039-4

[14] Drobyazko, Svetlana *et al*. (2019). Model for Forming of Optimal Credit Portfolio of Commercial Bank. *Journal of Management Information and Decision Sciences,* 22(4): 501-6.

[15] Furmanchuk, Oksana (2023). The Role of State Finance Audit in the System of Accounting and Analytical Support of the State Funds Management System. *Economics of Development,* 22(4): 34-42. DOI:https://doi.org/10.57111/econ/4.2023.34

[16] Horoshko, Olena-Ivanna, Andrii Horoshko, Stanislav Bilyuga, and Viktoriia Horoshko (2021). Theoretical and Methodological Bases of the Study of the Impact of Digital Economy on World Policy in 21 Century. *Technological Forecasting and Social Change,* 166: 120640.

[17] Jokipii, Terhi, and Pierre Monnin (2013). The Impact of Banking Sector Stability on the Real Economy. *Journal of International Money and Finance,* 32: 1-16. DOI: https://doi.org/10.1016/j.jimonfin.2012.02.008

[18] Kalenyuk, Iryna, Larysa Antoniuk, Oleg Kuklin, Liudmyla Tsymbal, and Olena Tsyrkun (2022). Modelling the Impact of Intellectualization on Economic Growth in Ukraine. *Financial and Credit Activity: Problems of Theory and Practice,* 4(45): 175-90.

[19] Karymshakov, Kamalbek, and Burulcha Sulaimanova 2019. *Measuring the Impact and Financing of Infrastructure in the Kyrgyz Republic*. Tokyo: Asian Development Bank Institute. Available at: https://www.adb.org/sites/default/files/publication/520321/adbi-wp988.pdf (accessed January 10, 2024).

[20] Khodakivska, Olga *et al*. (2022). Sustainable Development of Regions: Modeling the Management of Economic Security of Innovative Entrepreneurship. *International Journal of Advanced and Applied Sciences,* 9(3): 31-38.

[21] Kovalenko, Victoria *et al*. (2023). Credit and Investment Support for the Development of Ukraine's Agricultural and Economy Sector. *Scientific Horizons* 26(5): 151-63. DOI:https://doi.org/10.48077/scihor5.2023.151

[22] Loi, Anna (2023). Identification of Investment Attraction Strategies to Increase the Economic Potential of a Trading Enterprise. *Economics, Entrepreneurship, Management,* 10(1): 8-16. DOI:https://doi.org/10.56318/eem2023.01.008

[23] Mabkhot, Hashed, and Hamid Abdulkhaleq Hasan Al-Wesabi (2022). Banks' Financial Stability and Macroeconomic Key Factors in GCC Countries. *Sustainability,* 14(23): 15999. DOI:https://doi.org/10.3390/su142315999

[24] Makhazhanova, Ulzhan *et al*. (2022). The Evaluation of Creditworthiness of Trade and Enterprises of Service Using the Method Based on Fuzzy Logic. *Applied Sciences (Switzerland),* 12(22): 11515.

[25] Mehta, Kedar, Ekaterina Mingaleva, Wilfried Zörner, Nadira Degembaeva, and Ermek Baibagyshov. (2022). Comprehensive Analysis of the Energy Legislative Framework of Kyrgyzstan: Investigation to Develop a Roadmap of Kyrgyz Renewable Energy Sector. *Cleaner Energy Systems,* 2: 100013. DOI:https://doi.org/10.1016/j.cles.2022.100013

[26] Migwi, James M. (2013). *Credit Monitoring and Recovery Strategies Adopted by Commercial Banks in Kenya*. Nairobi: University of Nairobi. Available at: http://erepository.uonbi.ac.ke/handle/11295/59489

[27] Nikolaychuk, Tetyana (2022). The Main Prerequisites for Sectoral Financial and Credit Cooperation between Territorial Communities, Objects of the Nature Reserve Fund of Ukraine, and Environmental-Oriented Entrepreneurs: Theoretical Aspects. *Scientific Bulletin of Mukachevo State University. Series 'Economics',* 9(3): 9-19.

[28] Niyazbekova, Shakizada, Anastasia Zverkova, Natalia Sokolinskaya, and Seyit Kerimkhulle (2023). Features of the 'Green' Strategies for the Development of Banks. *E3S Web of Conferences* 402: 08029.

[29] Patino, Omar Alonso, and Laura Marcela Patino Gutierrez (2019). Financial Education and Inclusion: The Role of Banks. *International Journal of Sustainable Entrepreneurship and Corporate Social Responsibility* 4(1). Available at: https://www.igi-global.com/article/financial-education-and-inclusion/228991

[30] Poyda-Nosyk, Nina, and Noemi Markush (2023). Comparative Characteristics of Accounting Models. *Scientific Bulletin of Mukachevo State University. Series 'Economics',* 10(2): 21-30. DOI:https://doi.org/10.52566/msu-econ2.2023.21

[31] Toktosunova, Colpon *et al*. (2021). Problems of the Growth of the External Public Debt of the Kyrgyz Republic. *Studies of Applied Economic,* 39(5): 1-18. DOI: https://doi.org/10.25115/eea.v39i5.5245

[32] Trusova, Natalia V. *et al*. (2021). Managing the Intellectual Potential in the Business-Network of Innovative Digital Technologies. *Estudios de Economia Aplicada,* 39(5): 1-15.

[33] Trusova, Natalia V., Serhii V. Karman, Maksym A. Tereshchenko, Yurii O. Prus (2018). Debt Burden of the Financial System of Ukraine and Countries of the Eurozone: Policy of Regulating of the Risks. *Espacios,* 39(39). Available at: https://www.revistaespacios.com/a18v39n39/a18v39n39p30.pdf

[34] Vereshchahina, Kateryna (2023). Problems of Legal Regulation of Bankruptcy. *Social and Legal Studios,* 6(3): 201-208. DOI: https://doi.org/10.32518/sals3.2023.201

[35] Vovchenko, Oksana (2021). Development of the Banks' Risk Management System under Conditions of Uncertainty. *Economics of Development,* 20(4): 8-15.

[36] Law of the Kyrgyz Republic No. 21 'On the Payment System of the Kyrgyz Republic'. 2015. Available at: http://cbd.minjust.gov.kg/act/view/ru-ru/205425

[37] Law of the Kyrgyz Republic No. 249 'On the Authorised State Body in the Sphere of Supervision and Regulation of the Financial Market'. 2009. Available at: http://cbd.minjust.gov.kg/act/view/ru-ru/203198

[38] Law of the Kyrgyz Republic No. 93 'On Banks and Banking Activities'. 2022. Available at: http://cbd.minjust.gov.kg/act/view/ru-ru/112428

[39] Law of Ukraine No. 25 'On Prevention and Counteraction of Legalization (Laundering) of Criminal Proceeds, Financing of Terrorism and Financing of Proliferation of Weapons of Mass Destruction'. 2020. Available at: https://zakon.rada.gov.ua/laws/show/361-20#Text

[40] Regulation No. 52/4 'On the Minimum Requirements for Credit Risk Management in Commercial Banks and Other Financial and Credit Institutions Licensed by the National Bank of the Kyrgyz Republic'. 2010. Available at: http://cbd.minjust.gov.kg/act/view/ru-ru/302354/150?cl=ru-ru

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Activities of the Government of the Ukrainian State in 1918 in Solving the Issue of Unemployment in the Context of Social Exclusion: Structural and Organizational Aspect

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Abstract: The purpose of this study is to examine archival materials and historical experience in the fight against unemployment in 1918. To achieve this goal, the following methods were used: archival, statistical, historical, and hermeneutical methods. During the study, various archival data were analysed, which allowed creating an objective and comprehensive picture of social exclusion in a particular period. Additionally, unemployment statistics were reviewed, which revealed a high level of unemployment during the study period. The analysis of historical documents related to the government's activities during this period led to the conclusion that Pavlo Skoropadskyi and his government took various measures to improve the situation. The Cabinet of Ministers of 1918 created new committees and exchanges aimed at addressing the problems of social exclusion and the economic situation of the population. The study of historical and policy documents for 1918 revealed that their effect was ambivalent, causing both positive and negative aspects in society. On the one hand, the committees helped to overcome social exclusion and stabilize the economic situation by promoting the development of new industries and markets. On the other hand, some measures may have caused negative reactions and conflicts in society, leading to some tension and uncertainty about the country's future development path.

Keywords: reform; hetman Pavlo Skoropadskyi; government; allocation; regional exchanges; Labour Committee.

JEL Classification: E24; J64; P41; J21; J23.

Introduction

During the period of formation and development of the Ukrainian state in 1918, society faced unprecedented challenges, among which one of the most important was the issue of social exclusion, in particular unemployment. The government's activities at that time were of paramount importance, as solving the problem of unemployment required a comprehensive approach and consideration of the specifics of that period. After many years of being ruled by other states, Ukrainian society was given the opportunity to build its own state (Maksimović *et al.* 2022). However, along with new opportunities came significant challenges. In particular, the problem of unemployment has become a pressing issue, causing serious social and economic problems (Dashko and Mykhailichenko 2023; Reci and Kokaj 2023). In these circumstances, the government of the Ukrainian state was forced to look for effective solutions to improve the situation on the labour market. The structural and organizational aspect of the government's efforts to address unemployment proved to be key to the implementation of socio-economic reforms (Çifligu 2023; Vasylyeva *et al.* 2023). The need to create an effective system of employment and social protection of workers required thoughtful planning and careful organization. In this context, the analysis of archival materials of that time provides an opportunity to better understand the decisions made, their causes and consequences. The study will also highlight the specific measures taken by the government of the Ukrainian State in 1918 to overcome unemployment, as well as their impact on the socio-economic situation in the country.

In his study, O. Korniyenko (2020) examines the process of formation and development of social policy in Ukraine from the times of the princely Kyiv State to the present. The author draws attention to domestic and international experience in this area. Particular emphasis is placed on the period of the national liberation struggle of Ukrainians during the Revolution of 1917-1921. During this period, for the first time, a specialized government body was established – the Ministry of Public Health and State Welfare, which was responsible for social protection of Ukrainian citizens. Researcher I. Terlyuk (2020) also analysed the legal regulation of land and labour relations during the revolutionary era in the new Ukrainian state. He covered the formation of national legislation, in particular, in the field of socio-economic issues, which arose after the III Universal of the Ukrainian Central Rada. The researcher points out the importance of the UCR's social programme and the directions of the Ukrainian State's legal policy, in particular, in the field of land and labour issues. He examines attempts at legislative regulation through the ideological prism of socialist and non-socialist governments. The author believes that the regulation of labour relations aimed at solving social problems has made a significant contribution to the creation of national social legislation. In his opinion, the lack of legislative resolution of land issues and the underestimation of critical aspects of labour relations regulation affected the success of Ukrainians in forming an understanding and creating their own statehood.

The next group of scholars, O. Melnychuk *et al.* (2023), examined the activities of public authorities to overcome unemployment in the 1920s. The researchers wrote that after seizing power in Ukraine, the Bolshevik leadership loudly announced the need for a social support system for vulnerable groups of the population. The civil war and economic downturn led to a large-scale increase in unemployment and a decline in living standards. In the early 1920s, there were attempts at mandatory state-level unemployment insurance, with limited success due to bureaucracy and insufficient infrastructure. The government sought alternatives, including public works and the provision of benefits. In the late 1920s, active industrial construction increased the demand for labour, and the authorities set out to eliminate unemployment by administrative means, refusing to recognize those who refused to accept jobs as unemployed. This approach did not lead the country to a better situation in terms of unemployment. This historical experience should be considered in further analyses of this problem.

Studies by scholars such as M. Haliv *et al.* (2023) examined the activities of public organizations in the Drohobych region between November 1918 and May 1919. They paid particular attention to the functioning of various Ukrainian NGOs in the Drohobych district, such as Prosvita, Agriculture, Women's Community, Society for the Care of Ukrainian Soldiers, General Workers' Trade Union, and others. These organizations actively cooperated and supported the state authorities, interacting with them at various levels. The focus was not only on political cooperation, but also on the role of these communities in addressing social issues. The communities have taken on a variety of tasks, including social aspects. It is also worth highlighting the scientific article by O. Dudnyk (2022), which is part of a regional study of socio-political, socio-economic, and national-cultural events related to the Ukrainian people during the revolutionary period of 1917-1921 in the Uman district. The researcher noted that during the administration of Pavlo Skoropadskyi, important changes took place in the state apparatus of the Uman district. During this period, the region experienced repressions by the authorities, acts of looting, requisitioning and confiscation of property, as well as the introduction of food duties, contributions, and coercive measures against peasants, which led to a deterioration in the food situation. These factors led to conflicts between the population and the authorities. Therefore, the state policy was aimed at providing practical support to landowners and entrepreneurs to restore their lost property, as well as at taking measures to prevent anti-Hetman agitation and punishing political opponents who did not have sufficient support from most of the Uman district population.

The above studies did not analyse the specifics of the general situation of social exclusion throughout the Hetmanate, in particular, in the context of unemployment, and did not consider the specific measures taken by the government to overcome it within the framework of the Council of Ministers of the Ukrainian State in 1918. This implies that separate studies could focus on other aspects of history, such as political events, military conflicts, or economic transformations. Thus, the purpose of this study is to analyse the structural and organizational aspect of the measures taken by the government of the Ukrainian State in 1918 to combat unemployment, using archival materials to review historical experience and events.

1. Materials and Methods

The sources used in the study include scientific and historical literature on the theory and history of unemployment, as well as official documents and legislative acts, orders, and instructions of the relevant state authorities. For this purpose, the archive fund was used, namely the Central State Archive of Higher Authorities and Governments of Ukraine (CSAHA). The following methods were used in this study to solve the tasks: archival, statistical, historical, and hermeneutical methods.

The archival method was used to examine in detail various documents, such as official reports, letters, and other written materials, covering a wide range of information related to government decisions and programmes on unemployment and social exclusion. This method covered the period from 1918 onwards, allowing to identify and examine the measures taken by the government during this time. This method allowed not only identifying specific measures, but also thoroughly assessing their impact and effectiveness in the context of combating unemployment and social exclusion. Using the statistical method to examine unemployment rates in 1918, the author conducted an exploration of statistical data that allowed highlighting the real picture of the socio-economic situation of that period. The obtained indicators point to an extremely high level of unemployment and other social challenges, revealing the depth of the problems that determined the life of society at this historical moment. The analysis of these statistics made it possible not only to assess the extent of unemployment, but also to determine its impact on other aspects of social life, expanding our understanding of that period in history.

Using the historical method, the study examined various historical sources, publications, and scientific research covering the period under study. This allowed thoroughly investigating the historical factors related to the activities of Pavlo Skoropadskyi's government, revealing its historical impact on the further development of the Ukrainian state. By analysing the actions of the Hetmanate Cabinet of Ministers in the context of the historical circumstances of the time, it was possible to identify the key moments that shaped the events and determined the fate of Ukraine at that time. The hermeneutic method helped to deeply understand the textual materials and the context of the topic under study. In the context of the activities of the government of the Ukrainian State in 1918 to address the issue of unemployment, this method considered the context of the social, political and economic environment of the time. Moreover, the hermeneutic method was used to examine various types of texts, such as official documents, legislation, letters, publications. Hermeneutics allowed considering the context of the texts, interpreting them in terms of the author's intentions and the perception of their contemporaries. When studying the activities of the Council of Ministers of the Ukrainian State in 1918, the hermeneutic method helped to reveal different views and information that could influence decision-making in the fight against unemployment. The analysis of government documents and other sources can point to specific measures designed to address the problem of unemployment, as well as to the interaction with other aspects of social exclusion at the time.

The application of these methods will allow gaining a deeper and more comprehensive understanding of the activities of the government of the Ukrainian State of 1918 in addressing the problems of unemployment and social exclusion.

2. Results

This article examines the period of 1918, when Pavlo Skoropadskyi took power in Ukraine after a coup d'état on 29 April 1918. His arrival was due to the decline of the Central Rada. The state of the country during this period was critical, but the Hetmanate government showed great interest in social issues and identified the effective fight against unemployment as a key aspect of creating favourable conditions for the country's development at that time (Yablonskyi 2023; Dyczok 2000). His measures were aimed at stimulating the economy and providing employment through the development of industry and infrastructure.

The Cabinet of Ministers of Pavlo Skoropadskyi did not ignore initiatives in the field of education and medicine as part of its efforts to improve social conditions. The government and the Hetman realized that a fair distribution of social resources would contribute to the balanced development of society and increase its overall well-being. Thus, Pavlo Skoropadskyi's Council of Ministers was notable not only for its understanding of the need for social reforms, but also for its active steps to ensure the well-being and development of all segments of the population. The conditions in Ukraine at the time, strained by mass unemployment, required careful management of social issues. The difficult situation of former soldiers and officers without a stable income created serious social pressure, especially among the families of fallen soldiers. The Ministry of Labour of the Ukrainian State registered 200,000 unemployed in July 1918, predicting that this number would rise to 500,000 in August. The active agitation of anarchists, Bolsheviks, and supporters of the 'indivisible one' among the unemployed created additional challenges for the government (Velychenko 2011; Verba 2022). The Hetman reacted objectively to the events of the time, he set tasks for his government: to employ the unemployed as much as possible and to promote the development of production. A significant number of Ukrainian enterprises were under foreign ownership, which, as a result of the war, ended up outside the country. This led to the adoption of measures to provide state funding for enterprises and to seek cooperation with domestic entrepreneurs.

The Hetman cancelled the laws of the Ukrainian Central Rada aimed at socialization and noted this in his 'Letter to the entire Ukrainian people' of 29 April 1918 (Document No. 3300-18 'Letter to the entire Ukrainian nation', 1918). This document recognized private property rights as the basis of culture and civilization, and cancelled the orders of previous governments, both the Ukrainian and the Provisional Russian governments. The Hetman also established full freedom to buy and sell land and to stimulate economic and financial initiative by creating broad opportunities for private enterprise. Another measure to combat unemployment was the introduction of public works, which was approved on 5 August 1918, when the government officially approved a resolution to allocate financial resources to various projects. Among them were the fortification of St Andrew's Hill in Kyiv, the improvement of Taras Shevchenko's grave in Kaniv, and the development of stone quarries near the villages of Lozovatka and Selyshche. An important initiative was the plan to create a canal lock system from the Baltic to the Black Sea and to build hydroelectric power stations on the Dniester, Bug, and Dnipro rivers. An additional step to overcome unemployment was the First All-Ukrainian Conference of Trade Unions, which took place from 21 to 26 May in the capital of the Ukrainian state. The conference adopted a resolution that determined the need for a decisive separation of the working class from Bolshevism and the redirection of the labour movement to the path of economic and social demands (Verstyuk *et al.* 1995). The All-Ukrainian Council of Trade Unions was also established to strengthen the socio-economic foundations and support workers in the labour sphere.

In support of this strategy, the government passed a law on 15 July 1918 establishing a 'Labour Committee' initiated by the Ministry of Labour. The main purpose of this Committee was to study and discuss draft laws developed by the Ministry of Labour (Hai-Nyzhnyk 2007). It is worth noting that the Committee not only analysed the proposed laws, but also actively participated in their discussion and made necessary changes or additions. This body consisted of representatives of six different ministries, two economic experts and eight workers' representatives. V. Kosynskyi was elected as the Chairman of the Committee. The initial activities of the Committee were to draft laws aimed at regulating industry and specifying the rights and obligations of workers in the Ukrainian state. The process of drafting the laws included stages of internal discussion and approval within the Labour Committee. Economic experts and workers' representatives were actively involved in the development of specific provisions relating to working conditions, remuneration and social protection of workers.

After internal discussion and approval, the Committee submitted the draft laws to the Council of Ministers for consideration and approval (Doroshenko 2002). This stage was important for ensuring the legitimacy and legal sanction of the decisions made. Only after approval by the relevant government resolutions did the laws become effective and enter into force in the Ukrainian state, creating a framework for regulating labour relations and social issues. In addition, the statute of the Committee clearly defined the persons who made up this body. This reflected a democratic approach and a wide range of representation in the Committee's work to ensure a comprehensive and diverse view of the problems and needs of workers in various sectors of the economy and society (Pyrig and Prodanyuk 1992). Thus, the Labour Committee was created as an effective mechanism for studying, discussing and formulating legislative initiatives aimed at protecting the labour rights and social welfare of workers in the Ukrainian State. The government of Pavlo Skoropadskyi actively took measures to support the unemployed in the Ukrainian State. As part of these initiatives, the Cabinet of Ministers adopted a law on the organization of public works, for which significant financial resources were allocated in the amount of 2.5 million rubles. The main goal of this measure was to create opportunities for jobseekers, contributing to their social and economic recovery.

In a move to increase the productivity of Ukrainian industry, the government passed a law on 17 September that allowed for variations to the 8-hour working day. It is important to note that these changes were only applied in specific cases, such as to provide the population with essential goods or to address the needs of public or state institutions of national importance. This approach was aimed at maintaining economic stability and meeting the needs of society in a difficult socio-economic situation. Ukraine had its own peculiarities, under which the inspection covered all government agencies and banks that paid fines for late reporting. In addition, control also extended to private institutions, such as zemstvo offices and cooperatives. A temporary 'Status of State Control' was created in the Ukrainian state to organize legal control. Under the leadership of Fedir Lyzohub, Hryhoriy Afanasiev was appointed State Controller and Dmytro Valiysky was appointed his deputy. Under the government of Stepan Gerbel, Sergei Petrov, who had previously worked in the central Russian control institutions in St. Petersburg, became the Controller. Four departments of the State Control were created, including Dmytro Symoniv, Putnytskyi, Mykola Skuhar-Skuharevskyi and Ivan Kabachkiv. These transformations had a positive impact on the unemployment situation, but some of them had mixed results. In order to control the movement of workers, the Hetmanate government in the Ukrainian State in 1918 adopted a resolution that restored the law of the Russian State of 2 December 1905. This law provided for quarantine measures for participation in strikes and defined temporary rules of punishment for persons who participated in strikes at enterprises of civil or state importance, as well as in state institutions. It also established measures to ensure the fate of those employees who did not take part in certain strikes and thus suffered from violence against them. The Resolution of the Council of Ministers of the Ukrainian State on the regional labour exchanges in Ukraine, general provisions on labour exchanges, and a list of local labour exchanges showed the Hetmanate government's intention to closely monitor and regulate the participation of citizens in industrial strikes. Particular emphasis was placed on ensuring the full functioning of enterprises and institutions at the state level, as well as on guaranteeing the observance of the rights and protection of those who did not participate in the protests (The Central State Archive, 1918).

In 1918, the difficult economic situation with unemployment in Ukraine continued to deepen. Statistics provided by the Ministry of Labour at the end of May showed an alarmingly high unemployment rate of over 180,000 people. In general, the situation with unemployment, strikes, and protests remained unresolved due to the financial crisis, the destruction of industry due to war and anarchy, problems in the transport system, and shortages of raw materials, construction materials and production tools. To address these problems, the government allocated a substantial allocation of 13,232,043 rubles. In addition, some cities, such as Nizhyn (receiving 56,000 krb) and Odesa (1 million krb), were provided with interest-free loans. However, the largest amount of funds was allocated to the capital of Ukraine. The Kyiv City Council was allocated 30,000 rubles to clean the city's ditches and 1,994,500 rubles for land works, planning of streets, squares, and mountains (The Central State Archive of..., 1918). These allocations reflect the significant assistance provided by the Cabinet of Ministers to address the problems faced by the cities and regions of the Ukrainian state. This financial approach emphasizes the importance of investing in localities to improve their infrastructure and economic development. The special focus on the capital city reflects the recognition of Kyiv as the central hub of the country, where effective investments can have a significant impact on the development and stability of the entire country.

At a meeting of the Council of Ministers held on 30 June 1918, the creation of a Special Labour Committee under the Ministry of Labour was considered. Its task was to develop legislation to normalize relations between workers and entrepreneurs. This fact indicates that the government was trying to settle the relationship between workers and entrepreneurs and find a compromise in improving the situation of the working class. It is worth noting that one of the key significant events of that time was the formation of the Exchanges. In November 1918, the Ministry of Labour, with the financial support of the government, established the Regional Labour Exchanges to organize and organize information on the number of unemployed people and provide them with support. The issue of the establishment and the statute of the Provincial Labour Exchanges was considered in October by the Small Council of Ministers, and the relevant statute was approved by a resolution of the Council of Ministers. The creation of Labour Exchanges began during the period of the Central Rada on 25 November 1917. This concept was adopted from the experience of England and Austria, where such a system had been operating since 1900. In May, a government project to create an all-Ukrainian network of Labour Exchanges and Registration and Correspondent Offices was approved (Gregory and Noble 1982).

Comparing the number of established Provincial Exchanges during the Central Rada and the Hetmanate period, the statistics in Table 1 show that the policy of Pavlo Skoropadskyi's government took into account the problems of unemployment and employment more fully than the policy of the Central Rada.

Table 1. Network of Labour Exchanges during the time of the Central Rada and the Hetmanate

No.	Provinces	The number of exchanges in the district	Cities
1	Kyiv	10 (66, and 3 of them already existed)	Bila Tserkva, Berdychiv, Rynnytsia
2	Kharkiv	8 (49)	Bakhmut, Akhtyrka, Slovyansk, Sumy
3	Poltava	15 (18, Kharkiv subdistrict)	Boryspil, Gadyach, Grodysk, Zolotonoshe, Zinkiv
4	Katerynoslav	6 (22, and 5 of them already existed)	Melitopol, Novomoskovsk, Kryvyi Rih, Katerynoslav, Kamenske
5	Alexandriya	5	-
6	Odesa	5 (42, of which 5 already existed)	Golta, Mykolaiv, Kherson, Elisavetgrad, Odesa

Note: the first numbers are data for the period of UNR; numbers in parentheses are data for the period of the Hetmanate.
Source: (The Central State Archive, 1918).

A programme for an all-Ukrainian meeting of labour exchange managers and instructors was also developed to accompany the project of the newly established regional exchanges and its statute. Much attention was paid to initiatives to protect the rights of workers who became active members of the newly formed trade unions. These trade unions sought not only to represent the interests of their members, but also to help ensure their legal protection (The Central State Archive, 1918; Gregory and Noble 1982). To address these issues, the provisional All-Ukrainian Council of Trade Unions issued a statement to the Government of the Ukrainian State calling for an end to repression of trade unions. This statement emphasized the negative aspects, in particular, the use of security and police methods by the authorities. These methods included arrests, expulsions, and harassment, which, in the opinion of the trade unions, led to restrictions on workers' rights and violations of their freedom of activity. The need to take measures to ensure freedom of trade union activity and protect their members from unacceptable repression was also noted.

Thus, a difficult situation has arisen in the Ukrainian state, which has become even more problematic due to the growing unemployment problem among the Ukrainian population. Thanks to the active support of the government and the initiatives of the Ministry of Labour, which was marked by the introduction of social protection and the implementation of vocational programmes, part of the population was able to benefit from state assistance, while the other part found employment opportunities (Ramskyi 2021; Borbély-Pecze *et al.* 2022; Eckhard 2022). Compared to the previous government, the Hetmanate actively took responsibility for the development of social and economic programmes, which led to the involvement of a significant number of people in the active work process. However, despite these initiatives, the socio-economic policies did not enjoy wide popular support. The government was unable to reach a social compromise with various social groups, which ultimately led to the collapse of the Hetmanate in December 1918.

3. Discussion

The topic of unemployment and its relationship with social exclusion is a subject of study and research for many foreign scholars from various fields such as economics, sociology, psychology, social policy, and others. There are several main reasons why this topic arouses interest and attracts the attention of scholars. One of them is that unemployment can lead to disruptions in the social structure and cause tensions in society, which in turn can lead to increased poverty and other forms of social dysfunction.

It is worth considering the work of B. Bridgman and R. Greenaway-McGrevy (2023). Their research is aimed at analysing the impact of social distancing on the economy of the United States of America during the 1918 influenza pandemic, particularly the impact of non-pharmaceutical interventions (NPI) on the social sphere. This interest has intensified in the wake of the COVID-19 pandemic. Scientists have investigated how NPIs affect social and economic dynamics. The researchers draw attention to the significance of the First World War in a quasi-experimental analysis of the pandemic, as cities with stricter NPIs grew significantly between 1914 and 1918. The war affected US export opportunities. For example, the demand for navy and civilian ships increased, leading to an expansion of production and employment in cities that had previously lacked labour. This led to an improvement in the unemployment situation. Scientific analysis has not found a long-term link between employment and the spread of the pandemic. During the war and the flu, the demand for infrastructure restoration and the development of the military industry helped to expand employment opportunities. The 1918 flu stimulated the development of working capital in education and medicine. This paradoxical phenomenon demonstrates the effectiveness of non-pharmaceutical measures in those days, which is in sharp contrast to the current situation.

The next scientist, G. Gabbuti (2021), in his study of the economic history of Italy, noted that between 1895 and 1970 Italy experienced significant changes in the structure of the economy, as well as in the division of labour and inequality. During this time, the country experienced a period of industrialization, agricultural development, and the growing importance of the service sector. With industrialization, the number of industrial jobs grew, but this process was not always accompanied by adequate working conditions and social protection. The share of labour in different sectors of the economy reflected the dynamics of changes in the employment structure, from agriculture to industry and services. Inequality was also actively debated during this period, and it was constantly changing depending on economic conditions and political reforms. Different schools of economic thought emerged, offering different solutions to the problems of social inequality. It should be noted that this period in Italy and Ukraine has common features. Both countries tried to restore their economies, developed industry and agriculture, but did not focus on creating laws aimed at improving the social situation of the population in the long term. In general, the economic development and changes in the division of labour in Italy and in the Ukrainian State of 1918 during this period reflect the multifaceted and complex interrelationships between economic, social, and political processes.

Another scholar, Y. Liu (2021), studied the impact of the First World War on the British economy. He viewed Britain as a country that experienced the worst economic crisis of the 1920s, and also identified the causes of unemployment that existed on its territory. In analysing the impact of the First World War on the British export market, it was found that the conflict significantly damaged its stability and functioning. The war resulted in a decline in exports, economic difficulties, increased unemployment, financial losses, and the overall degradation of the country's economy. A similar situation was observed in the territories of Ukraine at that time. In the 1918s, unemployment in Ukraine was caused by a mix of factors, including the aftermath of the First World War, political instability in the country during the civil war, destruction of infrastructure, loss of markets and increased competition for jobs due to mass migration and economic changes.

Also, an important opinion on the social situation of the population in the twentieth century was expressed by the scholar R. Kučera (2016). He described the situation in Bohemia. During the period of 1914-1918, working class politics in Bohemia (part of the modern Czech Republic) was active and dynamic. With the outbreak of the

First World War, the country's production and economy underwent significant changes. Unemployment grew, and hard labour became the norm for many workers. In these circumstances, the working class in Bohemia actively used strikes as a means of fighting for better working conditions, higher wages, and better social conditions. Protests became a significant tool for confronting industrial entrepreneurs and the authorities. Especially during the war, the working class in Bohemia opposed the war effort and the government's efforts to support the war effort. This not only led to significant social tensions in the country, but also caused changes in the perception of the role of labour and workers in society. All these factors contributed to the formation and development of the labour movement in Bohemia and had an impact on the further development of social and political processes in Czechoslovakia after the war. Comparing the policy of P. Skoropadskyi's Ukrainian State and the policy of Bohemia, it is possible to conclude that under the leadership of the Hetman in Ukraine, power was centralized and authoritarian, with the establishment of a dictatorship in some domestic policy issues, which was one of the reasons for the Directory's coming to power. In Bohemia, in 1918, Czechoslovakia was established, where a democratic republic with an open multi-party system was proclaimed. The policy under Skoropadskyi's leadership in Ukraine and the policy of Bohemia in 1918 reflect different models of political and social organization, which were determined by the context of the time, historical circumstances, and national peculiarities. The Ukrainian state and Bohemia were on different paths of development during this period.

It is also worth noting the research of F.R. Velde (2022). In his scientific work, he studied the problem of unemployment in different historical periods, comparing the past and the present. As a result of his analysis, the scientist concluded that all events are cyclical, and history tends to repeat itself. In particular, the author compared the situation with the COVID-19 pandemic in 2020 to a global crisis like the one that occurred in 1918 during the Spanish flu. Both episodes led to profound challenges for the global economy and labour market due to instability caused by economic difficulties, political and geopolitical factors. Comparing the two periods, it is possible to see that the labour market is not only unstable due to economic challenges, but also due to political or geopolitical turbulence. These two events have not only caused significant difficulties in the field of employment, but have also led to serious problems of social exclusion, in particular, by causing an increase in unemployment. The conclusion of the researcher's work confirms that history can function according to a certain cyclical law, and therefore it is very important to study and analyse past events to respond effectively to future events. This makes it possible to develop and implement effective methods of dealing with problems that may arise in new historical circumstances. Research and analysis of the past helps modern society to identify ways to avoid and overcome difficulties, as well as to formulate strategies aimed at creating a sustainable and equitable labour market in the future.

Thus, having analysed the above-mentioned works of scholars, it can be noted that Ukraine's policy in 1918 was relatively typical for the time when many countries in Europe were going through a period of transformation, revolution, and changes in political systems, Ukraine was trying to establish its independence and solve social, economic, and political problems, although its development path was different from other countries. At that time, in 1918, many countries in the world and Europe, including the Ukrainian state, were facing problems of unemployment and social instability as a result of economic crises and changes in production (Bhat and Kandasamy 2023; Bernardini 2022; She *et al.* 2024). Common to many countries were attempts to find ways to overcome these problems through the implementation of social programmes, labour laws, economic regulation, and influence on the labour market. While each country's policy varied according to its specific circumstances and historical background, the general trend was that many countries sought to address economic and social challenges through similar measures and policies.

Conclusions and Further Research

Thus, it can be concluded that in early 1918, Ukraine faced numerous economic and social challenges related to the period of liberation struggle, revolutionary changes, and civil war. Unemployment at that time was a serious problem caused by several factors. The Civil War in Ukraine (1917-1922) resulted in the destruction and destruction of infrastructure, significant losses in production, and interruptions in the progressive production chains of the time, leading to the loss of numerous jobs. Political instability and turbulence in governments, as well as power struggles, caused delays in reforms and a lack of effective economic management during the short time of the Hetmanate's existence in 1918. The blockade of the territories was another reason for the unemployment problem, as the territories of Ukraine were subject to hostilities, which caused the blockade and restrictions on the movement of people and goods, leading to a deterioration of the economic situation. Famine and epidemics caused by the general instability and hostilities led to high unemployment due to the loss of labour capacity and reduced working capacity of the population.

In that difficult period, in 1918, the government of the Ukrainian State took key measures to overcome the problems of unemployment. Economic reforms were aimed at restoring the economy and supporting production. The establishment of social programmes and the provision of assistance became an important element of social support for the unemployed and war victims. Reconstruction of the infrastructure after the war's destruction was an important step to stimulate economic activity. Cooperation with foreign partners included attracting foreign investment and assistance for economic recovery. The analysis conducted during that period allowed identifying effective and ineffective methods used in the past.

However, despite the results achieved, there are some aspects that should be investigated in more detail. In particular, further study of economic and socio-cultural conditions could help to better understand which aspects and strategies may have been most relevant in a particular period of time. It is also important to consider innovations and technological advances, as they may affect the effectiveness of employment programmes. Opportunities for public-private partnerships and international experience should be further explored to improve employment programmes and interventions.

Credit Authorship Contribution Statement

Olena Khomenko: Conceptualization, Project administration, Writing – original draft, Supervision, Validation, Visualization.

Declaration of Competing Interest

The author declares that has no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Declaration of Use of Generative AI and AI-assisted Technologies

The author declares that has not used generative AI and AI-assisted technologies during the preparation of this work.

References

[1] Bernardini, Gabriele (2022). Unemployment in Retrospect: Economic Thought on Unemployment in Some Crucial Phases of the History of Economics. Rome: Luiss Guido Carli University. DOI:https://tesi.luiss.it/34790/

[2] Bhat, Rashid M., and Silllalee A/L S. Kandasamy (2023). Concepts and Contexts: The Interplay of Philosophy and History in Understanding Human Society. *East Asian Journal of Multidisciplinary Research* 2(6): 2581-2590. DOI: https://doi.org/10.55927/eajmr.v2i6.4052

[3] Borbély-Pecze, Tibor B., Lenka Hloušková, and Tomas Šprlák (2022). Career/Lifelong Guidance Systems and Services: Continuous Transformations in a Transition Region. *International Journal for Educational and Vocational Guidance* 22: 67-91. DOI: https://doi.org/10.1007/s10775-021-09473-4

[4] Bridgman, Benjamin, and Ryan Greenaway-McGrevy (2023). The Economic Impact of Social Distancing: Evidence from State-Collected Data during the 1918 Influenza Pandemic. *Explorations in Economic History* 90: 101531. DOI: https://doi.org/10.1016/j.eeh.2023.101531

[5] Çifligu, Eneida (2023). The Role of Trade Unions in Regulating Social and Labour Relations and Shaping National Policy in Latvia. *Foreign Affairs* 33(5). DOI: https://doi.org/10.46493/2663-2675.33(5).2023.37-44

[6] Dashko, Iryna, and Lubomir Mykhailichenko (2023). Features of the Use of Innovative Technologies in the Personnel Management System. *Economic Forum* 1(2): 3-10. DOI: 10.36910/6775-2308-8559-2023-2-1

[7] Doroshenko, Dmytro (2002). *History of Ukraine, 1917-1923: The Ukrainian Hetman State of 1918*. Kyiv: Tempora. Available at: http://resource.history.org.ua/item/0009620

[8] Dudnyk, Olena (2022). Uman District under the Rule of Hetman Pavlo Skoropadskyi. *Scientific Papers of the Vinnytsia Mykhailo Kotsyiubynskyi State Pedagogical University Series History* 39: 17-25. DOI:https://doi.org/10.31652/2411-2143-2022-39-17-25

[9] Dyczok, Marta (2000). *Ukraine. Movement without Change, Change without Movement*. London: Routledge. DOI: https://doi.org/10.4324/9781315080000

[10] Eckhard, Jan (2022). Gender Differences in the Social Consequences of Unemployment: How Job Loss Affects the Risk of Becoming Socially Isolated. Work, Employment and Society 36(1): 3-20. DOI:https://doi.org/10.1177/0950017020967903

[11] Gabbuti, Giacomo (2021). Labor Shares and Inequality: Insights from Italian Economic History, 1895-1970. *European Review of Economic History* 25(2): 355-378. DOI: https://doi.org/10.1093/ereh/heaa010

[12] Gregory, Denis, and Christine Noble (1982). Trades Unions and Special Measures for the Young Unemployed. In: *Youth Unemployment and State Intervention*. London: Routledge. Available at: https://www.taylorfrancis.com/chapters/edit/10.4324/9781003308591-6/trades-unions-special-measures-young-unemployed-denis-gregory-christine-noble?context=ubxandrefId=7db1736c-75a3-482a-8b58-90dbc833eab6

[13] Hai-Nyzhnyk, Pavlo (2007). The Ministry of Labour of the Ukrainian State and the Labour Legislation of the Hetmanate of 1918 in the Light of Unknown Documents. In: *Collection of Scientific Papers of the Research Institute of Ukrainian Studies* (pp. 325-350). Kyiv: Printing Centre 'Foliant'. Available at: https://hai-nyzhnyk.in.ua/doc/122doc.php

[14] Haliv, Mykola, Taras Batyuk, and Dmytro Shykitka (2023). Activities of Ukrainian Public Organizations in Drohobych County in the Conditions of the Revival of Ukrainian Statehood (1918-1919): According to the Materials of the Newspaper 'Drohobytsky Lystok' ('Drohobych Leaf'). *Scientific Papers of the Vinnytsia Mykhailo Kotsyiubynskyi State Pedagogical University, Series History* 46: 86-93. DOI:https://doi.org/10.31652/2411-2143-2023-46-86-93

[15] Korniyenko, Olga (2020). Social Policy on Ukrainian Lands: Historical and Legal Aspect. *Legal Bulletin of 'Krok' University* 38: 34-42. Available at: https://lbku.krok.edu.ua/index.php/krok-university-law-journal/article/view/244

[16] Kučera, Rudolf (2016). *Rationed life: Science, Everyday Life, and Working-Class Politics in the Bohemian Lands, 1914-1918*. New York, Oxford: Berghahn Books. Available at: https://www.degruyter.com/document/doi/10.1515/9781785331299/html

[17] Liu, Yifei (2021). The High Unemployment Rate in Britain during the Interwar Period. In: *The Fourth International Conference on Social Science, Public Health and Education*. Huhhot: EDP Sciences. Available at: https://www.shs-conferences.org/articles/shsconf/abs/2021/34/shsconf_ssphe2021_01027/shsconf_ssphe2021_01027.html

[18] Maksimović, Marijana, and Jelena Zvezdanović Lobanova (2022). Employment, Unemployment and Inequalities – Current Challenges. In: International Scientific Conference '*Towards a Better Future: Visions of Justice, Equality, and Politics'* (pp. 142-154). Bitola: University St. Kliment Ohridski. Available at: http://iriss.idn.org.rs/1223/

[19] Melnychuk, Oleh, Olha Murashova, and Ruslan Prylypko (2023). Activities of State Authorities to Overcome Unemployment in the Ukrainian SSR in the 1920s. *Scientific Papers of the Vinnytsia Mykhailo Kotsyiubynskyi State Pedagogical University, Series History* 46: 34-42. Available at: https://vspu.net/nzhist/index.php/nzhist/article/view/922

[20] Pyrig, Ruslan Ya., and Fedir M. Prodanyuk (1992). Pavlo Skoropadskyi: Touches to a Political Portrait. *Ukrainian Historical Journal* 9: 91-105. Available at: http://resource.history.org.ua/cgi-bin/eiu/history.exe?I21DBN=EJRNandP21DBN=EJRNandS21REF=10andS21CNR=20andS21STN=1andS21FMT=ASP_metaandC21COM=Sand2_S21P03=IDP=and2_S21STR=journal_1992_9_91

[21] Ramskyi, Andriy (2021). Ways to Overcome Poverty and Income Inequality in the Context of New Global Challenges: The Most Important Conclusions for Ukraine. *Comparative Economic Research. Central and Eastern Europe* 24(3): 53-73. Available at: https://www.ceeol.com/search/article-detail?id=982579

[22] Reci, Senada, and Gasper Kokaj (2023). Legal Framework of Professional Mobility in the EU. *Social and Legal Studios* 6(3): 135-42. DOI: https://doi.org/10.32518/sals3.2023.135

[23] She, Bibi, Siva Shankar Ramasamy, and Piang-or Loahavilai (2024). Based on Data: Assessing the Impact of the 'Double Reduction' Policy on the Local Economy. *Scientific Bulletin of Mukachevo State University. Series 'Economics'* 11(1): 83-91. DOI: https://doi.org/10.52566/msu-econ1.2024.83

[24] Terlyuk, Ivan (2020). Establishment of Ukrainian National Legislation in the Domain of Social and Economic Relations (1917-1921). *Law of Ukraine* 1: 180-196. Available at: https://pravoua.com.ua/en/store/pravoukr/pravo_2020_1/pravo_2020_1-s11/

[25] Vasylyeva, Olena, Lidiia Horoshkova, and Svitlana Shvydka (2023). The Imbalance of the Labor Market in Ukraine: Current Trends and Guidelines for Overcoming Disproportions. *University Economic Bulletin* 18(2): 99-109. DOI: https://doi.org/10.31470/2306-546X-2023-57-99-109

[26] Velde, François R. (2022). What Happened to the U.S. Economy during the 1918 Influenza Pandemic? A View through High-Frequency Data. *The Journal of Economic History,* 82(1): 284-326. DOI:https://doi.org/10.1017/S0022050722000055

[27] Velychenko, Stephen (2011). *State Building in Revolutionary Ukraine: A Comparative Study of Governments and Bureaucrats, 1917-1922*. Toronto: University of Toronto Press. DOI:https://doi.org/10.3138/9781442686847

[28] Verba, Snizhana (2022). Legal Regulation of Scientific Activities during the Hetmanate of Pavlo Skoropadskyi in 1918. *Scientific Notes. Series: Law* 13: 19-23. Available at: https://pravo.cusu.edu.ua/index.php/pravo/article/view/198

[29] Verstyuk, Vladislav, Olena Dzyuba, and Volodymyr Reprintsev (1995). *Ukraine From the Earliest Times to the Present: A Chronological Guide*. Kyiv: Scientific Thought. Available at: http://resource.history.org.ua/item/0001278

[30] Yablonskyi, Vasyl (2023). Formation and Transformation of Political Regime of the Ukrainian People's Republic Directory at the End of 1918-1919. *Kyiv Historical Studies* 16(1): 73-83. DOI:https://doi.org/10.28925/2524-0757.2023.18

[31] Document No. 3300-18 'Letter to the Entire Ukrainian Nation'. (1918). Available at: https://zakon.rada.gov.ua/laws/show/n0003300-18#Text

[32] The Central State Archive of Higher Authorities and Administration of Ukraine. (1918). Available at: https://tsdavo.gov.ua/?s=%D0%A6%D0%94%D0%90%D0%92%D0%9E%2C+%D0%A4.+1064

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Assessment of the Current State and Prospects for the Development of the Digital Economy of the Republic of Azerbaijan

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Abstract: Azerbaijan, along with other advanced countries in the world, is currently characterised by the intensive development of digital economies. That is why the issue of the main directions of development of the information and technology environment in the Azerbaijani economy is relevant. The research aims to study and summarise aspects of the current state and peculiarities of the development of the digital economy of Azerbaijan. The study used the induction, deduction, analysis, systematisation, SWOT analysis methods. Azerbaijan is a fairly developed industrial and agricultural country, but the country's economic environment is unstable. The development of the digital economy is negatively affected by a decrease in funding and a decline in the production of high-tech goods. However, the biggest problem is the low level of digital literacy of the population. Accordingly, the main directions for the development of digitalisation of economic processes in Azerbaijan should be measures to expand education in the field of information and computer technologies with the involvement of foreign specialists and introduce mandatory courses to improve the skills of digital specialists. The main factors in the development of Azerbaijan's digital economy are foreign investment and human capital. Thus, the practical significance of the study is that the main established directions of formation of the digital economy in Azerbaijan can be used in further works of scientists to improve digitalisation in the country, and the established main educational direction can be used by the Azerbaijani authorities to bring the country to the world level following digital technologies.

Keywords: digital economy; global innovation index; innovation; human capital.

JEL Classification: O33; O14; C01; R11.

Introduction

Nowadays, economic activity carried out with the use of digital technologies is referred to as the digital economy, but it is not only the digitisation of existing processes and financial transactions but also a significant revolution concerning the traditional economic model. Social media, falling technology costs, combined with trade liberalisation, have broken down information asymmetries, leading to innovative markets where consumers can also act as producers, while platforms are becoming the dominant business entity. Such dynamics have a shift from supply to demand, where all companies have to participate in the turnover of consumers and competitors (Abdullayev 2022; Korsunska *et al.* 2022; Khotamov 2019).

Globally, digital technologies are the main means of innovative development for every country (Kurhan *et al.* 2023; Piddubna and Gorobynskaya 2023). The more digitalised a country and its economy are, the higher the standard of living and the better the financial situation. In other words, today, the well-being of any country is closely dependent on its digitalisation. After all, the development of technology contributes to the automation of work processes, which further ensures the health of citizens and the preservation of the environment, and enables fast and high-quality information exchange. The digital economy in this case not only ensures high-quality financial transactions but also overcomes corruption and other types of criminal economy. Azerbaijan needs to improve the development of the digital economy.

Gultakin (2021) noted that Azerbaijan's digital economy is currently experiencing rapid growth. These trends are driven by the introduction of new innovative financial technologies in older markets, such as the use of online payments and money transfers, which are typical for developing economies, and, the other hand, investment insurance, lending, and management. Financial innovations that increase the level of competitiveness and introduce new business models are quite important in Azerbaijan's digital economy.

Khankishiyeva (2021) noted that the large-scale changes taking place in Azerbaijan and at the global level are bringing the country into the greatest technological period in history, *i.e.*, the time when natural resources cease to be the main means of improving the economic situation, giving way to science and technology. Sufficiently active use of information and communication technologies ensures an improvement in the economic situation, provided that the level of environmental protection is improved, and physical consumption is intensively reduced in favour of information and knowledge capitalisation. The new digital economy can be characterised by the presence of high growth rates of knowledge implementation in new products and services, increasing importance of innovation and education, globalisation, and sustainable development in the country ().

Khankishiyev (2021) determined that the introduction of a large-scale digital competitiveness rating, which focuses on the presence of opportunities and the degree of readiness of the country for digital transformation, is quite important for the development of the digital economy in Azerbaijan. The creation of a system of motivation for citizens that will ensure that they acquire the necessary skills to participate in the digitalisation of economic processes is considered to be an auxiliary means for the establishment of the country's digital economy. It is important to ensure that the education system is in line with new trends and that measures are taken in all areas to train highly qualified digital economy specialists. Azerbaijan's transition to the 4th industrial revolution is quite significant, which is accompanied by the need to develop and apply innovative methods. It is higher education institutions that face the main task not only to train qualified specialists but also to ensure that the educational process complies with the rules of innovation.

Abdullayev *et al.* (2022) have established that in recent periods, all countries of the world can be characterised by high growth rates in the digital economy. Accordingly, Azerbaijan similarly increases its economic position every year following the indicators of economic development. These trends are caused not only by effective economic policy but also by the development of the digital economy and the promotion of foreign investment (Horoshko *et al.* 2021). However, it is noted that Azerbaijan has certain problems in the development of the digital economy, as it is difficult to introduce information and computer technologies in all sectors of the economy and there is a high volume of exports of modern digital technologies. Accordingly, the digital economy in Azerbaijan is effectively regulated based on international experience.

Accordingly, based on the unstable external economic environment, the research aims to summarise the peculiarities of the current state and formation of the digital economy of Azerbaijan, to determine further directions of its development, considering strengths, weaknesses, opportunities, and threats. The main tasks of further research should be to review the current state of the economy and digitalisation in Azerbaijan, analyse the features and prospects for the development of the country's digital economy, and conduct an econometric study of the dependence of the formation of digital technologies on the country's economic development. Determining the peculiarities of the current state of the economy and digitalisation in Azerbaijan will be the main means for conducting further research to determine the prospects for the development of the digital economy. It is important to analyse the strengths and weaknesses of the country's digital economy and identify its opportunities and threats, which will be the main means of shaping the prospects for the development of the digital economy of Azerbaijan. An econometric study of the dependence of the formation of digital technologies on the economic development of the country will allow us to formulate the peculiarities of the impact of economic processes on the development of digitalisation in the country.

Digitalization of the national economy in modern developed countries enables the development of business areas and the creation of a favorable business environment. This process can stimulate the development of innovative activities of companies. The digitization process allows to improve business activity in economic areas. In addition, the digitalization of the national economy accelerates the integration of local manufacturing companies into international markets. As a whole, the digitalization of the national economy and the improvement of the quality of digital services have a positive effect on the improvement of the business environment. Digitization of business areas allows to optimize the performed operations, reduce transport and logistics costs, and increase the quality of services.

1. Materials and Methods

The following methods were used in the study. The method of deduction, which was used to move from a general to a specific concept, was used to establish the specifics of the meaning of the category 'digital economy' determine the essence of the structure of the digital economy and establish its main characteristics.

The method of analysis, which allows to highlight the peculiarities of the dynamics of indicators, was used to determine the peculiarities of the economic situation in Azerbaijan in 2018-2022. The systematisation method, which helps to separate data, was used to systematise the indicators of Gross Domestic Product in the US dollar exchange rate as of 01.01.2019-01.01.2023, GDP per capita, inflation, GDP deflator, consumer price index, imports and exports of goods and services, general unemployment rate, total reserves (including gold), foreign direct investment, and the amount of external debt. This method was used to study the state of development of Azerbaijan's digital economy and to consider indicators of the global innovation index, the amount of net official development assistance received, high-tech exports, exports of information and computer technology goods, the information disclosure index, the number of fixed broadband subscribers, the number of secure Internet servers, the credit information depth index, the number of ATMs and the number of commercial bank branches.

The study also used the SWOT analysis method. This method allowed for strategic planning of the direction of the formation of Azerbaijan's digital economy. The SWOT analysis identified the strengths, weaknesses, opportunities, and threats to the country's digital economy. This method was used to assess the internal and external factors of Azerbaijan's digital economy and to identify areas for improvement and potential problems of the research object. The study took the strengths and weaknesses of Azerbaijan's digital economy as internal factors. The strengths were identified as the competitive advantages of Azerbaijan's digital economy, and the weaknesses were identified as its shortcomings that need to be improved or have no competitive advantage. Opportunities and threats to Azerbaijan's digital economy were selected as external factors using this method. Opportunities in this study include methods that are necessary to improve the state of Azerbaijan's digital economy. The threats are the factors that negatively affect the development of the country's digital economy.

An induction method, which allows one to move from a specific concept to a general one, was used to identify the main directions of the country's digital economy based on a preliminary analysis of the state of Azerbaijan's digital economy and the identification of weaknesses, strengths, opportunities, and threats. This method was used to identify the main areas of development of the digital economy through the implementation of measures to expand education to create experienced professionals and raise the digital awareness of citizens. Using the method of mathematical modelling, the specifics of the dependence of high-tech exports and secure Internet servers, as indicators of the development of the digital economy, on the economic situation in Azerbaijan were determined.

The research theory is based on the main expert studies on the digital economy and information and computer technologies of Azerbaijan. The basis for the study of Azerbaijan's digital economy was the World Bank's data on indicators of economic development, information technology, the Internet, information availability, and the number of researchers on the development of the financial sector's operating environment.

2. Research Results

2.1. A Study of the Current State of the Economy and Digitalisation in Azerbaijan

After the collapse of the Union of Soviet Socialist Republics, Azerbaijan joined the post-Soviet countries and was characterised by a crisis economy, as the country's GDP fell by 52.6% between 1990 and 1994 (Kuklina and Babayev 2019). Later, the situation in the country stabilised somewhat, and since 1998, Azerbaijan's economy has been on a growth path. Then, starting in 2000, the growth rate of economic indicators slowed down. The development of technological support for the functioning of Azerbaijan's economic sectors can be one of the main factors in improving the country's economic situation. Today, Azerbaijan is a fairly developed industrial and agricultural country (Tkachenko *et al.* 2020; Stender *et al.* 2024). At the same time, the country's heavy industry sector is widely developed, mainly based on oil and gas production. The machine building, light industry and food production sectors are also gaining importance in Azerbaijan's industry. In addition, the country has a diversified industrial base, dominated by the energy sector, manufacturing and chemical industry. The processing industry, which produces mineral fertilisers, kerosene, petrol, herbicides, synthetic rubber, industrial oil and plastics, has developed quite a bit. In terms of foreign economic activity, Azerbaijan is a major exporter of chemicals, machinery, food (grapes and other fruits and vegetables), beverages, oil and natural gas, non-ferrous metals, iron, and steel (GDP (current US$) 2022). Let consider the dynamics of the main indicators of Azerbaijan's economic situation over the past six years (Table 1).

Table 1. Dynamics of economic indicators of Azerbaijan in 2018 – 2023

Indicator	2018	2019	2020	2021	2022	2023
GDP (billion USD)	47.11	48.17	42.69	54.83	78.72	76.64
GDP per capita (current US dollars)	4739.8	4805.75	4229.91	5408.05	7736.7	7126.2
GDP deflator (annual %)	12.18	-0.24	-7.4	21.59	37.25	-
Inflation, consumer prices (annual %)	2.27	2.61	2.76	6.65	13.85	8.22
Imports of goods and services (% of GDP)	37.58	36.77	36.39	29.8	27.03	-
Exports of goods and services (% of GDP)	54.09	49.05	35.62	46.49	60.05	-
Total unemployment rate (% of total labour force) (ILO modelled estimate)	4.94	4.85	7.16	5.95	5.46	5.6
Total reserves (including gold, billion USD)	6.67	7.04	7.63	8.31	11.29	-
Foreign direct investment, net inflow (USD billion)	1.4	1.5	0.51	-1.71	-4.47	-5.7
Total external debt (USD billion)	15.3	16.21	15.84	15.81	14.64	21.0

Note: some indicators are missing due to lack of updated data for 2023

Source: compiled by the authors based on GDP (Current US$) (2023), GDP per Capita (Current US$) (2023), Inflation, GDP Deflator (Annual %) (2022), Inflation, Consumer Prices (Annual %) (2023), Imports of Goods and Services (% of GDP) (2022), Exports of Goods and Services (% of GDP) (2022), Unemployment, Total (% of Total Labor Force) (Modeled ILO Estimate) (2023), Total Reserves (Includes Gold, Current US$) (2022).

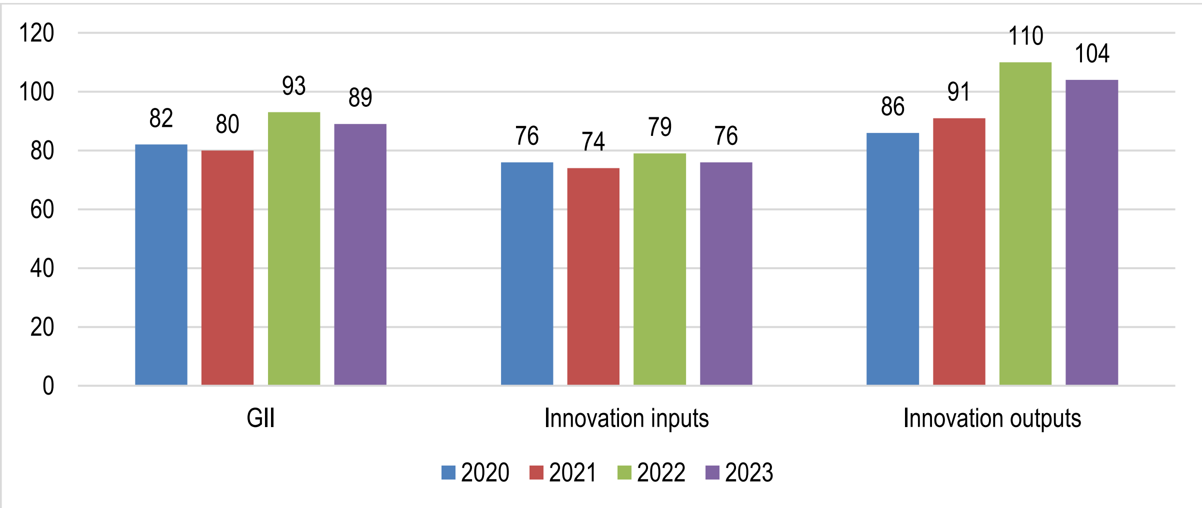
Table 1 shows the GDP level in Azerbaijan tended to increase, and GDP per capita also increased, which indicates a decrease in the poverty level of the country's citizens. At the same time, there are negative changes in pricing, as the GDP deflator and the consumer price index had intensive growth rates during 2018-2022. Azerbaijan's trade balance had a positive trend during the analysed period, as exports of goods and services increased, while imports of goods and services decreased (Tukhtabaev *et al.* 2023). At the same time, there is an increase in the unemployment rate in the country, which is accompanied by an increase in poverty. Also, during the analysed period, there was an increase in total reserves, which indicates an increase in the country's financial stability. Foreign direct investment at the end of 2022 was negative, indicating an outflow of foreign funding and the development of domestic investment in other countries. A positive trend for the country is observed in the amount of external debt, as it decreased during the analysis period, which indicates a decrease in the debt burden on the Azerbaijani budget. Thus, in general, the country's economic environment is unstable for the country's population, although it has positive changes for the development of the budget.

As of 2023, Azerbaijan's economy shows some signs of moderation following a post-pandemic surge in growth. Notably, oil production has declined while non-hydrocarbon growth has slowed, suggesting a shift in the economic structure. This shift is part of broader efforts to diversify the economy, including increasing non-hydrocarbon revenues and promoting green energy initiatives. Despite these changes, the economy still faces significant inflation risks, both from potential external shocks and ongoing strong domestic demand, though inflation has eased somewhat recently, returning to the target band of 4 ± 2 percent. The digital economy in Azerbaijan is also a focus, with considerable efforts towards digitalization, especially in public services and the financial sector. There has been notable growth in areas like secure internet servers and internet penetration, suggesting an improvement in digital infrastructure and services.

As for the digital economy, its development is a priority for Azerbaijan. The focus is primarily on the centralisation of electronic services and the digitisation of public services. Digital transformation is also one of the main directions of the government's socio-economic strategy. It is planned to increase the population's connection to the Internet by 2024. At the same time, the country's cybersecurity strategy, which focuses on data privacy legislation, is aimed at supporting the country's digitalisation. To implement a rapid technical assistance mechanism in Azerbaijan, the European Union (EU) Bank financed an Administrative Agreement in cooperation with the World Bank. This three-year programme supports and responds to the government's priorities, which include digital connectivity and Smart Villages. The EU and the EBRD have provided a loan of up to USD 50 million to support the construction of a state-of-the-art broadband infrastructure for more than 280 thousand households in Azerbaijan. The loan aims to bridge the digital divide between the capital and rural areas, focusing on supporting network expansion to improve speed and capacity (Foreign Direct Investment, Net Inflows… 2022).

Considering the dynamics of the Global Innovation Index, which reflects the innovative capabilities of world economies, Azerbaijan ranked 93rd among 132 economies in 2022 according to the country's digitalisation development ranking. This indicator is much worse than in 2020 and 2021. However, in 2023 the situation was better (Figure 1).

Figure 1. Dynamics of the Global Innovation Index of Azerbaijan in 2020-2023



Source: compiled by the authors based on Azerbaijan (2024).

Based on the results of 2022, Azerbaijan is characterised by better indicators of innovative investments than innovative results. At the end of the analysed period, Azerbaijan ranks 79th in terms of innovation, which is a decrease compared to the previous two years. Azerbaijan also ranks 110th in terms of innovation, which is also a decrease compared to 2021 and 2020. At the same time, the country ranks 32nd among 36 upper-middle-income groups and 16th among 19 economies in North Africa and West Asia.

In comparison to 2022, the year 2023 paints a slightly different picture of Azerbaijan's innovation landscape. While 2022 was characterized by better indicators of innovative investments than results, leading to a lower ranking in terms of innovation, the dynamics in 2023 suggest a remarkable improvement. This turnaround could indicate a strategic shift or the fruition of prior investments into tangible outcomes. Moreover, relative to GDP, Azerbaijan's innovation development is below the expected level of development. Also, Azerbaijan produces fewer innovative products following the level of investment in innovation. The negative aspect of this trend is that the country has sufficient resources for the development of the digital economy, but uses them inefficiently, which is accompanied by a slowdown in the pace of digitalisation in Azerbaijan.

Table 2 shows that innovation development in Azerbaijan is losing support from external sources, as the indicator of net official development assistance received has significantly decreased during 2018-2022. This indicator consists of loans received by the country on favourable terms, grants attracted by official institutions of the Development Assistance Committee, and various institutions to promote economic development and welfare in the country. At the same time, high-tech exports have also declined, reflecting the narrowing of production of products with a high level of research and development, such as aerospace, computer manufacturing, pharmaceuticals, scientific instruments, and electrical machinery in the country. In 2023, the sharp rise in innovation outputs in the face of stagnant innovation inputs could suggest a more efficient utilization of the available resources or a surge in sectors like IT and communication, where Azerbaijan might have directed its innovative efforts. However, exports of information and computer technology goods tended to increase slightly, reflecting the country's focus on computer and peripheral equipment, communication equipment, electronic consumer technology software, electronic parts, and other information technology goods.

Table 2. Dynamics of indicators of digital economy development in Azerbaijan in 2018 – 2022

Indicator	2018	2019	2020	2021	2022	Growth rate, %
Net official development assistance received (USD million)	123.53	87.42	119.09	122.74	9.24	-92.52
High-tech exports (% of industrial exports)	3.3	4.35	4.95	7.07	2.1	-36.47
Exports of ICT goods (% of total exports of goods)	0.02	0.02	0.02	0.14	0.02	23.42
Disclosure level index (from 0 – less disclosure to 10 – more disclosure	10	10	10	10	10	0
Fixed broadband subscriptions (per 100 people)	17.92	18.63	18.99	19.4	19.93	11.21
Secure Internet servers (per 1 million people)	101.87	259.49	329.38	368.8	299.31	193.83
Credit information depth index (from 0=low to 8=high)	6	8	8	8	8	33.33
Cash machines (ATMs) (per 100,000 adults)	32.16	32.85	34.49	35.17	37.43	16.39
Branches of commercial banks (per 100,000 adults)	10.66	7.06	7.02	6.23	6.5	-39.02
Researchers in RandD (per million people)				1718.8	1734.85	0.93

Source: compiled by the authors based on Net Official Development Assistance Received (Current US$) (2021), High-technology Exports (% of Manufactured Exports) (2022), ICT Goods Exports (% of Total Goods Exports) (2021), Business Extent of Disclosure Index (0=Less Disclosure to 10=More Disclosure) (2019), Fixed Broadband Subscriptions (per 100 People) (2022), Secure Internet Servers (per 1 million People) (2020) Depth of Credit Information Index (0=Low to 8=High) (2019), Automated Teller Machines (ATMs) (per 100,000 Adults) (2021), Commercial Bank Branches (per 100,000 Adults) (2021), Researchers in RandD (per Million People) (2021).

The information provision and accessibility of information in Azerbaijan is at the highest level, as the disclosure index had the highest value during the study period. In other words, the country's business environment provides full access to information for doing business, as the degree of investor protection through disclosure of ownership and financial information is quite high. At the same time, there has been an increase in high-speed access to the public Internet, which in turn ensures the development of digitalisation in the country. In addition, the use of encrypted transactions, where digital signatures on certificates are successfully verified, is increasing, as the rate of secure Internet servers has grown significantly during the analysed period (). These trends indicate the development of security in the digital economy of Azerbaijan.

Considering the trends in the development of technology in the country's financial sector, a positive trend in the digitalisation of operations is evident. The credit information depth index increased to its maximum value in 2018-2022, which indicates the availability and quality of credit information generated by public or private credit registers. This means that Azerbaijan has a high level of additional credit information available to facilitate lending decisions. At the same time, the number of ATMs in the country has increased, reflecting the development of technological support for the financial sector and the improvement of the digital economy. Accordingly, the number of bank branches in Azerbaijan has decreased amid the automation and digitalisation of the operating environment of the country's banking market.

Human capital is crucial in the digital economy. Scientists also play an important role in the creation and implementation of innovation processes (Musayeva *et al.* 2022). According to the World Bank, the number of researchers is only available for 2021 and 2022. During this time, the number of professionals conducting research and improving or developing concepts, theories, modelling equipment, devices, and software of operational methods in Azerbaijan has increased. This trend indicates the prospects for the development of the country's digital economy.

2.2. Analysis of the Features and Prospects for the Development of Azerbaijan's Digital Economy

Let's analyse the peculiarities of the digital economy in Azerbaijan based on a SWOT analysis (Table 3).

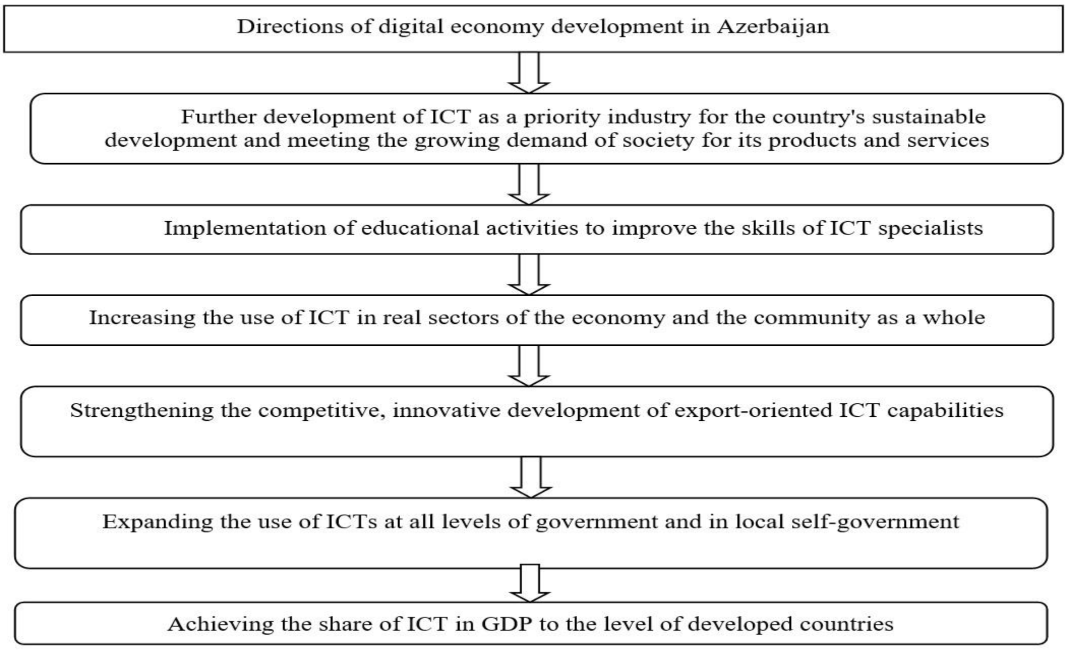
Table 3. SWOT analysis of digital economy development in Azerbaijan

Advantages	Disadvantages
Favourable economic environment. High level of information availability. Regulatory and legal support for the need for digitalisation. Focusing the government on the need to support the information and computer technology industry. Introduction of e-governance.	Low funding for innovation development. Low level of human capital in the development of information and computer technologies. Innovative investments outweigh innovative results.
Possibilities	**Threats**
Organisation of training to improve the digital competence of specialists. Enhanced development of e-governance. Empowerment of the financial sector. Automation of production, accounting and information exchange between enterprises and the state. Increase in the country's investment attractiveness.	Cyberattack threat. Insufficient computer literacy of all participants in management processes and the population. Increased price levels in the country.

Source: compiled by the authors.

In general, Azerbaijan has rather great prospects for the development of the digital economy. The country is characterised by a more or less stable economic situation and a high level of openness to information. The country's authorities are also beginning to develop information and computer technologies and are introducing e-government. However, there is currently insufficient funding for the development of digital technologies. And, according to the study, even the investments made in digitalisation are not effective. After all, the main problem with the formation of the digital economy is the low level of education in this area. Accordingly, the country has an insufficient level of specialists to implement the development of innovations in the digital economy. In addition, the insufficient level of computer literacy of the population slows down the digitalisation process, and the threat of cyber-attacks creates the risk of information outflow and unplanned expenses. At the same time, the instability of inflationary processes in the country leads to a decline in demand for technology. That is why it is important to conduct training to improve the digital literacy of specialists. In addition, the introduction of full e-government will bring Azerbaijan to a new level of digital economy development. According to the analysis of the formation of Azerbaijan's digital economy, it is appropriate to highlight its main directions (Figure 2).

Figure 2. Directions of digital economy development in Azerbaijan



Source: compiled by the authors.

The main directions for the development of the digital economy in Azerbaijan should be the introduction of processes to strengthen the targeted use of information and computer technologies and the application of measures to rapidly increase the number of Internet users. At the same time, the authorities need to respond with high speed to innovative changes in the world and meet modern requirements to maintain the necessary level of international cooperation. The e-services sector of the legislative and executive state authorities and management is one of the main means of organising the implementation of the technical system in the country's digital economy and is one of the main methods of combating the shadow economy (Blikhar *et al.* 2022; Yudina *et al.* 2024). E-services in Azerbaijan should be carried out in parallel in close cooperation and based on common principles and models (Babayev 2018; Ghrachorloo *et al.* 2021; Isayeva 2023).

Currently, the low level of digital awareness of the Azerbaijani population is a major obstacle to the development of the digital economy. In a world where more than 65% of the population has basic IT skills, Azerbaijan is at the bottom of its regional peers in terms of the proportion of people with standard and advanced digital skills. After all, only 0.7% of citizens in Azerbaijan have advanced information and computer technology skills, which include knowledge of programming languages and the ability to write a computer program (OECD 2022). This figure is significantly lower compared to the EU-8 and OECD averages of 4.4% and 6.8%, respectively. At the same time, digital skills in Azerbaijan are mostly acquired through self-study, which indicates the narrow capacity of the education system to provide its population with an adequate level of digital literacy. That is why, first of all, the country's authorities should organise and implement measures to improve the digital skills of the entire population. Another important element in the development of the digital economy is human capital. In Azerbaijan, the main problem today is the lack of qualified specialists in the field of information and computer technology, which leads to inefficient investment in innovation. That is why it is necessary to ensure the expansion of education in the field of digital technologies, where it is advisable to attract foreign specialists. It is also recommended to introduce compulsory courses to improve the skills of information and computer technology specialists.

2.3. An Econometric Study of the Dependence of the Development of Digital Technologies on the Economic Development of the Country

Since the main indicator of the development of Azerbaijan's digital economy is the state of digitalisation of the country, it is advisable to establish the peculiarities of changes in the indicators of high-tech exports and secure Internet servers, considering the influence of the country's economic factors, to establish further prospects for its development. Today, due to the decline in technology development in the country, there is a decline in high-tech exports. That is why, in the course of the study, when building a one-factor regression, the indicator of high-tech exports of Azerbaijan was taken as the first effective indicator (Table 4).

Table 4. The results of building one-factor regression models of the dependence of high-tech exports of Azerbaijan on the country's economic development

X	a	b	Correlation coefficient	Determination coefficient	Link proximity
GDP (billion USD)	7.86	-0.06	0.5	0.25	Average
Inflation, consumer prices (annual %)	5.16	-0.14	0.38	0.14	Average
Imports of goods and services (% of GDP)	3.64	0.02	0.05	0.003	Weak
Total unemployment rate (% of total labour force)	-0.27	0.82	0.41	0.17	Average
Foreign direct investment, net inflow (USD billion)	4.45	0.16	0.22	0.05	Weak

Source: compiled by the authors.

Table 4 shows the average level of dependence of Azerbaijan's high-tech exports on the dynamics of the level of Gross Domestic Product, inflation, and unemployment. The regression equation of the dependence of high-tech exports on the level of GDP shows that with the growth of GDP by one unit, there will be a decrease in high-tech exports. As the country's financial situation improves, the focus on improving the country's development increases and exports in general decrease, and high-tech exports decline accordingly. Also, as the inflation rate increases by one-unit, high-tech exports decline, because the higher the prices in a country, the lower the level of demand for goods. At the same time, the results of the econometric analysis show that as the overall unemployment rate increases by one unit, the level of high-tech exports increases, because, with the lack of human capital, technological developments are mostly exported. The study also showed that Azerbaijan's imports of goods and services and net foreign direct investment inflows have a weak impact on the country's high-tech exports. At the same time, as the country's imports of goods and services grow, the volume of high-tech exports also increases, which can be explained by the country's balancing trade balance. The growth of net foreign direct investment in Azerbaijan is also accompanied by an increase in high-tech exports, as foreign investment is mainly directed at the production of internationally traded goods. In general, an overview of the specifics of high-tech exports as an indicator of the development of the digital economy is not enough. That is why authors will further consider the trends in the regression dependence of the ratio of secure Internet servers in Azerbaijan as one of the main indicators of digitalisation on the country's economic development (Table 5).

Table 5. The results of building one-factor regression models of the dependence of secure Internet servers in Azerbaijan on the country's economic development

X	a	b	Correlation coefficient	Determination coefficient	Link proximity
GDP (billion USD)	182.31	1.65	0.23	0.05	Weak
Inflation, consumer prices (annual %)	227.33	-7.9	0.38	0.14	Weak
Imports of goods and services (% of GDP)	677.3	12.1	0.56	0.314	Average
Total unemployment rate (% of total labour force)	-114.03	-68.02	0.62	0.39	Average
Foreign direct investment, net inflow (USD billion)	260.71	19.97	0.49	0.24	Average

Source: compiled by the authors.

Table 5 shows a medium degree of correlation between secure Internet servers and imports of goods and services, total unemployment, and net foreign direct investment. The regression equation shows that as imports of goods and services increase by one unit, the indicator of secure Internet servers in Azerbaijan increases. After all, attracting goods of foreign origin brings the country to the international level and increases the degree of digitalisation in general. The constructed one-factor model of the dependence of the effective indicator on the overall unemployment rate shows that with an increase in the unemployment rate by one unit, there is a decrease in secure Internet servers. These trends can be explained by the fact that as the level of labour intensity in the country decreases, the need for digitalisation of the economy decreases. Accordingly, the results show that with an increase in net foreign direct investment inflows, there is an increase in secure Internet servers, which is accompanied by an improvement in the level of Azerbaijan's digital economy. The low density of connection with secure Internet servers in Azerbaijan is characterised by the dynamics of GDP and inflation, as they indeed indirectly affect the development of digitalisation in the country. It was found that with the growth of GDP per unit, the number of secure Internet servers increases, as the improvement of the country's financial situation allows allocating resources for the development of technological support. The increase in inflation per unit is also accompanied by a decrease in the number of secure Internet servers in Azerbaijan, as the growth of prices in the country leads to a low level of availability of resources, including digital ones.

3. Discussion

The issue of the formation of the digital economy has been previously studied by many scholars, but the main directions of its further functioning are currently uncertain. This can be explained by the intensive development of financial technologies and the lack of innovative educational activities aimed at improving the skills of employees.

The issue of the formation of the digital economy has been previously studied by many scholars, but the main directions of its further functioning are currently uncertain. This can be explained by the intensive development of financial technologies and the lack of innovative educational activities aimed at improving the level of skills of the Adner *et al.* (2019) examined the compatibility of two competing platform owners that generate revenue both through the sale of equipment and royalties from the sale of content. The researchers considered a game-theoretic model in which two platforms offer different digital services to users. Incentives towards one-way interoperability were found to be based on differences in their profit focus. One-way interoperability is found to increase the asymmetry between the profit focuses of platform owners and given the large difference in autonomous means, provides a larger amount of profit for both platform users. Overall, the authors concluded that to increase the degree of formation of the digital economy, it is necessary to create conditions for the formation of proper infrastructure, effective management, and comprehensive organised use of digital technologies. Their study also notes that, along with the expansion of the scientific and technical basis for the development of information and computer technologies and the scope of their application, the nature and scale of potential threats to information security in the areas of the digital economy are changing. Accordingly, there is an urgent need to constantly update, revise and create new measures, methods, and tools to calculate the volume of these losses. Increasing the degree of trust and security in the digital economy is the main means for approving appropriate management decisions regarding the functioning of information systems and areas for protecting the resource base. As a result of the study, the authors identified the main areas of information security in the digitalisation of the economy and established methods to ensure its security and increase the level of trust in it (). The researchers also identified the peculiarities of the impact of exclusive content and users of digital technologies only, which affect the promotion of their compatibility with the economic environment. In other words, the authors only consider the priority areas of ensuring the security of the digital economy and the peculiarities of compatibility of two competing platform owners, respectively, the issue of the development of the digital economy of the country under study was not raised in this paper and the peculiarities of the relationship between the economy and digitalisation were not considered.

Abdelli and Shahbaz (2023) conducted a study on the main trends in the digital economy, energy, and sustainable development. The researchers determined that the field of information and communication technologies is one of the main areas of the non-oil sector, and therefore its development is one of the most important areas of the state's economic policy, energy, and sustainable development. The main principle of the policy of innovative development is to build a favourable business environment for the efficient and stable functioning of energy enterprises. The authors also determined that during the study period, the development of the digital economy should be based on the fourth industrial revolution, which will become the main revolutionary transformation in the global economic system and strengthen the trends of sustainable development. The study found that digital technologies are the main means for business and energy, which allow making changes and managing a company in real-time without the involvement of human resources and are based on full automation of corporate business processes. The impact of the COVID-19 pandemic on business was a vivid example of the usefulness of the digital economy, as companies that did not have a high level of digitalisation were forced to shut down their operations. At the same time, firms that were able to quickly implement digital technologies and were customer-focused remained in the market and improved their information technology base. The publication also emphasises the importance of technology for achieving the Sustainable Development Goals. The researchers considered only the specifics of the digital economy trends along with the energy sector and their role in sustainable development, and the issue of further prospects for the development of the digital economy itself was not considered. Compared to the study, this study does not identify the strengths and weaknesses of the country's digital economy.

Dabbous *et al.* (2023) examined the peculiarities of the impact of digitalisation on business activities and sustainable competitiveness. The authors examined the extent to which the overall level of digitalisation of the economy affects its sustainable competitiveness. The results also highlight the aspects of digitalisation that are quite important for ensuring sustainable competitiveness. The study highlights the need to ensure extensive, fast, and reliable connectivity within a country; encourage use for transactions, communication, and content sharing; and promote greater digital integration as the three factors that have the greatest impact on sustainable competitiveness. Scientists determined that, in general, the development of the digital economy allows for a significant expansion of entrepreneurial activity at various levels (Abukhader 2008; Chen 2020; Cong *et al.* 2021; Hosan *et al.* 2022). In addition, the digitisation of the economy provides enormous opportunities to improve its overall efficiency and creates conditions for sustainable growth, although it is not accompanied by a reduction in sectors, but rather by their expansion, which generally opens up new opportunities for more stable development of the country. Accordingly, such trends strengthen the country's overall competitiveness in the international arena. The authors (Pürhani *et al.* 2022) also noted that the digital economy provides opportunities for the growth of the overall level of human capital by providing opportunities to increase personal financial capabilities and reproduce their entrepreneurial ideas and projects. The results also suggest that the presence of digitalisation is important, as countries need to increase their digital readiness to promote sustainable competitiveness. Thus, entrepreneurship and digitalisation should be a major focus of government development programmes and should be prioritised for accelerated economic, social, and environmental improvement. Although the authors examined the main advantages of the digital economy in the country, the study did not address the directions of the digital economy and did not highlight the peculiarities of the interdependence of technology development and economic processes.

The literature review was based on the study by Li *et al.* (2020), which is based on a critical assessment and research agenda of the Asian digital economy. The study addresses the global digital economy, clearly pointing to the need for Asian countries to update their traditional business processes to support better growth, increase the availability of technological innovation for transformation, develop public policies that support new models of social interaction to enhance national economic growth and continue to encourage high potential for digital entrepreneurship and successful start-ups. The authors highlighted the specifics of digital identification services and the access of public institutions to relevant data and information that citizens can obtain and noted that this is a long-standing issue of serious concern in most Asian countries, as well as in developing countries. Among the different sectoral models of the digital economy, it is electronics that is developing in a way that allows people to have equal access to information and public services (Alexiou 2009; Berdar and Yevtushevska 2021; Bukht and Heeks 2017; Okumura *et al.* 2019; Saridoğan, and Kaya 2019). The authors explained that the digital economy has made it so that no place is remote or inaccessible anymore. Although the study does not directly address the main directions of the digital economy, cyber risk insurance may be identified in the future as one of the aspects of improving the functioning of this sector of the economy.

Atici (2021) examined the peculiarities of the digital and digitised economy in developing countries, focusing on Turkey. The author attempted to highlight the transformation of the economy and the role of creative disruptors in the development of digital technologies. It was also noted that Covid-19 has become a major factor and accelerated the transition to a new digital norm. In addition, central bank directives on digital currency, cryptocurrency and distributed ledger technology play a prominent role in the development of the digital economy. The author also focuses on cases of blockchain use in business. It was also established that developing countries are trying to benefit from digitalisation to bypass developed countries and take their positions in the digital competition. The researcher also noted that there are challenges that need to be addressed, such as identifying new technologies, regulatory structure, tax collection, cybersecurity, fraud, and energy consumption in digitalisation. This study considers only the main trends of the digital economy in terms of its impact on the development of the country, namely, the main directions of the digital economy, compared to the studies by Gomes *et al.* (2022), David and Wynand Grobler (2020), Habibi and Zabardast (2020), Lopes *et al.* (2021), Mayer *et al.* (2020), Abdullayev *et al.* (2023), Leontyev and Ketners (2023), Korsunska *et al.* (2022), have not been established in this case.

Thus, the studies on the digital economy have shown that there are only indirect studies, and the main directions for further development of the digital economy have not been identified.

Conclusions and Further Research

Thus, the study of the digital economy of Azerbaijan established that this area, as in all countries of the world, is characterised by rapid development, but at the same time has several problems. The development of technological support for the functioning of Azerbaijan's economic sectors may become one of the main factors in improving the country's economic situation. Today, Azerbaijan is a fairly developed industrial and agricultural country. The study also showed that the country has positive dynamics in GDP accumulation, trade balance, reserves, and external debt. At the same time, inflation and unemployment are rising and foreign investment is outflowing. In other words, the country's economic environment is unstable. At the same time, the country's digital economy is developing, as the authorities are focusing on centralising electronic services and digitising public services. There are also plans to increase the population's internet connectivity.

Although Azerbaijan has sufficient resources for the development of its digital economy, it uses them inefficiently, which is accompanied by a slowdown in the pace of digitalisation in the country. This is also facilitated by a decrease in funding for information and computer technology and, accordingly, a decrease in the production of high-tech goods. On the other hand, information provision and accessibility of information and the development of the operating environment for technological financial services are at the highest level in Azerbaijan. Also, a slight increase in the number of researchers in the country indicates that the country's digital economy is still developing. That is why the main directions for the development of the digital economy in Azerbaijan should be measures to strengthen the targeted use of information and computer technologies, the application of measures to rapidly increase the number of Internet users, and management actions to improve the digital skills of the entire population. It is also recommended to expand education in the field of information and computer technologies with the involvement of foreign specialists and to introduce compulsory courses to improve the skills of digital specialists.

The conducted econometric study has made it possible to establish that changes in Azerbaijan's high-tech exports are moderately influenced by the level of gross domestic product, inflation, and unemployment, while imports of goods and services and foreign direct investment have a minor impact. It was found that with a one-unit increase in the level of GDP, there will be a decrease in high-tech exports. On the contrary, an increase in the overall unemployment rate by one unit leads to an increase in high-tech exports. If authors consider the peculiarities of the relationship between secure Internet servers in Azerbaijan and the country's economic development, it is important to note that the average impact on the development of digital technologies is exerted by the indicators of imports of goods and services, the overall unemployment rate, and the net inflow of foreign direct investment. It was also found that with the increase in imports of goods and services and the level of net foreign direct investment, there is an increase in secure Internet servers, which is accompanied by an improvement in the level of Azerbaijan's digital economy. However, the increase in unemployment harms the object of study.

Further research on the main directions of development of Azerbaijan's digital economy should be based on the development of measures and methods to improve the level of education in the field of information and computer technologies and digital literacy of the country's population.

Credit Authorship Contribution Statement

Kamran Abdullayev: Writing – review and editing, Methodology, Supervision, Project administration;
Sevda Badalova: Writing – original draft, Investigation;
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Mahir Zeynalov: Writing – review and editing, Formal analysis;
Aynur Babayeva: Writing – original draft, Data curation, Visualization.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Declaration of Use of Generative AI and AI-assisted Technologies

The authors declare that they have not used generative AI and AI-assisted technologies during the preparation of this work.

References

[1] Abdelli, El Amine Mohammeed, and Muhammad Shahbaz (2023). *Digital Economy, Energy and Sustainability: Opportunities and Challenges*. Cham: Springer.

[2] Abdullayev, Kamran, Mahir Abbaszade, Aygun Aliyeva, and Konul İbrahimova (2022). Regulation of the Digital Economy in Modern Conditions of Competitiveness. *WSEAS Transactions on Business and Economics* 19: 1289-95. DOI: https://doi.org/10.37394/23207.2022.19.115

[3] Abdullayev, Kamran, Rauf Allahyarov, Gunay Teymurova, Mahir Zeynalov, and Gulnara Fataliyeva (2023). The Role of Digital Transformation in Building a Competitive Economy: A Case Study of Azerbaijan. *Economic Affairs* 68(Special Issue): 705-10. DOI: http://doi.org/10.46852/0424-2513.2s.2023.11

[4] Abdullayev, Kamran (2022). Factors Influencing the Ranking of Maritime Transport in the Global Competitiveness Report: The Developing Country Case. *Corporate and Business Strategy Review* 3(2): 43-54. DOI: https://doi.org/10.22495/cbsrv3i2art4

[5] Abukhader, Sajed M. (2008). Eco-Efficiency in the Era of Electronic Commerce – Should 'Eco-Effectiveness' Approach Be Adopted? *Journal of Cleaner Production* 16(7): 801-08. DOI:https://doi.org/10.1016/j.jclepro.2007.04.001

[6] Adner, Ron, Jianqing Chen, and Feng Zhu (2019). Frenemies in Platform Markets: Heterogeneous Profit Foci as Drivers of Compatibility Decisions. *Management Science* 66(6): 2432-51. DOI:https://doi.org/10.1287/mnsc.2019.3327

[7] Alexiou, Constantinos (2009). Government Spending and Economic Growth: Econometric Evidence from South-Eastern Europe (SEE). *Journal of Economic and Social Research*, 11(1): 1-16.

[8] Atici, Gonca (2021). Digital and Digitalized Economy in EMs: A Focus on Turkey. In: Emerging Markets. London: IntechOpen. DOI: https://doi.org/10.5772/intechopen.94494

[9] Babayev, Emin A. (2018). Electronic Government as an Element of the Digital Economy: Experience of the Republic of Azerbaijan. *Administrative Consulting,* 8: 137-47. Available at: https://www.acjournal.ru/jour/article/viewFile/910/901

[10] Berdar, Marharyta M., and Olha Yevtushevska (2021). Ways of State Economic Policy Implementation. *Investments: Practice and Experience*, 2: 70-75. DOI: https://doi.org/10.32702/2306-6814.2021.2.70

[11] Blikhar, Vyacheslav, Mariia Vinichuk, and Angela Ryzhkova (2022). Institutional Foundations of De-Shadowing the Economy of Ukraine in the National Financial Security System. *Social and Legal Studios* 5(2): 68-76. DOI: https://doi.org/10.32518/2617-4162-2022-5-2-68-76

[12] Bukht, Rumana, and Richard Heeks (2017). Defining, Conceptualizing and Measuring the Digital Economy. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3431732

[13] Chen, Yongmin (2020). Improving Market Performance in the Digital Economy. *China Economic Review*, 62, 101482. DOI: https://doi.org/10.1016/j.chieco.2020.101482

[14] Cong, Lin William, Danxia Xie, and Longtian Zhang (2021). Knowledge Accumulation, Privacy, and Growth in a Data Economy. *Management Science,* 67(10): 6480-92. DOI: https://doi.org/10.1287/mnsc.2021.3986

[15] Dabbous, Amal, Karine Aoun Barakat, and Sascha Kraus (2023). The Impact of Digitalization on Entrepreneurial Activity and Sustainable Competitiveness: A Panel Data Analysis. *Technology in Society,* 73: 102224. DOI: https://doi.org/10.1016/j.techsoc.2023.102224

[16] David, Oladipo Olalekan, and Wynand Grobler (2020). Information and Communication Technology Penetration Level as an Impetus for Economic Growth and Development in Africa. *Economic Research,* 33(1): 1394-418. DOI: https://doi.org/10.1080/1331677X.2020.1745661

[17] Ghrachorloo, Najaf, Javid Ghahremani Nahr, and Hamed Nozari (2021). SWOT Analysis in the General Organization of Labor, Cooperation and Social Welfare of East Azerbaijan Province with a Scientific and Technological Approach. *International Journal of Innovation in Engineering,* 1(4): 47-61. DOI:https://doi.org/10.59615/ijie.1.4.47

[18] Gomes, Sofia, João M. Lopes, and Luís Ferreira (2022). The Impact of the Digital Economy on Economic Growth: The Case of OECD Countries RAM. *Revista de Administração Mackenzie,* 23(6): eRAMD220029. DOI: https://doi.org/10.1590/1678-6971/eRAMD220029.en

[19] Gultakin, Gabil M. (2021). The Role of Digital Economy in the Development of Financial System. In: *70th International Scientific Conference on Economic and Social Development* (pp. 140-5). Baku: Azerbaijan State University of Economics.

[20] Habibi, Fateh, and Mohamad Amjad Zabardast (2020). Digitalization, Education, and Economic Growth: A Comparative Analysis of Middle East and OECD Countries. *Technology in Society,* 63: 101370. DOI:https://doi.org/10.1016/j.techsoc.2020.101370

[21] Horoshko, Olena-Ivanna, Andrii Horoshko, Stanislav Bilyuga, and Viktoriia Horoshko (2021). Theoretical and Methodological Bases of the Study of the Impact of Digital Economy on World Policy in 21 Century. *Technological Forecasting and Social Change,* 166: 120640.

[22] Hosan, Shahadat *et al*. (2022). Dynamic Links among the Demographic Dividend, Digitalization, Energy Intensity and Sustainable Economic Growth: Empirical Evidence from Emerging Economies. *Journal of Cleaner Production,* 330: 129858. DOI: https://doi.org/10.1016/j.jclepro.2021.129858

[23] Isayeva, Xırdaxanım İlyas qızı (2023). Development of Financial Accounting Methods for the Digital Economy in Azerbaijan. *Scientific Bulletin (Social and Technical Sciences Series),* 1: 216-22. Available at: https://journal.wcu.edu.az/uploads/files/2023-1-ictimai-35Isayeva%20X%20Taxire%20x.pdf

[24] Khankishiyev, Khankishi (2021). Transition to a Digital Economy and Ensuring Sustainable Competitiveness in Global Markets. In: *70th International Scientific Conference on Economic and Social Development* (pp. 283-93). Baku: Azerbaijan State University of Economics.

[25] Khankishiyeva, Jamala (2021). Theoretical Foundations of the Development of the Digital Economy in Modern Conditions. In: *70th International Scientific Conference on Economic and Social Development* (pp. 277-82). Baku: Azerbaijan State University of Economics.

[26] Khotamov, Ibodullo S. (2019). World Tendencies and Development of the Digital Economy in Uzbekistan. *Archive of Scientific Research* 1(1). Available at: https://ejournal.tsue.uz/index.php/archive/article/view/341

[27] Korsunska, Maryna, Veronika Butorina, Kamran Abdullayev, Yuriy Kravtsov, and Lesia Ustymenko (2022). The Role of Creative Potential in the Project Management Process for the Implementation of the Company's Strategies. *Review of Economics and Finance,* 20: 255-62. DOI: https://doi.org/10.55365/1923.x2022.20.30

[28] Kuklina, Evgenia A., and Emin A. Babayev (2019). Digital Economy in the Projection of the Economic Development Model: Realities of the Republic of Azerbaijan. *Administrative Consulting,* 12: 90-103. DOI:https://doi.org/10.22394/1726-1139-2019-12-90-103

[29] Kurhan, Natalia, Olha Fartushniak, and Lidiia Bezkorovaina (2023). Improvement of Organization and Automation of Commercial Enterprise Electronic Money Accounting in Conditions of Economy Digitalization. *Economics of Development,* 22(3): 8-20. DOI: https://doi.org/10.57111/econ/3.2023.08

[30] Leontyev, Alexey, Karlis Ketners (2023). The Improvement of Decision-Making in the Latvian Tax System: Cases of Irreducible Incompatibility Taking into Account Reliability, Equity and Efficiency Criteria. *Intellectual Economics,* 17(2): 322-43.

[31] Li, Kai, Dan J. Kim, Karl R. Lang, Robert J. Kauffman, and Maurizio Naldi (2020). How Should We Understand the Digital Economy in Asia? Critical Assessment and Research Agenda. *Electronic Commerce Research and Applications,* 44: 101004. DOI: https://doi.org/10.1016/j.elerap.2020.101004

[32] Lopes, João M., Paulo Silveira, Luís Farinha, Márcio Oliveira, and José Oliveira (2021). Analyzing the Root of Regional Innovation Performance in the European Territory. *International Journal of Innovation Science,* 13(5): 565-82. DOI: https://doi.org/10.1108/IJIS-11-2020-0267

[33] Mayer, Walter, Gary Madden, and Chen Wu (2020). Broadband and Economic Growth: A Reassessment. *Information Technology for Development,* 26(1): 128-45. DOI:https://doi.org/10.1080/02681102.2019.1586631

[34] Musayeva, Nezaket, Nigar Atakishiyeva, Manzar Mammadova, and Ulkar Mammadova (2022). Innovations in the Azerbaijan Auditing Activity. *Review of Economics and Finance,* 20: 1286-94.

[35] Okumura, Yukihiko, Satoshi Suyama, Jun Mashino, and Kazushi Muraoka (2019). Recent Activities of 5G Experimental Trials on Massive MIMO Technologies and 5G System Trials Toward New Services Creation. *IEICE Transactions on Communications,* E102.B(8): 1352-62. DOI:https://doi.org/10.1587/transcom.2018TTI0002

[36] Piddubna, Liudmyla, and Marianna Gorobynskaya (2023). Digital Transformation as a Factor of Changes in the Organizational Behaviour of International Companies. *Development management,* 22(4): 25-36. DOI:https://doi.org/10.57111/devt/4.2023.25

[37] Pürhani, Safar, Shafa Guliyeva, Vusala Teymurova, Narmin Guliyeva, and Shahla Gahramanova (2022). Human Capital as a Driver of Sustainable Development in Azerbaijan. *Journal of Eastern European and Central Asian Research,* 9(6): 927-37.

[38] Samedova, Elnara *et al*. (2022). Exchange Rate Regime in a Crisis: The Case of Azerbaijan. *Journal of Eastern European and Central Asian Research,* 9(4): 679-90.

[39] Saridoğan, Hasan Önder, and Muhammed Veysel Kaya (2019). Knowledge Economy and Economic Performance: Comparison of Turkey and the European Union. *Journal of Mehmet Akif Ersoy University Economics and Administrative Sciences Faculty,* 6(3): 916-35. DOI: https://doi.org/10.30798/makuiibf.569498

[40] Stender, Svitlana, Inna Tsvihun, Inna Balla, Valentyna Borkovska, and Yuliia Haibura (2024). Innovative Approaches to Improving the Agricultural Sector in the Era of Digitalization of the Economy. *Scientific Horizons,* 27(3): 154-63. DOI: https://doi.org/10.48077/scihor3.2024.154

[41] Tkachenko, Alla, Nataliia Levchenko, Tatyana Pozhuieva, and Nataliia Chupryna (2020). Innovative Infrastructure and Economic Development in the Agrobusiness Investment. *International Journal of Advanced Science and Technology,* 29(8 Special Issue): 2559-65.

[42] Tukhtabaev, J. S. *et al*. (2023). Econometric Assessment of the Dynamics of Development of the Export Potential of Small Businesses and Private Entrepreneurship Subjects in the Conditions of the Digital Economy. *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)* 13772 LNCS: 440–51.

[43] Varnaliy, Zakhariy, Svitlana Onishchenko, Alexandra Masliy (2016). Threat Prevention Mechanisms of Ukraine's Economic Security. *Economic Annals-XXI* 159(5-6): 20-24.

[44] Yudina, Svitlana, Olena Lysa, Hanna Razumova, Olena Oskoma, and Vasyl Halahanov (2024). Management and Administration of Financial Resources Using Digital Technologies. *Scientific Bulletin of Mukachevo State University. Series 'Economics',* 11(1): 92-102. DOI: https://doi.org/10.52566/msu-econ1.2024.92

[45] Ziberi, Besime, and Merita Zulfiu Alili (2021). Economic Growth in the Western Balkans: A Panel Analysis. *South East European Journal of Economics and Business,* 16(2): 68-81.

[46] Automated Teller Machines (ATMs) (per 100,000 Adults). (2021). Available at: https://data.worldbank.org/indicator/FB.ATM.TOTL.P5

[47] Azerbaijan (2024). Available at: https://eufordigital.eu/countries/azerbaijan/

[48] Business Extent of Disclosure Index (0=Less Disclosure to 10=More Disclosure). (2019). Available at: https://data.worldbank.org/indicator/IC.BUS.DISC.XQ?view=chart

[49] Commercial Bank Branches (per 100,000 Adults). (2021). Available at: https://data.worldbank.org/indicator/FB.CBK.BRCH.P5

[50] Depth of Credit Information Index (0=Low to 8=High). (2019). Available at: https://data.worldbank.org/indicator/IC.CRD.INFO.XQ?view=chart

[51] Exports of Goods and Services (% of GDP). (2022). Available at: https://data.worldbank.org/indicator/NE.EXP.GNFS.ZS

[52] Fixed Broadband Subscriptions (per 100 People). (2022). Available at: https://data.worldbank.org/indicator/IT.NET.BBND.P2?view=chart

[53] Foreign Direct Investment, Net Inflows (BoP, Current US$). (2022). Available at: https://data.worldbank.org/indicator/BX.KLT.DINV.CD.WD?view=chart

[54] GDP (Current US$). (2023). Available at: https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?view=chart

[55] GDP per Capita (Current US$). (2023). Available at: https://data.worldbank.org/indicator/NY.GDP.PCAP.CD

[56] Global Innovation Index: Azerbaijan. (2022). Available at: https://www.wipo.int/edocs/pubdocs/en/wipo_pub_2000_2022/az.pdf

[57] High-technology Exports (% of Manufactured Exports). (2022). Available at: https://data.worldbank.org/indicator/TX.VAL.TECH.MF.ZS?view=chart

[58] ICT Goods Exports (% of Total Goods Exports). (20210. Available at: https://data.worldbank.org/indicator/TX.VAL.ICTG.ZS.UN?view=chart

[59] Imports of Goods and Services (% of GDP). (2022). Available at: https://data.worldbank.org/indicator/NE.IMP.GNFS.ZS?view=chart

[60] Inflation, Consumer Prices (Annual %). (2023). Available at: https://data.worldbank.org/indicator/FP.CPI.TOTL.ZG?view=chart

[61] Inflation, GDP Deflator (Annual %). (2022). Available at: https://data.worldbank.org/indicator/NY.GDP.DEFL.KD.ZG?view=chart

[62] Net Official Development Assistance Received (Current US$). (2021). Available at: https://data.worldbank.org/indicator/DT.ODA.ODAT.CD?view=chart

[63] OECD. (2022). *Promoting Enterprise Digitalisation in Azerbaijan*. Paris: OECD Publishing.

[64] Researchers in RandD (per Million People). (2021). Available at: https://data.worldbank.org/indicator/SP.POP.SCIE.RD.P6

[65] Secure Internet Servers (per 1 million People). (2020). Available at: https://data.worldbank.org/indicator/IT.NET.SECR.P6?view=chart

[66] Total Reserves (Includes Gold, Current US$). 2022. Available at: https://data.worldbank.org/indicator/FI.RES.TOTL.CD?view=chart

[67] Unemployment, Total (% of Total Labor Force) (Modeled ILO Estimate). (2023). Available at: https://data.worldbank.org/indicator/SL.UEM.TOTL.ZS?view=chart

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Modelling the Impact of the Digital Economy on the Development of the Logistics Industry. Study Case of Henan Province

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Abstract: The purpose of the study is to model and analyse the impact of the digital economy on the development of the logistics industry in Henan province. To achieve this goal, the following methods were used: historical analysis to determine the stages of digitalisation of logistics, statistical analysis to assess the dynamics of gross domestic product (GDP) by economic sectors, system analysis and analysis of strengths, weaknesses, opportunities and threats to investigate the impact of individual elements of the digital economy on the logistics sector, and regression analysis to model the relationships between digitalisation and economic indicators of the logistics industry in Henan province. The main results of the study were: identification and analysis of key stages in the development of the logistics industry in China; determination of structural changes in the GDP of Henan province and their correlation with trends in the digital economy; development of a regression model demonstrating the dependence of economic growth in the tertiary sector of the economy, including the logistics industry, on the advancement of digital technologies. The study confirmed the hypothesis of a significant impact of the digital economy on the logistics sector of Henan province, which is reflected in quantitative estimates and confirmed by statistical tests.

Keywords: regression analysis; economic driver; tertiary sector; gross domestic product; correlation.

JEL Classification: C83; L14; L86; C88; M15; R11.

Introduction

In today's world, where the boundaries between physical and digital spaces are blurring, the digital economy is becoming a key driver of global economic processes, influencing all spheres, including logistics. The development of digital technologies is redefining approaches to supply chain management, optimising traffic flows and managing customer expectations (Horoshkova *et al.* 2023; Lipych *et al.* 2024).

The relevance of the study is conditioned by the fact that understanding the mechanisms of the digital economy's impact on the logistics industry of Henan province is a prerequisite for effective planning and informed management decisions at the regional level. The growth of the digital economy in China is changing the economic landscape, and the scale of the impact determines the need to examine its real impact on logistics processes. Thus, C. Wang *et al.* (2023), based on panel data, investigated the relationship between the digital economy and logistics efficiency in the context of China's modern industrial system. The innovative system of evaluation indices used by the researchers confirmed the positive impact of the digital economy on improving logistics efficiency, and also allowed to substantiate its role as a catalyst for progress in the modern industrial sector. The study also notes the crucial role of urbanisation and a favourable general economic environment in improving logistics efficiency, which highlights the diversity of factors contributing to improving the situation in this area (Buil *et al.* 2015).

W. Zhang *et al.* (2022) examine the development of integration between the digital economy and the logistics industry in China in the period from 2007 to 2017 using input-output models and social network analysis. The main findings indicate significant growth rates of integration, especially in more developed regions; the authors emphasise the differences between the northern and southern regions of China. W. Gan *et al.* (2022) substantiate the need for China's logistics industry to achieve 'green' development through digital transformation, considering the interaction between the logistics industry, digitalisation and environmental development in four provinces: Fujian, Jiangxi, Guizhou, and Henan.

The impact of digitalisation on logistics efficiency in the context of Industry 4.0 is analysed by A. Moldabekova *et al.* (2021). The study examines the challenges and opportunities associated with the Fourth Industrial Revolution, in particular, in the field of supply chain management, transport, and environmental sustainability. The researchers (Kondratenko *et al.* 2014; Kredina *et al.* 2022) emphasise that the introduction of innovative digital technologies characteristic of Industry 4.0 not only increases the responsiveness to fluctuations in demand and capacity constraints, but also significantly reduces the lead time, improves inventory control.

M. Brzozowska *et al.* (2022) investigate the impact of the digital revolution on modern societies, emphasising its role in the establishment of Society 5.0 and Economy 5.0, where the boundaries between digital and biological are increasingly blurred. The digital revolution, according to the researchers, has significantly changed the functioning of companies and economies due to the development of big data, cloud computing, mobile communications, automation and robotics. The paper notes that technological changes have led to the transformation and integration of vertical and horizontal value chains, as a result of which consumers play a crucial role in the digital transformation of enterprises. The researchers also highlight the growing demand for employees who are able to navigate the digital landscape, especially in the logistics industry, which by its nature is associated with innovative technical solutions and closely interacts with the digital economy.

Thus, noting the relevance of research related to identifying the interrelationships between the development of the digital economy and logistics in China and its provinces, and the role of digitalisation as a driver of economic development, the lack of studies on the problems considered in the example of Henan province with a developed industrial and commercial infrastructure is of interest from the standpoint science and actualises the potential of research to take advantage of the opportunities it opens up for the economic development of the province. In this context, Henan province, which occupies a strategically important position in the economic structure of China, is the region were studying the impact of digitalisation on logistics is appropriate and justified.

The purpose of the study is to analyse and model the impact of the digital economy on the development of the logistics industry in Henan province. The tasks to be solved include:

- analysis of structural changes in the gross domestic product (GDP) of Henan province with an emphasis on the tertiary sector, including the logistics industry;
- comprehensive analysis of the impact of individual elements of the digital economy on the logistics industry.

1. Materials and Methods

A set of methods was used in the research, which helped to achieve the set goal. Including:

- historical analysis – to study past and current data and identify key trends and changes in the logistics industry;
- qualitative content analysis – to investigate changes in the logistics industry under the influence of digitalisation;
- system and SWOT analysis – in the process of researching the impact of key elements of the digital economy on the logistics sector;

- statistical analysis – in the process of using descriptive statistics methods to analyse changes in the structure of GDP;
- comparative analysis – when comparing the shares of different sectors of the provincial economy and determining sectoral shifts;
- time series analysis is used to assess the dynamics of GDP and the volume of the digital economy, to identify trends in economic development.

In the process of building a mathematical model of the impact of digitalisation on the logistics industry of Henan province:

- regression analysis is used to assess the relationship between the variables under study. The estimated regression equation (1) will look like:

$$Y=\beta\_0+\beta\_1\ X+\varepsilon, \tag{1}$$

where: Y – dependent variable; X – independent variable; $\beta 0$ – constant term; it represents the value of the dependent variable (Y) when the independent variable is zero. Serves as the base value that the model uses to account for factors not included in the equation; $\beta 1$ – coefficient for X, reflecting the influence of the variable on the dependent variable; ε – random error;

- correlation analysis is used to determine the degree of connection between the development of the digital economy and the indicators of the logistics industry. The interpretation of the correlation coefficient depends on the field of study and the context in which it is applied. In the course of the study, the strength of the correlation relationship between the indicators and the interpretation of the correlation coefficient was estimated based on the gradation (Table 1).

Table 1. Data for interpreting the value of the correlation coefficient

Size of the correlation coefficient (r)	Interpretation of the correlation coefficient value
$0.9\le\|r\|\le 1$	Very high positive (negative) correlation
$0.7\le\|r\|\le 0.89999$	High positive (negative) correlation
$0.5\le\|r\|\le 0.69999$	Moderate positive (negative) correlation
$0.3\le\|r\|\le 0.49999$	Low positive (negative) correlation
$0\le\|r\|\le 0.29999$	Insignificant correlation

Source: compiled by the authors based on M.M. Mukaka (2012).

- the least squares method (LSM) is used in the process of constructing a regression model estimating the impact of the digital economy on the GDP of the tertiary sector; to determine the coefficients of the regression equation in order to minimise the sum of the squares of the differences between the observed and predicted values of the dependent variable;
- assessment of statistical significance of coefficients – in the process of conducting t-tests to check hypotheses about the significance of regression coefficients and estimation of p-values to determine whether the coefficient estimates are statistically significant;
- analysis of the adequacy and reliability of the regression model – in the process of performing checks for the presence of autocorrelation, heteroscedasticity, and multicollinearity, and the overall adequacy of the model.
- MS Excel software suite was used to build the mathematical model. Thus, the following were calculated: linear correlation coefficient RYX, Student's t-test (tnab, tcrit, $t\beta 0$, $t\beta 1$), absolute approximation error A, Fisher's F-criterion, coefficient of determination R2, coefficient of autocorrelation r1, Spearman rank correlation coefficient, RS-criterion.

The methods used allow comprehensively approaching the analysis of the problem, providing a comprehensive study of the interaction between the digital economy and the development of the logistics industry, which is key to achieving the goals of the study.

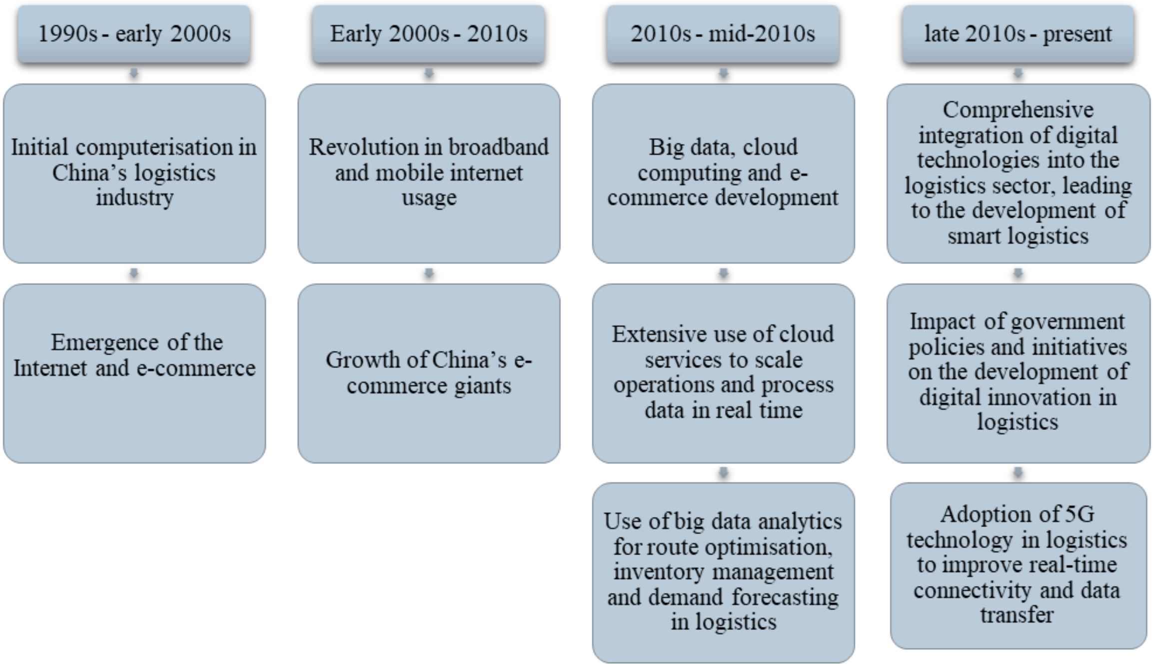
The study used materials and data characterising the state of the digital economy and the logistics industry in China, including Henan province: Ministry of Commerce of the People's Republic of China (2023); National Bureau of Statistics of China (2023); Hunan Government Work Report 2022.

2. Results

2.1. Changes in China's Logistics Industry Under the Influence of Digitalisation: From Theory to Practice

Examining the data to identify key trends and changes in China's logistics industry has highlighted key stages of logistics development depending on the understanding of the current state and prospects of digitalisation in logistics. Thus, according to research on the development of the digital economy (Tao et al 2022; Zhang and Chen 2019; Wu and Yu 2022) and the impact of digitalisation on logistics (Wang *et al.* 2023; Zhang et al 2022), the main stages of changes taking place in China's logistics industry under the influence of the digital economy were highlighted (Figure 1).

Figure 1. Stages of changes in China's logistics industry under the influence of the digital economy



Source: compiled by the authors based on T. Zhao *et al.* (2022).

The periodization shown in Figure 1 highlights that the digital economy in China not only has a direct impact on logistics operations but also constantly shapes the strategic direction of their development. Understanding these stages is important for assessing the current state of the logistics industry and its future potential as part of further digital transformation. Certain elements of the digital economy have a significant impact on the logistics industry, however, a balanced approach is needed in the study of digitalisation, since its results, in addition to opportunities for growth, can be potential carriers of risks and challenges. Table 2 systematises the possible consequences of the impact of elements of the digital economy on logistics.

The considered consequences highlight the complex relationship between the digital economy and the logistics industry, demonstrating both the opportunities and challenges that arise as a result of digital transformation. The applied integrated approach allows us to conclude that limiting consideration of the consequences of the development of the digital economy to exclusively positive manifestations limit the possibility of using the results obtained due to the lack of preventive measures aimed at minimising possible negative impacts (Trushaj 2023; Aubakirova 2024). Thus, Table 2 provides an analysis of how various components of the digital economy affect the logistics industry, which confirms the complexity and multidimensional manifestations of this influence, emphasising both innovative opportunities and challenges faced by the industry in the era of digital transformation.

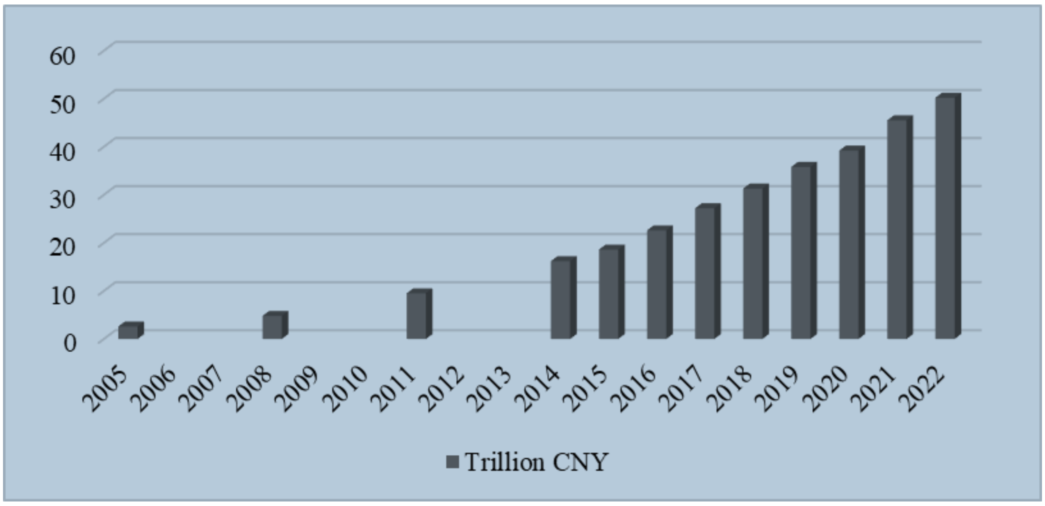
Table 2. Impact of individual elements of the digital economy on the logistics industry

Components of digital economy	Impact on logistics industry	
	Positive effects	Negative effects
Digital infrastructure	The improvement of the digital infrastructure contributes to the improvement of interaction between various participants in logistics activities, which leads to increased efficiency of coordination and data exchange. Modern networks allow cargo tracking in real time, increasing transparency and reliability of logistics operations.	Reliance on digital infrastructure can make logistics vulnerable to technological disruptions and disruptions.
E-commerce	E-commerce has expanded the scope of activities of logistics companies, increasing the volume of transportation and delivery. The growth of e-commerce has led to the emergence of innovative logistics solutions in the field of delivery.	The demand for faster and more efficient delivery puts pressure on logistics networks, which can lead to overloading and inefficiency.
Digital services and content	Digital services such as cloud-based logistics management systems increase operational efficiency through route optimisation and inventory management.	The integration of various digital services can complicate logistics management, requiring complex coordination and technical know-how.
Mobile and Internet of Thing (IoT) technologies	IoT devices allow better monitoring of the condition of the cargo and the operation of the vehicle, improving the quality of control and maintenance. Mobile technologies allow for better customer interaction and real-time shipment information.	The increasing use of IoT devices raises concerns about data security and privacy in logistics operations.
Big data and analytics	Big data analytics helps optimise routes, predict maintenance needs, and manage inventory more efficiently. Predictive analytics helps to better predict demand, reduce losses, and improve resource allocation.	The need to manage and analyse large amounts of data requires complex systems and qualified personnel.
Cybersecurity	Robust cybersecurity measures are necessary to protect logistics data and digital infrastructure from cyber-attacks.	Implementing and maintaining robust cybersecurity measures can be expensive and difficult.
Digital payments	Digital payments help accelerate and improve the efficiency of financial transactions in the logistics industry.	Digital payment systems can be susceptible to fraud and cyber-attacks, which requires reliable security measures.
Digital talents and education	A skilled workforce proficient in digital technologies can contribute to innovation and improve logistics efficiency.	The rapid development of technology can lead to a shortage of qualified personnel with the necessary digital skills.
Regulatory framework and policy	An effective regulatory framework ensures standardisation and compliance of digital practices in logistics.	Navigating complex and evolving digital regulatory documents can be challenging for logistics companies.
Artificial intelligence and automation	Artificial intelligence and automation can significantly improve efficiency, reduce errors and reduce logistics costs. AI algorithms can predict potential problems and proactively optimise logistics processes.	Automation can lead to the displacement of traditional jobs in the logistics sector.

Source: compiled by the authors based on A. Moldabekova *et al.* (2021), M. Brzozowska *et al.* (2022), W. Zhang *et al.* (2022), Y. Kayikci (2018), N.N. Nordin *et al.* (2023), D.M. Herold *et al.* (2021).

Having assessed the qualitative consequences of the impact of the digital economy components, the study considers the dynamics of the Chinese digital economy market in value terms (Figure 2).

Figure 2. Volume of China's digital economy in the period from 2005 to 2022



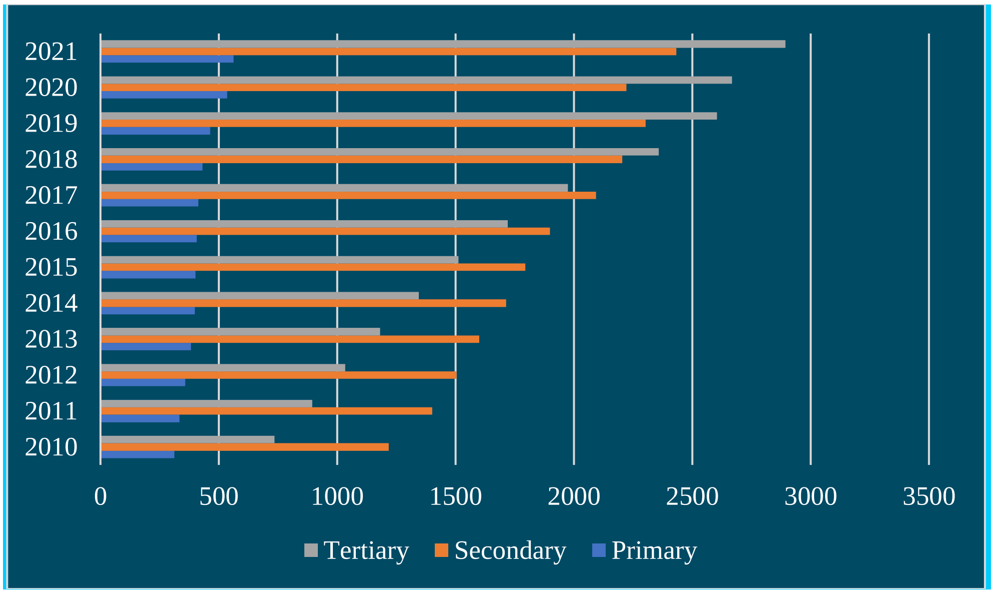
Source: compiled by the authors based on the data from Statista (2024b).

Based on the data presented in Figure 2, the growth of the digital economy in China in the period from 2005 to 2022 amounted to CNY 47.6 trillion. The observed steady upward trend indicates an increase in the impact of digitalisation on all sectors of the economy, including the logistics industry. This increase in the size of the digital economy market can be attributed to a number of factors, including increased Internet access, increased innovation, government incentives and investments in technological infrastructure, which affect efficiency improvements, cost reductions and improved logistics process management (Novanda and Medyawati 2023; Piddubna and Gorobynskaya 2023). In logistics, this manifests itself in improved integration of supply chains, optimisation of routing and inventory management, and the emergence of opportunities for more accurate forecasting and tracking of goods in real-time. These trends highlight the strategic importance of the digital economy for the development and modernisation of the logistics industry in China.

2.2. Transformation of the Structure of the GDP of Henan Province

The analysis of Henan province's GDP by economic sectors and changes in their structure is important for understanding the economic development of the region and its reorientation from traditional industries to modern services and industries. The growth of the share of the tertiary sector is particularly significant (Figure 3), which demonstrates stable growth and is a key engine of the region's economy in the analysed period.

Figure 3. The volume of the GDP of Henan province by economic sector



Source: compiled by the authors based on the data from Statista (2024a), Hunan Government Work Report 2022 (2022).

The presented data show that in the analysed period, despite the increase in absolute values of indicators for all sectors of Henan province, the structure of GDP has changed. Thus, the share of the primary sector decreased from 13.80% in 2010 to 9.54% in 2021; the secondary sector – from 53.73% to 41.32%; the share of the tertiary sector increased by 16.67%. In the pre-pandemic period, the tertiary sector showed high annual growth rates (Table 3).

Table 3. The growth rate of the GDP of Henan province by economic sector

Years	Primary sector	Secondary sector	Tertiary sector
2010	6.79%	15.18%	21.67%
2011	7.12%	7.28%	15.58%
2012	6.99%	6.33%	14.19%
2013	4.21%	7.15%	13.86%
2014	0.69%	4.72%	12.45%
2015	1.2%	5.79%	13.74%
2016	1.86%	10.29%	14.81%
2017	4.15%	5.24%	19.45%
2018	7.53%	4.52%	10.43%
2019	15.49%	-3.54%	2.45%
2020	4.98%	9.5%	8.43%
2021	6.79%	15.18%	21.67%

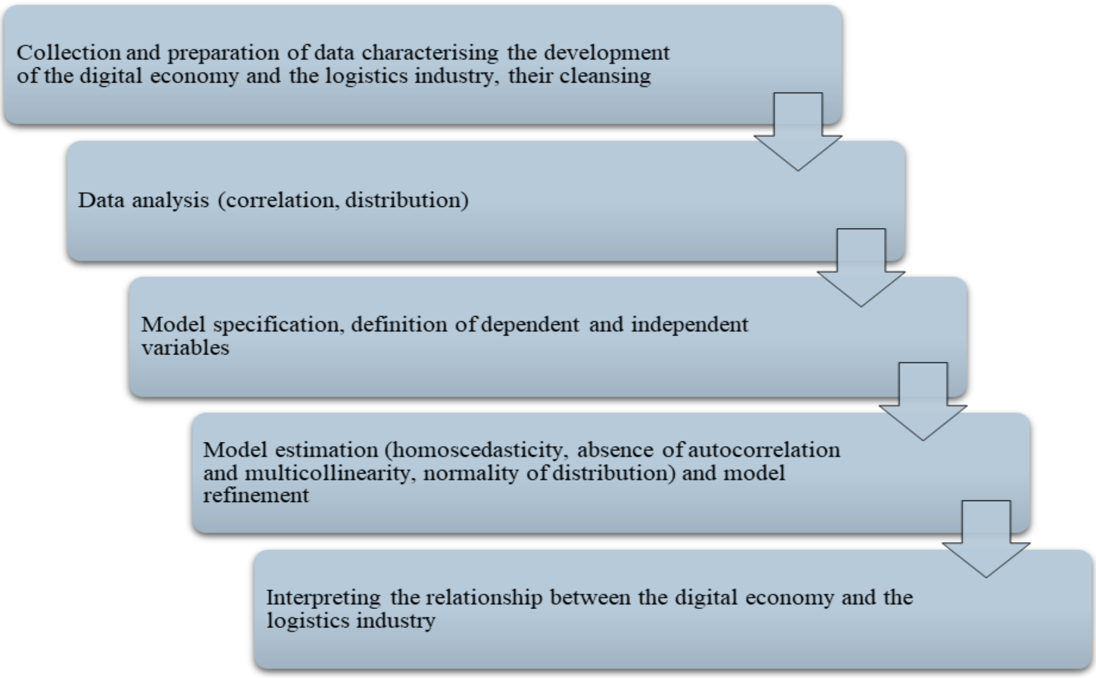
Source: compiled by the authors.

An analysis of the GDP growth rate of Henan province by economic sector revealed significant growth in the tertiary sector, which includes the logistics industry. This growth indicates the transformation of the economic structure of the region and the increasing role of service and logistics services, which is especially important in the context of the growing influence of the digital economy.

2.3. Modelling of the Impact of China's Digitalisation on the Logistics Industry of Henan Province

The algorithm for modelling the impact of the digital economy on the development of the logistics industry (using the example of Henan province) is shown in Figure 4.

Figure 4. An algorithm for modelling the impact of the digital economy on the development of the logistics industry of Henan province



Source: compiled by the authors.

The model of the impact of the digital economy on the development of the logistics industry in Henan province is generally represented by the regression equation (1), where the dependent variable will reflect the volume of GDP attributable to the tertiary sector of Henan province, which, in turn, includes knowledge-based services and activities, and is one of the indicators reflecting the state of the logistics industry. In the context of the digital economy, the tertiary sector is at the forefront of digital transformation (Mann 2023; Melnykova 2023). E-commerce, online commerce, and digital services are becoming an integral part of the logistics industry, directly affecting its operating models and revenue streams. Thus, the choice of GDP of the tertiary sector as a variable for the regression model is justified by its significance as a reflection of the level of development and the scale of the impact of digitalisation on logistics in Henan province. The hypothesis of the study: the growth or decrease in GDP of the tertiary sector of Henan province can be considered as a direct result of changes in the logistics industry under the influence of digitalisation.

An indicator reflecting the size of the digital economy market in China was analysed as an independent variable model, since it is an indicator of the penetration and integration of digital technologies into the economy, reflects the level of technology adoption, including in logistics. Increasing the volume and pace of development of the digital economy provides conditions for the growth of the number of e-commerce operations, which, in turn, requires enhanced logistical support. The choice of an indicator assessing trends in the digital economy at the national level is conditioned by the importance of taking it into account as a predictor reflecting the influence of macroeconomic forces on the formation of the logistics industry in Henan province. The least squares method was used to estimate the parameters β0 and β1, which provided the most consistent, unbiased estimates of the parameters of the regression equation: β0=492.631; β1=55.564. Thus, an empirical regression equation is obtained reflecting the impact of the digital economy on the development of the logistics industry in Henan province, which has the form:

$$Y=492.631+55.564X, \qquad (2)$$

where: Y – GDP of the tertiary sector of Henan province; X – size of the digital economy market in China.

To estimate the closeness of Y and X relationship, a linear correlation coefficient RYX=0.989 was calculated. The obtained coefficient value in the range of 0.9RYX1 indicates a high degree of coupling. The hypothesis of the significance of the correlation coefficient was tested using the Student's t-test, calculations confirmed the statistical significance of the correlation coefficient RYX, since |tscore|tcrit(tscore=16.321; tcrit=2.969). To test hypotheses about the significance of the coefficients of the linear regression equation (2), the Student's t-test were also calculated (tβ0=4.66; tβ1=16.32; tcrit=2.969). Since 4.66>2.969 and 16.32>2.969, the statistical significance of the regression coefficients β0 and β1 has been confirmed. The quality of the obtained regression equation (2) was estimated by calculating the absolute approximation error A=2.78%. The result shows that, on average, the calculated values deviate from the actual ones by 2.78%. Since the error is less than 5%, equation (2) can be used as a regression. The significance of the regression model was checked using the Fisher F-test at a significance level of α=0.05. Since the actual value of F>Ftabl, then the estimation of the regression equation is statistically reliable (F=266.37; Ftabl=5.99). The results of the calculation of the coefficient of determination (R2=0.978) gave grounds to assert that in 97.8% of cases, changes in X lead to a change in Y, confirming the high accuracy of the selection of the regression equation.

An economic interpretation of the model of the impact of the digital economy on the development of the logistics industry in Henan province allows for the conclusion that an increase in the X – volume of the digital economy market in China by 1 trillion CNY leads to an increase in the Y – GDP of the tertiary sector of Henan province by an average of 55.564 billion CNY. The model of the impact of the digital economy on the development of the logistics industry in Henan province, described by the regression equation (2), is constructed using the least squares method, the use of which is possible if a number of conditions are met: absence of autocorrelation; absence of heteroscedasticity; normality of the distribution of the residual component. Checking for the presence of autocorrelation of residues by calculating the autocorrelation coefficient (r1) confirmed that the property of independence of residues is fulfilled, and there is no autocorrelation (-1.05<r1=0.267<1.05). The evaluation of Spearman's rank correlation coefficient, and the Goldfeld-Quandt test, confirmed the absence of heteroscedasticity. To check the normality of the distribution of the residual component, the value of the RS criterion was calculated, which falls within the interval (2.7-3.7), which confirms compliance with the property of the normal distribution. Thus, the model of the impact of the digital economy on the development of the logistics industry in Henan province is adequate in terms of the normality of the distribution of the residual component.

Thus, based on the results of the study, the hypothesis that the growth or decline in GDP in the tertiary sector of Henan province is a direct result of changes in the logistics industry caused by digitalisation is confirmed.

The high values of correlation and determination coefficients in the regression equation indicate a strong relationship between the development of the digital economy and the results of the logistics industry in Henan province.

3. Discussion

The analysis of the impact of key elements of the digital economy, such as digital infrastructure, e-commerce, digital services, IoT technologies, big data, cybersecurity, digital payments, digital talents and education, artificial intelligence and automation, provided a comprehensive study of their impact on the logistics industry. C. Wang *et al.* (2023) investigated the relationship between the digital economy and the logistics efficiency of China's industrial system. The researchers adhere to a strategic approach to improving logistics efficiency, offering four main mechanisms: integrated promotion, joint development, cooperation and exchange of experience, and adaptation to local conditions. The paper notes that by using these strategies, China is striving to form the advantages of a growing digital economy, as a result of which the logistics sector will actively contribute to the country's advancement along the path of high-quality industrial development. This study provides valuable information for stakeholders, including practical recommendations and a comprehensive analysis of the synergy between the digital economy and logistics efficiency.

W. Zhang *et al.* (2022) conducted a detailed analysis of the integration between the digital economy and the logistics industry in China in the period from 2007 to 2017. The study has enriched the existing body of research on industrial convergence in the digital economy of China, the researchers have formed recommendations to promote the synergetic development of the digital economy and the logistics industry. It is necessary to update the results of the study, since data were evaluated that did not include the pandemic period. Accordingly, it is advisable to clarify the conclusions by including in the analysis data characterising the studied phenomena during the pandemic.

The symbiotic relationship between the digital economy and the logistics industry of Anhui province is explored in the study by Y. Guo *et al.* (2022). Using a system of integrated assessment indicators, the researchers proposed a model describing cooperation as a key aspect for assessing the level of coordinated growth of the digital economy and the logistics industry, the practical application of the model is illustrated by data from Anhui province for the period from 2013 to 2020. The results obtained indicate fluctuations in the growth dynamics of the integrated system of the digital economy and the logistics industry in Anhui province. Thus, it can be noted that for Henan province, the observed relationship between the digital economy and logistics is more stable. The use of the methodology of the researchers in relation to Henan province data can confirm the conclusions of the study and focus on regional differences in provincial development.

L. Zhang *et al.* (2023) assessed the impact of digital logistics methods on regional economic growth using the example of the Yangtze River Economic Belt, covering 11 cities. The paper highlights the transformational potential of integrating intelligent infrastructure, data and intelligent technologies into modern supply chains and logistics to optimise the logistics process. At the same time, the researchers note the existence of problems related to transport costs, quality and multinational transportation, especially in remote cities that do not receive the necessary logistical support, which hinders business growth.

In confirmation of the previously presented results, B. Yan *et al.* (2023), having studied how the qualitative development of the logistics sector affects economic development at various stages of industrial development, substantiated that the logistics industry plays a positive role in ensuring high-quality economic growth. The researchers note that the influence of the logistics industry on economic development varies at different levels of the industrial structure, which determines the need to develop special strategies at different stages. The paper emphasises the need to optimise industry structures and deepen integration between logistics and related industries. This approach seems reasonable to ensure the qualitative development of the logistics sector and is consistent with the results of modelling the impact of the digital economy on the development of the logistics industry in Henan province. The analysis of the GDP growth rates of Henan province by economic sectors presented in the paper revealed a significant growth in the tertiary sector, which includes the logistics industry. This growth indicates the transformation of the economic structure of the region and the increasing role of service and logistics services, which is especially important in the context of the growing influence of the digital economy. The choice of GDP of the tertiary sector as a variable for the regression model, in this case, is justified by its significance as a reflection of the level of development and the scale of the impact of digitalisation on logistics in Henan province.

J. Kern (2021) presents a comprehensive analysis of the digitalisation gap in the logistics sector, contrasting recognised industry giants with newcomers and those who resist the introduction of new technologies. The sector-by-sector assessment revealed significant fluctuations in the degree of digital technology adoption in individual logistics processes and services. It is noted that seaports and airports are lagging in digital transformation, and only a small part of terminals have achieved automation. On the contrary, warehouses and trucking companies are making more significant progress by implementing Industry 4.0 technologies and, accordingly, transportation management systems. In contrast to the previously presented results, the researcher concludes that the overall level of digitalisation in the logistics industry remains low or medium, and most companies lack an understanding of the need for adaptation and development. The paper highlights that companies unwilling to actively adapt their digital strategies risk being left behind, which highlights the need for the logistics industry to embrace digital transformation despite challenges such as high costs, lack of standards, and uncertainty of immediate benefits.

C. Wang (2023), emphasising the key role of logistics in ensuring high-quality economic development, highlighted its basic principles such as increasing customer satisfaction, optimising the activities of enterprises, and focusing business development on information technology. The researcher draws attention to the critical problems faced by the logistics sector: disproportionately high costs of social logistics in relation to GDP, underdevelopment of transport infrastructure and equipment, low level of digitalisation and introduction of intelligent technologies, insufficient integration with related industries (Kondratenko *et al.* 2011). The paper advocates a multifaceted approach to solving these problems, emphasising the need to reduce costs, increase efficiency, and continuously improve and modernise vehicles and equipment. The study also highlights the need to enhance the digital and intellectual capabilities of the logistics sector, promotes a faster and more integrated approach to integrating logistics with other industries, and calls for increased training in logistics to equip staff with the skills and knowledge necessary to navigate the changing landscape of modern logistics. The opinion presented by the researcher is consistent with the results of systematising the potential consequences of the impact of elements of the digital economy on logistics.

The study by N.N. Nordin *et al.* (2022) is devoted to the investigation of the impact of the digital economy on logistics efficiency and economic growth in Asian countries. The study uses panel data from 15 Asian countries. The main conclusion is that the digital economy makes a significant contribution to strengthening the relationship between logistics indicators and economic growth in these countries. The researchers emphasise the role of institutions in the digital economy and conclude that institutions have a moderating effect, increasing the efficiency of logistics and thereby stimulating economic growth. Thus, it is proved that the integration of digital economy practices into the logistics sector, supported by a strong institutional framework, can lead to an increase in the efficiency of logistics operations and make a positive contribution to the economic development of the Asian region.

Summing up, it can be noted that the observed dynamics of the digital economy market and structural changes in the GDP of Henan province reflect the transformational processes taking place in the economy. These processes, combined with the modelling of regression dependencies between the development of the digital economy and the indicators of the logistics industry, create a scientifically sound basis for assessing the current state and forecasting future development trends. Thus, this study represents a contribution to the development of strategic areas for the digital transformation of the logistics industry, given the growing role and importance of these technologies in the economic space of China and beyond.

Conclusions and Further Research

The presented periodization of changes in China's logistics industry under the influence of the digital economy, divided into stages, reflects the introduction and adaptation of new technologies and shows how they influenced logistics. This allowed assessing how logistics has evolved in response to technological changes, which provided the foundation for understanding current trends and predicting future changes.

The results of the analysis of the potential impact of individual elements of the digital economy on the logistics industry, such as digital infrastructure, e-commerce, digital services, IoT technologies, big data, cybersecurity, digital payments, digital talents and education, regulatory framework, artificial intelligence and automation, are summarised. Both positive and negative aspects of the impact of elements of the digital economy are highlighted, which provided a comprehensive analysis, identifying opportunities for growth and potential risks. The assessment of the Chinese digital economy market indicates an increased impact of digitalisation on all sectors of the economy, including the logistics industry, and the indicator characterising the volume of the digital market showed a steady upward trend. The analysis of Henan province's GDP revealed significant changes in the structure of the economy: the share of the tertiary sector covering logistics increased by 16.67%, while the shares of the primary and secondary sectors decreased by 4.26% and 12.41%, respectively. This confirms the strengthening of the role of the service sector and, in particular, logistics, which is a key element of the tertiary sector.

The results of modelling conducted as part of a study of the impact of the digital economy on the development of the logistics industry in Henan province demonstrate that the growth or decline in GDP of the tertiary sector of Henan province is a direct consequence of changes caused by digitalisation processes. The high values of correlation and determination coefficients obtained during the analysis indicate a significant impact of the development of the digital economy on the dynamics of the logistics industry in this region. Statistical tests (t-test, F-criterion) confirm the statistical significance and reliability of the regression equation. A small approximation error and a high coefficient of determination emphasise the accuracy of the model and its suitability for analysing the interrelationships between the digital economy and the logistics industry of Henan province. The conditions for using the least squares method are met, which guarantees the adequacy and accuracy of the simulation. The absence of autocorrelation and heteroscedasticity, and the normal distribution of the residual component, confirm the correctness of the method application. Thus, the results of the study confirm that the increase in the size of the digital economy market in China leads to a significant increase in the GDP of the tertiary sector in Henan province.

The prospect of future research is to provide a basis for developing strategies and measures to optimise the interaction between the digital economy and the logistics industry by including additional independent variables in the model of the impact of the digital economy on the logistics industry in Henan province and their interpretation.

Credit Authorship Contribution Statement

Azyk Orozonova: Conceptualization, Project administration, Writing – original draft, Supervision, Validation, Visualization;
Shanshan Zhang: Methodology, Formal analysis, Data curation;
Esengeldi Zhumadilov: Investigation, Software, Formal analysis, Writing – review and editing, Visualization;
Xiaomei Sun: Software, Formal analysis, Writing – review and editing, Visualization;
Xueqing Liu: Methodology, Writing – original draft, Data curation, Validation.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Declaration of Use of Generative AI and AI-assisted Technologies

The authors declare that they have not used generative AI and AI-assisted technologies during the preparation of this work.

References

[1] Aubakirova, Dinara (2024). Directions for Using Big Data Analytics in Logistics Management. *Development Management,* 23(1): 27-36. DOI: https://doi.org/10.57111/devt/1.2024.27

[2] Brzozowska, Marta *et al*. (2022). Competences 4.0 In the Logistics Sector Against the Challenges of Sustainable Digital Transformation of the Economy in the Polish Perspective. *Scientific Papers of Silesian University of Technology. Organization and Management,* 162: 53-85.

[3] Buil, Roman, Miquel Angel Piera, Marjan Gusev, Egils Ginters, and Artis Aizstrauts (2015). Mas Simulation for Decision Making in Urban Policy Design: Bicycle Infrastructure. *International Conference on Harbour, Maritime and Multimodal Logistics Modelling and Simulation* (pp. 95-102). Bergeggi: I3M Conference.

[4] Gan, Weihua, Wenpei Yao, Shuying Huang, and Yanan Liu (2022). A Study on the Coupled and Coordinated Development of the Logistics Industry, Digitalization, and Ecological Civilization in Chinese Regions. *Sustainability,* 14(11): 6390.

[5] Guo, Yuxia, Huiying Mao, Heping Ding, Xue Wu, Yujia Liu, Hongjun Liu, and Shuling Zhou (2022). Data-Driven Coordinated Development of the Digital Economy and Logistics Industry. *Sustainability,* 14(14): 8963.

[6] Herold, D. Martin, Marek Cwiklicki, Kamila Pilch, and Jasmin Mikl (2021). The Emergence and Adoption of Digitalization in the Logistics and Supply Chain Industry: An Institutional Perspective. *Journal of Enterprise Information Management,* 34(6): 1917-1938.

[7] Horoshkova, Lidiia, Oleksandr Menshov, Olena Vasylyeva, Alexander Sumets, and Ihor Ryshykov (2023). Logistics Technologies for the Potential Management of Marine and River Transport in Ukraine. *University Economic Bulletin,* 18(2): 32-45. DOI: https://doi.org/10.31470/2306-546X-2023-57-32-45

[8] Kayikci, Yasanur (2018). Sustainability Impact of Digitization in Logistics. *Procedia Manufacturing,* 21: 782-789.

[9] Kern, Johannes (2021). The Digital Transformation of Logistics: A Review about Technologies and Their Implementation Status. In: *The Digital Transformation of Logistics: Demystifying Impacts of the Fourth Industrial Revolution* (pp. 361-403). Piscataway: Institute of Electrical and Electronics Engineers, Inc.

[10] Kondratenko, Yuriy P., Leonid P. Klymenko, and Ievgen V. Sidenko (2014). Comparative Analysis of Evaluation Algorithms for Decision-Making in Transport Logistics. *Studies in Fuzziness and Soft Computing* 312: 203-17. DOI: https://doi.org/10.1007/978-3-319-03674-8_20

[11] Kondratenko, Yuriy P., Sylvia B. Encheva, and Eugene V. Sidenko (2011). Synthesis of Intelligent Decision Support Systems for Transport Logistics. *Proceedings of the 6th IEEE International Conference on Intelligent Data Acquisition and Advanced Computing Systems: Technology and Applications, IDAACS'2011* 2: 642–6. DOI: https://doi.org/10.1109/IDAACS.2011.6072847

[12] Kredina, Anna, Mirey Akhtanova, Makpal Bekturganova, Alexander Tsoy, and Lazat Spankulova (2022). The Relationship between Logistics and Information and Communication Technologies and Their Impact on the Economy of Kazakhstan. *Problems and Perspectives in Management,* 20(4): 344–55. DOI:https://doi.org/10.21511/ppm.20(4).2022.26

[13] Lipych, Liubov, Oksana Khilukha, and Myroslava Kushnir (2024). Inventories in an Integrated Supply Chain. *Economic Forum,* 1(4): 62-69. DOI: https://doi.org/10.36910/6775-2308-8559-2023-4-8

[14] Mann, Ruslan (2023). Strategy for Managing Regional Competitiveness Development. *Economic Bulletin of Cherkasy State Technological University,* 23(2): 5-14.

[15] Melnykova, Kateryna (2023). Mechanisms of Achieving Sustainable Micrologistics System Functioning. *Development Management,* 22(2): 30-38. DOI: http://doi.org/10.57111/devt/2.2023.30

[16] Moldabekova, Aisulu, Robert Philipp, Hans-Eggert Reimers, and Bauyrzhan Alikozhayev (2021). Digital Technologies for Improving Logistics Performance of Countries. *Transport and Telecommunication Journal,* 22(2): 207-216.

[17] Mukaka, Mavuto (2012). Statistics Corner: A Guide to Appropriate Use of Correlation Coefficient in Medical Research. *Malawi Medical Journal,* 24(3): 69-71.

[18] Nordin, N. Naddia *et al.* (2022). Digital Economy: Improving Logistics Performance in Asian Countries. In: *Proceedings of the International Conference on Entrepreneurship, Business and Technology (InCEBT) 'Industry Forward and Technology Transformation in Business and Entrepreneurship'* (pp. 459-468). Singapore: Springer.

[19] Novanda, N, and Henny Medyawati (2023). Determinant of Shopee Xpress Consumer Satisfaction in Jakarta Greater Area. *Economics, Entrepreneurship, Management,* 10(2): 25-34. DOI:https://doi.org/10.56318/eem2023.02.025

[20] Piddubna, Liudmyla, and Marianna Gorobynskaya (2023). Digital Transformation as a Factor of Changes in the Organizational Behaviour of International Companies. *Development Management,* 21(4): 25-36.

[21] Trushaj, Aleks (2023). Features of the Foreign Policy of the Republic of Kazakhstan. *Foreign Affairs,* 33(5): 45-51. DOI: https://doi.org/10.46493/2663-2675.33(5).2023.45-51

[22] Wang, Chunjuan, Kaige Guo, and Xiangyu Yin (2023). Research on Improving Logistics Efficiency by Digital Economy from the Perspective of High-Quality Development. In: *Proceedings of the 2nd International Academic Conference on Blockchain, Information Technology and Smart Finance (ICBIS 2023)* (pp. 476-484). Amsterdam: Atlantis Press.

[23] Wang, Cuimin (2023). Research on High Quality Development Path of Modern Logistics Industry. *Industrial Engineering and Innovation Management,* 6(6): 60-66.

[24] Wu, Harry, and Changhua Yu (2022). The Impact of the Digital Economy on China's Economic Growth and Productivity Performance. *China Economic Journal,* 15(2): 153-170.

[25] Yan, Borui, Bo Yao, and Chenjing Zhang (2023). Industrial Structure, High-Quality Development of Logistics Industry and the Economy. *PLoS ONE,* 18(5): e0285229.

[26] Zhang, Liuhua, Tianbao Gong, and Yanan Tong (2023). The Impact of Digital Logistics Under the Big Environment of Economy. *PLoS ONE,* 18(4): e0283613.

[27] Zhang, Longmei, and Sally Chen (2019). China's Digital Economy: Opportunities and Risks. *IMF Working Paper*. Available at: https://www.imf.org/en/Publications/WP/Issues/2019/01/17/Chinas-Digital-Economy-Opportunities-and-Risks-46459

[28] Zhang, Wei, Hongli Liu, Yuan Yao, and Zifu Fan (2022). A Study Measuring the Degree of Integration Between the Digital Economy and Logistics Industry in China. *PLoS ONE,* 17(9): e0274006.

[29] Zhao, Tao, Zhi Zhang, and Shangkun Liang (2022). Digital Economy, Entrepreneurship, and High-Quality Economic Development: Empirical Evidence from Urban China. *Frontiers of Economics in China,* 17(3): 393-426.

[30] Hunan Government Work Report 2022. (2022). Available at: http://222.240.193.190/2022tjnj/indexeh.htm

[31] Ministry of Commerce of the People's Republic of China. (2023). Concise Statistics on China's Outbound Direct Investment Across All Industries from January to April 2023. Available at: http://english.mofcom.gov.cn/article/statistic/foreigntradecooperation/202306/20230603418682.shtml

[32] National Bureau of Statistics of China. (2023). China Statistical Yearbook 2023. Available at: https://www.stats.gov.cn/sj/ndsj/2023/indexeh.htm

[33] Statista. (2024a). Gross Domestic Product (GDP) of Henan Province, China from 1990 to 2022, by Economic Sector (in Billion Yuan). Available at: https://www.statista.com/statistics/1082657/china-gdp-of-henan-by-industry/

[34] Statista. (2024b). Market Size of the Digital Economy in China in Selected Years from 2005 to 2022 (in Trillion Yuan). Available at: https://www.statista.com/statistics/1250080/china-digital-economy-size/

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Accounting for Non-Financial Assets in the Public Finance Management System in Ukraine during the Conflict

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Abstract: The relevance of the study lies in the fact that accounting and effective management of non-financial assets in times of conflict is strategically important for ensuring sustainability, economic recovery, and resource security of the state. The purpose of the study is to analyse the features of accounting for non-financial assets in the management of public finances in the war and post-war period. Among the methods used were the analytical, statistical, functional, system analysis, deduction, synthesis, and comparison. This study is devoted to the investigation of methods for assessing and reclassifying non-financial assets of state institutions in the context of military conflict, in particular, considering the aggression of Russia and the temporary occupation of the territory of Ukraine. The main criteria related to restricted access to non-financial assets were identified, and an algorithm for reclassification in case of loss or restricted access to them was proposed. Considering the criteria, a recommendation system has been developed for recognising and reclassifying non-financial assets in military conditions. The study emphasises the need to regulate this issue in the legal field, in particular, by making changes to the relevant regulatory documents that would consider the specifics of managing and evaluating non-financial assets during the war period. These changes include reclassification procedures and rules for recording such assets in financial statements, considering their real value and restricted access status. The practical significance of this study is to develop specific recommendations and procedures for reclassification of non-financial assets of state institutions in the context of military conflict, which will improve the efficiency of management and reflection of their value in conditions of limited access.

Keywords: public finance; accounting; reclassification; unified register; regulatory framework; evaluation algorithm.

JEL Classification: L86; E60; L82; M14.

Introduction

Ukraine's economy is going through a difficult time due to martial law and numerous challenges, both internal and external. However, the public sector remains a key driving factor in economic development and the introduction of effective mechanisms to respond to these challenges. State institutions are managed within the limits of their powers defined by the constituent documents and charters. These constituent documents define the functional purpose of each institution, in particular, its role in ensuring a social effect for society.

In Ukraine, according to the State Statistics Service of Ukraine (2023), the number of state institutions increases and decreases in different periods, but their role in the public administration system remains integral. In 2021, 79,323 state institutions were registered, in 2022 – 39,102 state institutions, and in 2023 – 93,952 state institutions. Of relevance is the study of state institutions that manage finances in the context of war, occupation and post-conflict periods. The positive development of the country and society is based on the cohesive work of all public sector actors, including state institutions and enterprises (Moshenskyi *et al.* 2024). Having a clear management system, accounting reform, and access to information about non-financial assets play an important role in achieving this goal.

The study of the features of accounting for non-financial assets in state institutions, especially in the war and post-war period, is an urgent task, since it will help determine ways to effectively manage these assets in a difficult socio-economic situation. Sliusar (2022) determined that the key component of effective public finance management is the proper functioning of accounting in public institutions. She stressed that high-quality accounting is a necessary condition for making informed management decisions and ensuring transparency in the management of public finances. In turn, Bezhenar (2021) suggests that the emphasis on the development and modernisation of the accounting system in public institutions will help to increase the efficiency of financial management. The researcher highlights the importance of introducing modern approaches and technologies into the accounting system to improve the processes of collecting and analysing financial information during martial law.

Storozhuk (2023) also focuses on the role of government agencies in reporting and provides proposals for standardisation of this process. The researcher suggests that unified reporting standards will help unify information, make it easy to compare, and promote consistent management decisions. Radionov (2023) highlights the role of state-owned enterprises in the public finance management system. These enterprises, bearing social responsibility, are key participants in the development of a positive social effect for society and citizens, especially in the conditions of martial law. Tsiatkovska (2023) focuses on the problems of accessing information about non-financial assets of the state. The researcher argues that free access to this information for the public is a necessary prerequisite for increasing the level of responsibility and transparency in the management of public finances, especially in the context of European integration processes.

In general, various aspects of public finance management and the role of public institutions in this process were considered. However, some aspects remained under-disclosed, such as specific methods for modernising accounting, analysis of the impact of standardisation on the consistency of financial information, aspects of social responsibility, and issues of ensuring public access to information about non-financial assets. The purpose of the study is to analyse the methods of modernisation of accounting of non-financial assets of state institutions in the context of public challenges.

1. Literature Review

Accounting for non-financial assets in the public finance management system is defined as a key component of an integrated financial and economic strategy in the context of the growing role of the state in economic development. Over the past decades, there has been a tendency to increase the influence of government agencies on the economy, which requires managers to take a balanced and integrated approach to managing a variety of resources, including both financial and non-financial ones.

First of all, it is necessary to address the theoretical aspects of accounting for non-financial assets. According to Gaio *et al.* (2021), non-financial assets include a variety of resources, such as real estate, technical equipment, natural resources, and others that can have a significant impact on a country's economic development. Accounting for these assets involves determining their value, condition, and use. Hecimovic and Martinov-Bennie (2023) focus on the importance of standardising the accounting of non-financial assets in the context of public finance. They point out that the development of national standards in this area will improve management efficiency and provide greater transparency in the financial statements of government agencies. One of the key aspects is to consider the impact of emergency events, such as military conflicts, on non-financial assets. Jeegers (2023) shows that the conditions of military conflict can significantly affect the access and condition of non-financial assets, which requires adaptation of accounting and management methods in crisis situations.

An important aspect is also the introduction of international standards in the field of accounting for non-financial assets in the public sphere. The study by Alslihat *et al.* (2017) emphasises the importance of harmonising national standards with international ones in order to ensure comparability and standardisation of accounting for non-financial assets in the context of global economic interaction, especially in crisis situations. It is worth highlighting separately the problems associated with assessing and determining the state of non-financial assets during the crisis, which indicates the need to develop special methods and criteria. Lestari and Adhariani (2022) highlight the need to adapt accounting systems to emergencies.

Ironkwe and Nwaiwu (2018) consider this topic from the standpoint of using modern technologies in the process of accounting and management of non-financial assets. They highlight the relevance of digitalisation in the public sector, pointing out how modern information technologies can improve management efficiency and provide more accurate accounting of non-financial assets. On the other hand, the study by De Bernardi *et al.* (2019) examines the impact of climate change on the state of non-financial assets. The researchers propose new approaches to accounting and managing non-financial assets in changing environmental conditions. They analyse how challenges of climate change can affect the status and use of non-financial assets, and propose specific accounting strategies and techniques that allow these assets to be effectively managed in the face of environmental and climate change.change.

In general, accounting for non-financial assets in the public finance management system is a complex and urgent problem. The literature review reflects the need for research in areas such as standardisation, the impact of emergency events, international harmonisation, and the development of special accounting techniques. Further research in this area will identify effective tools and approaches for achieving optimal management of non-financial assets in government agencies.

2. Materials and Methods

The research was based on a comprehensive analysis of a number of materials, including theoretical sources, laws and regulations, statistical data, and accounting methods. These materials contributed to the consideration of the specifics of accounting for non-financial assets in the context of conflict and Russian aggression on the territory of Ukraine. One of the main sources of research was regulatory legal acts, in particular National Regulation (Standard) on Public Sector Accounting (NR(S)PSA) regulating the accounting and valuation of non-financial assets (Ministry of Finance of Ukraine 2023). They define procedures and criteria for recognising and evaluating assets in conditions of restricted access and temporary occupation of territories.

Statistical data from the Unified register of managers and recipients of budget funds (State Treasury Service of Ukraine 2022) for different years were used. These data were used to analyse the dynamics of the number and structure of government agencies in the context of accounting for non-financial assets. The consideration and analysis of research papers in the field of non-financial asset accounting and public finance management contributed not only to the systematisation of scientific knowledge, but also to the creation of a conceptual and theoretical foundation for further research in this important area.

The study of topical issues was carried out using methods that reveal the content of the object. The use of the analytical method allowed considering the laws regulating the accounting of non-financial assets in conflict situations, and it was possible to identify the basic rules and requirements that apply to this type of asset. The results of the analysis provided an opportunity to understand the context of existing standards and their impact on accounting. The use of the statistical method helped to collect and investigate quantitative data on the number of state institutions that record non-financial assets during the conflict period. Trends and changes in the structure of these institutions were identified.

The use of the functional method consisted in determining the role and tasks performed by accounting for non-financial assets in a state conflict. This became the basis for understanding the role of accounting in the financial management system. The relationships between parts of the accounting system and their impact on the management of non-financial assets in conflict situations were studied through system analysis. The study provided insight into key factors and opportunities for optimisation. The application of the deduction involved the examination of general principles of accounting for non-financial assets and their further application to understand specific cases in conflict situations. The results can serve as a basis for formulating conclusions.

The synthesis allowed combining information from various sources (laws and regulation, statistical data, analysis results) to form a comprehensive idea of the problem of accounting for non-financial assets in a conflict. The use of the comparison method helped to contrast approaches and methods of accounting for non-financial assets in Ukraine and assess the effectiveness and feasibility of the chosen approaches in the context of conflict. As a result, these actions were performed to gain a deep understanding of the system of accounting for non-financial assets in conflict situations, assess its effectiveness and identify opportunities for optimising public finance management processes.

3. Results

State institutions play a key role in the system of business entities, establishing the basis for the implementation of public tasks and ensuring the effective functioning of society. Defining their role and place in the overall structure of the economy means revealing the main aspects of their functionality and interaction with other business entities. This is confirmed by statistics in Table 1.

Table 1. Number of institutions and organisations included in the Unified register of managers and recipients of budget funds

Year	Number of institutions (organisations)						Total
	State budget	including		Local budgets	including		
		managers	recipients		managers	recipients	
2015	17,815	14,252	3,563	59,747	41,821	17,926	77,562
2016	17,651	14,093	3,558	62,295	42,150	20,145	79,946
2017	16,707	13,550	3,157	63,200	41,616	21,584	79,907
2018	12,917	11,455	1,462	59,415	38,204	21,211	72,332
2019	12,941	11,673	1,268	59,804	36,825	22,979	72,745
2020	12,287	11,096	1,191	59,146	36,038	23,108	71,433
2021	11,561	10,415	1,146	58,762	36,715	22,047	70,323
2022	10,614	9,459	1,155	56,577	34,623	21,954	67,191
2023	10,527	9,431	1,096	56,229	34,483	21,746	66,756

Source: compiled by the authors based on (Hecimovic and Martinov-Bennie 2023; State Treasury Service of Ukraine 2022).

According to the Unified register of managers and recipients of budget funds for 2023, the number of institutions and organisations included in the Register is 66,800, of which 10,500 are state budgets and 56,200 are local budgets. Compared to 2021, it was revealed that during 2023 the number of registered institutions and organisations in the Treasury decreased by 3,600, of which 1,100 belong to the state budget and 2,500 to local budgets. The main reason for such a sharp decline is the full-scale invasion, which led to the occupation of a large part of the country's territory, and frequent rocket attacks that cause serious damage to buildings and pose a threat to the life and health of citizens.

Analysis of the structure of the network of budget managers indicates that the decrease in the number of managers and recipients of budget funds included in the register was recorded in almost all territorial offices of the State Treasury Service of Ukraine (STSU). This is directly related to the reduction in budget allocations in connection with the implementation of budget programmes under martial law. It is worth noting that the highest dynamics of decline was recorded in Donetsk, Lviv, and Zaporizhzhia oblasts (Slyuz 2022). In addition, the dynamics of the number of managers and recipients of budget funds in 2017 according to the corresponding indicator in 2023 are extremely negative. Since there was a decrease of 13,100, of which 6,200 were financed from the state budget and 6,900 from the local budget. The key feature of the activities and management of state institutions can be considered that all institutions are financed from the state or local budget on an irrevocable basis, but provided that the principle of targeted use of budget funds and specific measures and areas are observed. Namely, the activities and areas for which funds should be spent are determined in the functional purpose of the institution's activities (Ionela 2012; Roshylo 2023).

The system of state institutions is developed under the influence of the formation of the budget system and the system of state and local government bodies. The modern system of state institutions was created during the independence of Ukraine. That is, at a time when the main executive, legislative, and judicial authorities were established. Under the influence of various factors and in order to improve the public administration system, the structure of these institutions is re-formed. But the main purpose of these institutions remains stable and key to the overall social impact on society. Public institutions are managed not only through the accounting system, but also through planning and use of budget funds, compliance with the intended use of these funds, development of NR(S)PSA and implementation of international public sector accounting standards (IPSAS), risk monitoring and analysis, external and internal audit, budget and financial reporting, public procurement, and other public administration mechanisms (Abbasova *et al.* 2023).

The modern accounting system in state institutions is standardised and harmonised with the IPSAS. The main reason for these processes is that Ukraine aims to work closely with international organisations and institutions, and to ensure that the reporting of public sector institutions is transparent, understandable, and comparable with the reporting of international partners. That is why the process of implementing IPSAS has begun. It is the IPSAS that is used as the basis for developing national standards. Considering certain public challenges and state policies, NR(S)PSA are regulated and changed. An equally important driving force for change is the changes that are being made to IPSAS. Since domestic accounting standards must comply with international standards.

Currently, public sector institutions have serious problems with the valuation, recognition, and accounting of non-financial assets. Given the martial law in the country, the military aggression of the Russian Federation and the features of the functioning of state institutions in wartime, it is necessary to classify non-financial assets with due regard to these features. One problem is that not all institutions have access to their assets to manage them. Therefore, due to military aggression, temporary occupation of territories, and the conduct of military operations on the territory of Ukraine, it is necessary to classify non-financial assets according to such a classification feature as access to assets. And, accordingly, classify them into non-financial assets that are freely accessible, partially accessible, and located in the occupied territory, since not only accounting, but also the overall assessment of the state's assets depends on access to non-financial assets. That is why it is extremely necessary to reflect up-to-date information about non-financial assets and information about access to them, both in accounting and reporting, respectively (Furmanchuk 2023; Lemishovska 2023).

Non-financial assets of state institutions are a key component of their functioning. The success of an institution and its ability to perform various functions largely depends on the availability and size of these non-financial assets. It is important to keep in mind that the mere presence of non-financial assets, although important, does not guarantee the effectiveness of the institution's activities. Therefore, proper accounting of both created and non-created resources at the disposal and use of the institution is identified as a key aspect for ensuring effective management of the institution. Heads of institutions manage by making strategic decisions based on the analysis and synthesis of information obtained from accounting and financial statements. This approach emphasises the relationship between the management of government agencies and their non-financial assets, determining how the effectiveness of management affects the activities of the institution (Mahacek *et al.* 2019; Abbasova *et al.* 2022; Khodakovsky 2023). Non-financial assets occupy a significant part in the overall structure of assets of business entities; in particular, Table 2 provides statistical information on the indicators of non-financial assets for the period 2013-2022.

Table 2. Statistical information on non-financial assets of business entities in Ukraine, million UAH

Indicator	2013	2014	2015	2016	2017	2018	2019	2020	2021
Fixed assets and intangible assets	1,750.9	1,781.5	2,661.5	2,771.6	2,770	2,987	3,271.4	3,539	3,818.9
Depreciation	7,837.6	11,424.7	4,598.4	4,385.3	3,887.6	5,117.2	4,723.8	5,559.6	5,597.4
Investment property	32.4	45.3	47.8	48.9	52.7	57.7	76.3	89.4	101.2
Long-term biological assets	8.6	7.4	8.4	9.4	10.9	12.4	13.8	14.4	15.8
Capital investment in progress	270	253.1	271.7	315.7	389.5	481.7	487.2	488.4	518.9
Inventory	683.6	654.1	850.8	1,046.5	1,294.6	1,548.1	1,624.2	1,739.2	2,096.4
Current biological assets	13.2	13.4	15.8	18.9	21.5	26.6	28.8	31.8	36.2
Total non-financial assets:	2,758.8	2,754.9	3,856.1	4,211.1	4,539.3	5,113.4	5,501.7	5,902.2	6,587.5
Balance	5,712.3	5,994.3	8,073.8	9,991.8	9,961.8	10,878.1	11,495	12,682.5	14,070.5
Non-financial assets in the asset structure, %	48.3	45.96	47.76	42.15	45.57	47.01	47.86	46.54	46.82

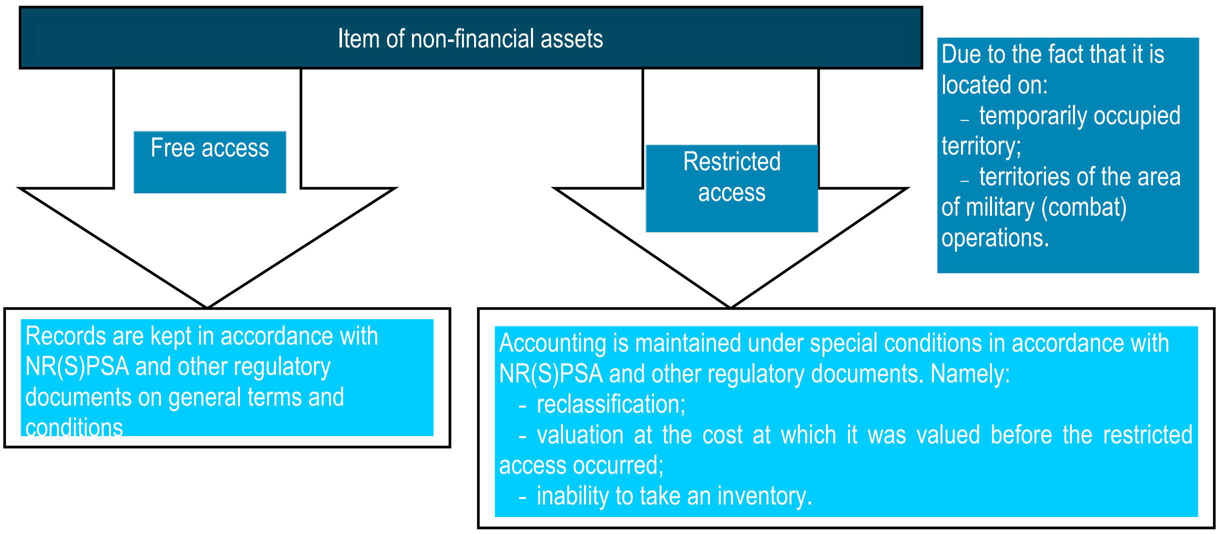
Source: compiled by the authors based on (State Statistics Service of Ukraine 2023).

When evaluating the indicators in the structure of business entities' assets, it is worth noting that non-financial assets account for a significant share of the asset structure. That is, this figure is about 50%. Analysing the dynamics of the share of non-financial assets in the asset structure, this indicator had minor changes during the analysed period. The lowest value of this indicator was in 2016 and amounted to 42.15%, which is more than 6% less than in 2013. But in comparison with 2016, in 2021 this indicator increased by more than 4.5%, which indicates a positive trend in the provision of business entities with non-financial assets. Consequently, non-financial assets, depending on their structure and security features of business entities, are an important component of the assets of business entities (Khodakivska *et al.* 2022). The manner in which non-financial assets are acquired also determines the recognition and measurement of such assets. Features of valuation of non-financial assets depending on the method of receipt is regulated by NR(S)PSA. It is worth noting that there is a direct relationship between the method of receipt and the definition of valuation of non-financial assets. Since the valuation of non-financial assets received as a result of acquisition for a fee differs significantly from the valuation of non-financial assets received without payment.

As a result of the Russian invasion, non-financial assets of certain state institutions are located in the temporarily occupied territory or are located in a war zone. That is why it is advisable to classify and identify all non-financial assets in accordance with the proposed classification features for the division of non-financial assets. Since the issue of access to non-financial assets is currently relevant and requires legal regulation. That is why it is advisable to reclassify it and transfer it from one group to another if there is a situation where access to non-financial assets is limited or completely absent. Accordingly, if an object of non-financial assets is located in the temporarily occupied territory, then it must be removed from one group of non-financial assets to another. And, accordingly, reflect on the balance sheet at the cost at which the corresponding object was accounted for and reflected in the financial statements in the previous period until access to it became impossible. However, in order to carry out reclassification, it is necessary to define the main criteria that must be considering when making a decision on reclassification. Thus, focusing on the non-financial assets of public entities, they can be considered as resources that were and were not created under the control of public entities as a result of past events related to their creation. These resources bring economic benefits through the ownership or use of operational management rights over a certain period of time.

The main criteria for recognising non-financial assets can be determined by considering their control and management by a state institution. According to the classification of assets by access level, non-financial assets are divided into those that have free access, partial access, and those that are located in the temporarily occupied territory, where access is restricted. Therefore, in order to evaluate and recognise non-financial assets, access to which is restricted, it is necessary to define criteria in accordance with the essence of non-financial assets and considering that the objects of non-financial assets have different recognition criteria. It is necessary to highlight such main criteria as: lack of management and control over the object of non-financial assets; there is a possibility of obtaining certain economic benefits in the future; the possibility of reliable assessment (revaluation); use for its intended purpose. A government agency may exercise control over an asset if it has the right to receive future economic benefits from its use and may restrict other business entities' access to the asset. Usually, control is related to ownership.

Figure 1. The Algorithm for evaluating and reclassifying non-financial assets depending on access to the asset



Source: compiled by the authors based on (State Statistics Service of Ukraine 2023).

These norms define the criteria for recognising an object of non-financial assets, such as controllability, materiality, useful life of more than a year or an operating cycle, obtaining future economic benefits, the possibility of reliable assessment, purpose for use in the production process, supply of goods, services, lease or implementation of administrative and socio-cultural functions (Slobodeniuk 2023). Features of assessment and reclassification of non-financial assets in the absence of free access to objects related to the military aggression of the Russian Federation and the occupation of a certain part of the territory of Ukraine are presented in Fig. 1.

Appropriate adjustments should be made to laws and regulations, which determine that a public sector entity should reclassify all objects of non-financial assets only in cases where these assets are located in the territory that is under the influence of military (combat) operations, or are under temporary occupation, surrounded (blocked), and should be evaluated according to the value determined in the financial statements for the previous reporting period.

4. Discussion

The results of the study indicate a significant impact of changes in the number of institutions and organisations included in the Unified register of managers and recipients of budget funds (State Treasury Service of Ukraine 2022). This influence is associated with a full-scale invasion, which led to the occupation of part of the country's territory, and missile attacks. The results obtained indicate a significant decrease in the number of managers and recipients of budget funds included in the register at almost all territorial representative offices of the State Treasury Service of Ukraine. This decrease is determined by the reduction of budget allocations in connection with the implementation of budget programmes under martial law. Analysis of the dynamics from 2017 to 2023 indicates extremely negative trends, which were manifested in an overall decrease of 13,100, of which 6,200 were financed from the state budget, and 6,900 from the local budget.

It is important to note that in the context of military conflict and temporary occupation of territories, there are serious problems in the assessment, recognition, and accounting of non-financial assets of state institutions. One problem is that not all institutions have access to their assets to manage them. Given these difficulties, it is recommended to classify and identify all non-financial assets in accordance with the proposed classification criteria, in particular by the specifics of the functioning of wartime conditions. It is necessary to focus on the importance of providing up-to-date information about non-financial assets and information about access to them, both in accounting and reporting. It is very important to define criteria for reclassifying non-financial assets, in particular, considering different levels of access to assets, such as free access, partial access, and location in the temporarily occupied territory. Such measures will help ensure adequate accounting and evaluation of non-financial assets in the context of military conflict and occupation.

Battaglio *et al.* (2019) considered in detail the role of state institutions in the system of enterprises, where they highlighted the significant influence of these institutions on the performance of public tasks and on ensuring the effective functioning of society. The researchers focused on the functional aspects of the work of state institutions and their interaction with other actors in a complex system. One of the key points that the researchers identified is the need for adequate funding to ensure the effective operation of government agencies. They strongly argued that responsible use of budgetary funds plays a critical role in ensuring the functionality of these institutions and in their positive impact on society as a whole. These results, as well as the study above, show the interaction of state institutions with other subjects of the system, which is an important aspect of the analysis. The researcher identified the key aspects of this interaction, given their importance for achieving optimal results in the sphere of public tasks and the functioning of society.

Kaufman and Covaleski (2019) comprehensively analysed the accounting of funds of budgetary institutions. The results of this analysis reveal important aspects of money management and financial transparency in government organisations. The researchers reviewed in detail the process of registering funds in budgetary institutions. They drew attention to the importance of accurate and systematic recording of each cash flow in the accounting system. The results show that proper accounting guarantees effective financial management and allows identifying possible risks and shortcomings in the economy in a timely manner. The results obtained indicate the importance of improving cash accounting in government agencies. These recommendations can serve as a basis for further measures to optimise financial management and ensure the financial stability of budgetary institutions.

Macintosh and Daft (1998) considered aspects of government agency management through the introduction of a system of accounting and budget planning. The researchers focused on key elements of effective management, in particular, on the directed use of budget funds and the need to develop national standards. They identified that the accounting and budget planning system is an important management tool that allows efficient allocation of resources and prioritisation for government agencies. In particular, it was emphasised that the principle of directed use of budget funds is important for achieving maximum efficiency in the use of public finances. The development of national standards in the field of public institution management would allow unifying approaches to accounting and planning, providing standard procedures and improving the comparison of results between different institutions. This step will help to increase transparency and efficiency of governance in the public institutions sector.

Kori *et al.* (2020) focused on the problems of evaluating and accounting for non-financial assets in public institutions, especially in the context of crisis conditions caused by military conflicts. The researchers developed a classification system for non-financial assets, considering limited access to them due to these conflicts, which cause difficulties in managing and evaluating resources. As a result of the study, an algorithm was created for evaluating and reclassifying non-financial assets in connection with war and occupation zones. This algorithm can be an important tool in situations where some objects may have limited or no access due to military operations. This approach allows managers and specialists in the field of finance to consider the specifics of the conditions faced by public institutions and effectively manage non-financial assets, ensuring accuracy and objectivity in financial statements in times of crisis.

Hu *et al.* (2019) considered the current system of state institutions in the country, analysing in detail the influence of various factors on their structure and reform processes. They delved deeply into the main aspects of the functioning and management of state organisations, their place in the overall system of government, and their interaction with other actors. The researchers analysed various factors that affect public institutions, such as political, economic, and socio-cultural changes. They looked at the impact of reforms and modernisation on the structure and functionality of public institutions, and identified the main challenges they face in modern conditions. The researcher's results, as well as the study above, focus on the key challenges faced by public institutions in modern conditions and determine their role in the power system. They also highlight the importance of analysing practical examples and provide grounds for further discussions on the effectiveness of public sector management strategies.

Oliinyk *et al.* (2023) focused on managing non-financial assets of public institutions in times of crisis and military conflicts. One of the key features of their study is the development of a classification system for non-financial assets, considering limited access to them due to military conflicts. A distinctive feature of the research is the creation of an algorithm for evaluating and reclassifying non-financial assets in a war or occupation zone. The study can serve as an important tool in situations where asset management and valuation become particularly difficult due to the impact of military conflicts. These approaches can be useful for finance professionals and managers working in the field of public administration in emergency situations.

In general, the results indicate important aspects of managing public institutions and solving problems related to financial and non-financial management in modern society and crisis situations. The researchers focused on the effective use of budget funds, the development of standards, and asset management in the face of constraints such as military conflicts.

Conclusions and Further Research

The study aims to understand the role of government institutions and the challenges faced in managing non-financial assets, especially in the context of the crisis caused by the Russian invasion. An analysis of the Unified register of managers and recipients of budget funds for 2022 revealed a significant decrease in the number of registered institutions due to the ongoing conflict situation. The war led to the occupation of the territory, destruction, and reduction of budget allocations, which affected the work of state institutions.

The study highlighted the importance of effective management through budget planning, compliance with the intended use of funds, and compliance with national and international standards. The introduction of International Public Sector Accounting Standards (IPSAS) is defined as a step towards achieving transparency and compatibility with international reporting standards. The need for a flexible classification of non-financial assets in connection with limited access in times of war is highlighted. Analysis of non-financial assets of economic entities showed their key role in the overall asset structure, accounting for about 50%. The dynamics indicated a positive trend in providing business entities with non-financial assets. However, the valuation and recognition of non-financial assets in times of crisis, where access is limited, requires a reclassification process. The proposed evaluation and reclassification algorithm considers the lack of access, economic benefits, and intended use. In the context of war, the study points to the need for criteria for recognising non-financial assets, such as control, materiality, useful life, and the possibility of future economic benefits. The algorithm provides a basis for evaluating and reclassifying assets in territories affected by military operations or temporary occupation. Overall, the study provides valuable insights for policy makers and professionals who face the complexities of managing government agencies and non-financial assets in challenging circumstances.

Further research may be aimed at analysing the effectiveness of managing government institutions and non-financial assets in a military crisis, including aspects of international experience, technological innovation, public policy, and international cooperation.

Credit Authorship Contribution Statement

Olena Tsiatkovska: Conceptualization, Project administration, Writing – original draft.
Olena Prymachenko: Methodology, Formal analysis, Data curation;
Liudmyla Lezhnenko: Investigation, Formal analysis, Writing – review and editing, Visualization;
Yevheniya Feshchenko: Formal analysis, Writing – review and editing, Visualization.
Olena Mykhalska: Supervision, Validation, Visualization.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Declaration of Use of Generative AI and AI-assisted Technologies

The authors declare that they have not used generative AI and AI-assisted technologies during the preparation of this work.

References

[1] Abbasova, Agamamed *et al*. (2023). Problems and Prospects in Developing the Auditing System in Azerbaijan. *Universidad y Sociedad,* 15(2): 550-61.

[2] Abbasova, Sevinj, Mehriban Aliyeva, and Leyla Huseynova (2022). Accounting Information Transparency and Business Performance: A Case of G7 Construction Companies. *Problems and Perspectives in Management,* 20(4): 518-31. DOI: https://doi.org/10.21511/ppm.20(4).2022.39

[3] Alslihat, Nimer (2017). Accounting Disclosure of Both Financial and Non-Financial Information in the Light of International Accounting Standards. *International Journal of Economic Research,* 14(12): 105-18. Available at: https://serialsjournals.com/abstract/21953_8.pdf

[4] Battaglio, R. Paul Jr., Paola Belardinelli, Nicola Bellé, and Patrick Cantarelli (2019). Behavioral Public Administration Ad Fontes: A Synthesis of Research on Bounded Rationality, Cognitive Biases, and Nudging in Public Organizations. *Public Administration Review,* 79(3): 304-20. DOI:https://doi.org/10.1111/puar.12994

[5] Bezhenar, Andrii Yu (2021). Modernization of the Accounting System in the Public Sector. In: *Proceedings of the VII International Scientific and Practical Conference Dedicated to the 115th Anniversary of the Kyiv National Economic University named after Vadym Hetman 'Accounting, Analysis, Audit and Taxation: A Modern Paradigm in the Information Society'* (pp. 222-26). Kyiv: Kyiv National Economic University named after Vadym Hetman. Available at: https://dspace.kntu.kr.ua/server/api/core/bitstreams/6a3a5b6c-feb2-4a79-8118-d9ed08d936fa/content

[6] De Bernardi, Patrizia, Francesco Venuti, and Amedeo Bertello (2019). The Relevance of Climate Change Related Risks on Corporate Financial and Non-Financial Disclosure in Italian Listed Companies. In: *The Future of Risk Management: Perspectives on Law, Healthcare, and the Environment* (pp. 77-107). Cham: Palgrave Macmillan. DOI: https://doi.org/10.1007/978-3-030-14548-4_4

[7] Furmanchuk, Oksana (2023). The Role of State Finance Audit in the System of Accounting and Analytical Support of the State Funds Management System. *Economics of Development,* 22(4): 34-42. DOI:https://doi.org/10.57111/econ/4.2023.34

[8] Gaio, Cristina, Teresa Gonçalves, and Adalmiro Pereira (2021). Financial Crisis and Impairment Recognition in Non-Financial Assets. *Review of Business Management,* 23(2): 370-87. DOI:https://doi.org/10.7819/rbgn.v23i2.4108

[9] Hecimovic, Aida, and Nonna Martinov-Bennie (2023). Audit Report Construction: Public Sector Organisation Perspectives within a Non-Financial Information Context. *Journal of Public Budgeting, Accounting and Financial Management,* 35(2): 172-91. DOI: https://doi.org/10.1108/JPBAFM-09-2021-0135

[10] Hu, Helen Wei, Luoluo Cui, and Preet S. Aulakh (2019). State Capitalism and Performance Persistence of Business Group-Affiliated Firms: A Comparative Study of China and India. *Journal of International Business Studies,* 50: 193-222. DOI: https://doi.org/10.1057/s41267-018-0165-5

[11] Ironkwe, Umanta I., and Joseph N. Nwaiwu (2018). Accounting Information System on Financial and Non-Financial Measures of Companies in Nigeria. *International Journal of Advanced Academic Research: Business Development and Management,* 4(2): 39-55. Available at: https://www.ijaar.org/articles/Volume4-Number2/Business-Development-Management/ijaar-bdm-v4n2-feb18-p3.pdf

[12] Jeegers, Thomas (2023). Non-Financial Risk Management. In: *Understanding Crypto Fundamentals: Value Investing in Cryptoassets and Management of Underlying Risks* (pp. 219-36). Berkley, CA: Apress. DOI:https://doi.org/10.1007/978-1-4842-9309-6_13

[13] Kaufman, Wm. Brett, and Michael A. Covaleski (2019). Budget Formality and Informality as a Tool for Organizing and Governance Amidst Divergent Institutional Logics. *Accounting, Organizations and Society,* 75: 40-58. DOI: https://doi.org/10.1016/j.aos.2018.10.003

[14] Khodakivska, Olga *et al*. (2022). Sustainable Development of Regions: Modeling the Management of Economic Security of Innovative Entrepreneurship. *International Journal of Advanced and Applied Sciences,* 9(3): 31-38. DOI: https://doi.org/10.21833/IJAAS.2022.03.004

[15] Khodakovsky, Vadim (2023). State Financial Policy of Economic Development. *University Economic Bulletin,* 18(3): 24-30. DOI: https://doi.org/10.31470/2306-546X-2023-58-24-30

[16] Kori, Bryson Wafula, Samuel M.A. Muathe, and Samuel Maina (2020). Financial and Non-Financial Measures in Evaluating Performance: The Role of Strategic Intelligence in the Context of Commercial Banks in Kenya. *International Business Research,* 13(10): 130-42. DOI: https://doi.org/10.5539/ibr.v13n10p130

[17] Lemishovska, Olesia (2023). Methodological Tools in the Processes of Income and Expenditure Accounting: Contemporary Discussions and Developments in Galicia at the Turn of the Century. *Economics, Entrepreneurship, Management,* 10(2): 35-47. DOI: https://doi.org/10.56318/eem2023.02.035

[18] Lestari, Ni Ida Gede, and Desi Adhariani (2022). Can Intellectual Capital Contribute to Financial and Non-Financial Performances During Normal and Crisis Situations? *Business Strategy and Development,* 5(4): 390-404. DOI: https://doi.org/10.1002/bsd2.206

[19] Macintosh, Norman B., and Richard L. Daft (1998). Management Control Systems and Departmental Interdependences: An Empirical Study. In: *Management Control Theory* (pp. 251-78). London: Routledge. DOI:https://doi.org/10.4324/9780429422553

[20] Mahacek, Darko, Aleksandar Vcev, and Drazen Sebo (2019). Budget and Non-Financial Assets. In: Economic and Social Development: 37th International Scientific Conference on Economic and Social Development – 'Socio Economic Problems of Sustainable Development'. Baku: Varazdin Development and Entrepreneurship Agency. Available at: https://unec.edu.az/application/uploads/2019/09/Huseynov-Faiq1.pdf

[21] Moshenskyi, Sergii, Dymytrii Grytsyshen, and Oleksandr Petruk (2024). Agricultural and Resource Economy of Ukraine and Problems for Economic Growth. *Scientific Horizons,* 27(1): 152-161. DOI:https://doi.org/10.48077/scihor1.2024.152

[22] Oliinyk, Yuliia *et al*. (2023). Development of Information Support for Fiscal Risk Management Within Crises. *Financial and Credit Activity: Problems of Theory and Practice,* 6(53): 432-50. DOI:https://doi.org/10.55643/fcaptp.6.53.2023.4219

[23] Popa, Ionela (2012). Features of Budget Execution in Public Institutions' Budgets Entirely Funded by Public and Local Budgets. *Ovidius University Annals: Economic Sciences Series,* 12(2): 1330-32.

[24] Radionov, Yurii D. (2023). The Public Finance System of Ukraine under Martial Law. In: *V International Scientific and Practical Conference 'Financial Instruments of Sustainable Economic Development'* (pp. 34-38). Chernivtsi: Yuriy Fedkovych Chernivtsi National University. Available at: http://dspace.puet.edu.ua/bitstream/123456789/13038/1/2023_Conference_CHERNIVTSI%20.pdf#page=35

[25] Roshylo, Violetta (2023). Specific Features of the Financial System of Ukraine in the Conditions of War. *Scientific Bulletin of Mukachevo State University. Series 'Economics',* 10(2): 31-41. DOI:https://doi.org/10.52566/msu-econ2.2023.31

[26] Sliusar, Svitlana (2022). Organisation of Accounting in Public Sector Institutions of Ukraine: International Context. University *Economic Bulletin,* 53: 88-93. Available at: https://www.ceeol.com/search/article-detail?id=1060064

[27] Slobodeniuk, Tymur (2023). Modernisation of the National System of Administrative Services in Ukraine, Caused by the Russian-Ukrainian War. *Development Management,* 22(4): 8-15. DOI:https://doi.org/10.57111/devt/4.2023.08

[28] Slyuz, Tetyana (2022). Public Report of the Head of the Treasury on the Results of the Activities of the State Treasury Service of Ukraine for 2022. *State Treasury Service of Ukraine*. Available at: https://www.treasury.gov.ua/storage/app/sites/1/uploaded-files/ПУБЛІЧНИЙ%203ВІТ%20за%202022%20рік.pdf

[29] Storozhuk, T.M. (2023). On the Issue of Forming the Accounting Policy of Public Sector Institutions. In: *V International Scientific-Practical Conference 'Modernization of Economy: Current Realities, Forecast Scenarios and Development Prospects'* (pp. 465-69). Kherson: Kherson National Technical University. http://dspace.nbuv.gov.ua/bitstream/handle/123456789/196945/16-Boichenko.pdf

[30] Tsiatkovska, Olena (2023). Methodological Basis for Constructing the Accounting of Non-Financial Assets in State Institutions. *Acta Academiae Beregsasiensis. Economics,* 4: 552-62. Available at: https://aab-economics.kmf.uz.ua/aabe/article/view/121

[31] Regulatory and Legal Support of Accounting in the Public Sector. (2023). Ministry of Finance of Ukraine. Available at: https://mof.gov.ua/uk/nacionalni-polozhennja

[32] State Statistics Service of Ukraine. (2023). Available at: https://www.ukrstat.gov.ua/

[33] Unified Register of Managers and Recipients of Budget Funds. (2022). State Treasury Service of Ukraine. Available at: https://www.treasury.gov.ua/unifie-register-search

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Barriers in the Development of Small Businesses in Kosovo

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Abstract: The research aims to identify barriers to the growth of entrepreneurship in the country and assess their real impact on the ability of businesses to operate. The main research methods used were analysis, forecasting, abstraction, and statistical methods. As part of the study, the results of a survey conducted in Kosovo were presented, which allowed us to understand the views of business owners and managers on the obstacles to business growth in Kosovo. A majority of respondents were found to see significant obstacles to doing business in Kosovo. These barriers harm their business opportunities and plans for future business operations. In addition, more than two-thirds of the surveyed business owners and managers expressed a desire to develop their business in the future, while the rest did not. The survey also identified several factors that negatively affect business in Kosovo. Among them were poor access to finance, problems in tax policy, lack of rule of law, infrastructure development. This study provides valuable insights into the challenges and intentions of businesses in Kosovo, shedding light on the factors that influence business growth and development. The findings can be used both in shaping the government's business policy and by the managers of such companies in formulating their development strategies.

Keywords: business operation; public policy; management; entrepreneurship; institutional development.

JEL Classification: L26; L38; M38; M21; O12.

Introduction

The development of small and medium-sized enterprises (SMEs) helps to ensure economic growth, create a significant number of jobs, and increase the share of services in the economy. In addition, such enterprises often become the drivers of innovation; they are more flexible in implementing new ideas and technologies. Given that small and medium-sized enterprises are located throughout the country, even in its least developed areas, this leads to the development of all its territories. That is why finding opportunities for the development of this component of the economy is still relevant, especially given the significant number of barriers and obstacles that exist in the current environment. The growth of such enterprises is always associated with certain factors that affect the perception of business owners and managers (Varenyk and Piskova 2024). Thus, it remains important to identify these factors, study them in more detail and find opportunities to counteract them (Akpan *et al.* 2022; Bartik *et al.* 2020).

Many scholars have studied the problems of entrepreneurship development in Kosovo. As such, F. Krasniqi and H. Terziu (2021) focused on the challenges of microbusinesses in their study. They showed the difficulties faced by such enterprises ('nepotism', corruption, difficulties in terms of credit and fiscal policy), but did not pay enough attention to the possibility of providing recommendations for such companies. S. Lajqi *et al.* (2019) studied the possibilities of launching new businesses in Kosovo in their research. They highlighted the need for more active investment in such companies to modernise existing outdated equipment. Based on this, the researchers propose to create an online portal to provide advice on government instruments and funds for start-ups and encourage the involvement of private initiatives. Although this policy may indeed prove to be effective and lead to a much more efficient functioning of business in the current conditions in Kosovo, it is worth conducting additional research in this area, given the rather narrow focus of the study in this paper. V. Jahmurataj *et al.* (2023) assessed the factors influencing the longevity of family businesses in the country. They identified several key factors, including family culture, knowledge transfer from the founder to the successor. A. Loku *et al.* (2021) studied the role of small and medium-sized enterprises in Kosovo. Their work showed that, although their role is indeed significant, there are still difficulties related to innovation, low product mix, inadequate governance. R. Hoxha and H. Hoti (2019), in turn, studied the impact of gender, age, and management style on business development in Kosovo. They showed that doing business is influenced by gender (primarily due to the local mentality), the age of the manager and the management style. In such circumstances, it is effective for the state to introduce additional opportunities for training the local population in the basics of entrepreneurship to increase the efficiency of small and medium-sized businesses.

Several key hypotheses were formed as part of the study, which are outlined below:

H_1 – owners' perceptions of barriers affect their intention to grow (some barriers have a greater impact on intention to grow, others less). This hypothesis is formulated to investigate how owners/managers perceive barriers affecting their behaviour and intention to develop.

H_2 – the impact of barriers on growth intentions differing, depending on the longevity of the business.

H_3 – the impact of barriers on intentions to develop differs depending on the type of business.

Thus, the study further concluded, based on the data collected from the survey, whether each of these hypotheses could be considered confirmed or rejected. Thus, the research aims to analyse certain factors that affect business growth opportunities in Kosovo. This will help better shape government policy in this area to improve the efficiency of local enterprises.

1. Materials and Methods

To assess the existing barriers to business, 20 face-to-face online interviews were conducted with business owners and managers. These were conducted among business owners, managers, and other key stakeholders. The process aimed to test the research protocol, data collection tools and other components for a more detailed study. Subsequently, the data obtained from the interviews were used to create the questionnaire. The interviews provided insight into the challenges and obstacles to development faced by business owners and managers. The questionnaire had a clear structure of questions: from simple to complex. The main goal of this approach was to ensure the convenience and psychological comfort of respondents to obtain more plausible results. The questions were formulated clearly and in a logical sequence. Thus, the interview was organised in such a way that its questions were easily understood by the interviewed managers and owners. Multiple-choice questions were mostly used, and a five-point Likert scale with response options ranging from 'strongly disagree' to 'strongly agree' was used to assess the level of perception of managers and owners.

After that, a survey was also conducted in 230 different enterprises, which were assessed on the same five-point scale. The results are shown in Table 1. The questions asked included the following: position in the company; level of education; length of business in years; number of employees; type of business; and location of the business. In addition, it was asked whether there are obstacles to doing business in Kosovo; whether there is a desire to develop the company; whether obstacles interfere with development plans and goals; whether the presence of barriers forces them to change (cancel) growth goals; whether the business has grown in 5 years. Subsequently, an extensive survey was conducted to determine how each component of the barriers to business hinders (or does not hinder) its development. The sample of businesses surveyed was randomly selected based on the Ministry of Trade and Industry/Agency for Business Registration; it includes businesses from all regions of Kosovo and all major sectors (industry, trade, and services).

Table 1. Information on the share of enterprises in the population and sample by size and industry

Sector	Micro-enterprises	Small enterprises	Medium enterprises	Total	Sector share in total, %	Sector share in sample, %
Industry	95.2	2.4	2.4	100	10.1	23
Services	97	1.7	1.3	100	40	35
Trade	98.7	0.8	0.6	100	50	42
Share of company size in total, %	97.7	1.3	1	100	100	100
Share of company size in sample, %	70	25	5	100	0	0

Source: compiled by the author.

As can be seen from Table 1, the sample of small enterprises consisted of micro-enterprises (1-9 employees) and small enterprises (10-49 employees), with medium-sized enterprises also included in the sample. The sample structure is detailed in Table 2.

Table 2. Stratified sampling by sector

Sector	Micro-enterprises	Small enterprises	Medium enterprises	Sector share, %
Industry	12	6	18	10
Services	60	22	82	40
Trade	80	20	100	50
In total	152	48	200	100

Source: compiled by the author.

Table 2 shows the respective approximate shares of the main sectors of the Kosovo economy, namely industry, services, and trade. This study also used a statistical classification approach to ensure that small enterprises in all regions of Kosovo are fairly represented and aligned with the different sectors. The study divided Kosovo into seven regions based on the percentage of registered enterprises in each region.

The study used a wide variety of research methods. These include an analysis that assessed the main quantitative and qualitative data on the development of SMEs in Kosovo. To better understand the evolution of this component over time, the historical method was used, which allowed for a retrospective assessment of information on SMEs. Statistical methods were used to evaluate the data obtained through a survey of business representatives in Kosovo. In addition, the forecasting method was used to generate estimates of the future development of this sector. Abstraction was used to limit the factors assessed in the study (in case they were found to be unimportant).

2. Results

Small and medium-sized enterprises in Kosovo remain an important component of the country's development and play a significant role in job creation and gross domestic product growth. There has been some momentum in terms of growth in their number over the past few years, but the market itself still needs assistance to develop further. The government generally recognises the importance of SMEs and has implemented policies to support them through various initiatives. These include facilitating access to finance, developing the capacity of enterprises and increasing their competitiveness. Nevertheless, all these components, as well as some others, such as the foreign economic activity of such companies, remain problematic (Ciekanowski and Wyrebek 2020; Chudyk and Vivchar 2023; Fabeil *et al.* 2020). Thus, some SMEs in Kosovo have started to try to enter foreign markets, in particular within the European Union, due to geographical advantages. Nevertheless, active development of this activity remains difficult (Peci *et al.* 2012). In any case, there are still some difficulties in the country in terms of doing business in Kosovo for small and medium-sized businesses, which should be resolved soon, partly with the help of the survey described later in the paper.

Initially, the survey asked whether there are obstacles to doing business in Kosovo and how they address these obstacles to business growth. Thus, 3 respondents strongly disagreed, 19 disagreed, 18 neither agreed nor disagreed, 25 agreed and 135 strongly agreed. Thus, about 80% of respondents believe that there are obstacles to doing business in Kosovo. The data on whether such an environment filled with restrictions and barriers hurts the development of enterprises in Kosovo showed that about 80% of respondents believe that this should lead to obstacles to the company's growth plans and goals. The assessment of goals for the future development of such companies also remained important (Fairlie 2020). Thus, about 70% of respondents expressed their intention to develop, while the remaining 30% did not. In transition economies such as Kosovo, this high level of intention to grow can be explained by the limited opportunities for career advancement and the significant economic uncertainty that prevails in these environments.

The respondents were also asked about their predictions for the growth of their sales and employment to build regression equations. The data showed that among the 200 businesses surveyed, some reported sales growth, while others experienced no growth or even a decline. On average, these businesses achieved a growth rate of 19.67% over the five-year period, which translates into an average annual increase of 3.93%. Similar findings were obtained concerning employment levels: most companies reported an increase in employment over time, but some still reported a decline. As part of the study, a survey was also conducted on the main factors that negatively affect doing business in Kosovo. Access to finance received the highest score with an average of 4.43, indicating that the majority of respondents agree or strongly agree that this obstacle hinders their business development. Tax policy was next on the list with a score of 4.06, especially given the problems that the tax authorities create for companies. Economic policy had a moderate impact (at 3.09), given the ongoing demands to strengthen economic resilience. The group related to the absence of the rule of law played a separate role, namely the perception of corruption (4.56) and the ineffectiveness of the justice system (4.53). Market barriers (4.39) due to smuggling played a significant role; problems in terms of infrastructure development (4.51), in particular the lack of electricity; lack of human resources and qualified personnel (3.95); and difficulties in the labour market (3.95).

It is the perception of barriers that can have a different impact on the intentions and behaviour of business owners/managers. Thus, barriers can change the perception of business growth, undermine the company's goals, slow down the process of achieving goals. These barriers operate in different ways, for example, those related to the rule of law tend to impede growth actions, while institutional barriers undermine growth goals or impede their realisation. Sometimes these impacts are decisive, for example when barriers lead to critical and unfair outcomes (unchecked corruption or propaganda). To study the impact of individual barriers on companies' intentions to develop, an independent sample test was conducted. For this purpose, 5 indicators were selected, as mentioned above, and separate questions were asked of the respondents. The indicators were as follows: lack of institutional support (LOIS); lack of rule of law (LORL); market barriers (MB); lack of infrastructure (LOI); and incapacity of human resources (IOHR). Table 3 below shows how respondents answered the questions related to the impact of this factor on barriers:

Table 3. Data on the respondent's answers to the question about the impact of certain barriers on the ability of small and medium-sized businesses to grow

	Does this factor affect business development?	Amount	Average	Standard deviation	Standard error
LOIS	No	60	3.53	0.43109	0.05565
	Yes	140	3.45	0.33225	0.02808
MB	No	60	2.95	0.70929	0.09157
	Yes	140	3.42	0.51567	0.04358
LOI	No	60	2.63	0.59303	0.07656
	Yes	140	2.73	0.47781	0.04038
LORL	No	60	4.16	0.29838	0.03852
	Yes	140	4.3	0.52289	0.04419
IOHR	No	60	3.29	0.5539	0.07151
	Yes	140	3.26	0.51934	0.04389

Source: compiled by the author.

From Table 3, only two variables showed significant differences: MV and LORL. Regarding the variable market barriers (MB), there is a difference between firms that intend to grow and those that do not intend to grow. Firms that do not intend to grow their business have a mean value of 2.95, while firms that intend to grow their business have a mean value of 3.41. This suggests that companies facing market barriers are less enthusiastic about growing their business, while those facing fewer barriers are more likely to look for growth opportunities.

Table 4. Differences in the impact of barriers on small business development between groups

Indexes		F	F Sig.	t	df	Sig. (double-sided)	Mean Difference	Std. Error Difference	95% Confidence Interval	
									Lower Bound	Lower Bound
LOIS	EVA/EVNA	11.794	0.001	1.47	198	0.143	0.083	0.056	-0.028	0.194
	EVA/EVNA			1.33	90.38	0.188	0.083	0.062	-0.041	0.206
MB	EVA/EVNA	24.19	0	-5.16	198	0	0.462	0.09	-0.638	-0.285
	EVA/EVNA			-4.55	86.87	0	-0.462	0.101	-0.663	-0.26
LOI	EVA/EVNA	3.433	0.065	-1.17	198	0.242	-0.093	0.079	-0.25	0.063
	EVA/EVNA			-1.08	93.33	0.284	-0.093	0.087	-0.265	0.079
LORL	EVA/EVNA	22.568	0	-1.99	198	0.049	-0.143	0.072	-0.285	-0.001
	EVA/EVNA			-2.44	182.4	0.016	-0.143	0.059	-0.259	-0.027
IOHR	EVA/EVNA	0.741	0.39	0.39	198	0.696	0.032	0.082	-0.129	0.193
	EVA/EVNA			0.38	105.48	0.704	0.032	0.084	-0.134	0.198

Source: compiled by the author.

The information in Table 4 can be interpreted as meaning that firms with no intention to grow to face fewer problems with the lack of rule of law than firms to grow. Considering all the information described above, H1 can be considered confirmed.

The survey found that the age of the enterprise has an impact on how it is affected by various barriers. Older firms tend to grow faster and seem to be less affected by barriers, which in turn has a different impact on their growth. This hypothesis (H2, mentioned in the methodology) can be tested using a one-way analysis of variance. To ensure the validity of the analysis, assumptions such as homogeneity of variances are tested. The results of this analysis are shown in Table 5.

Table 5. Checking the homogeneity of variances based on the average of all variables

	Levene Statistic	df1	df2	Sig.
LOIS	0.163	3	196	0.921
MB	1.967	3	196	0.12
LOI	1.46	3	196	0.227
LORL	2.264	3	196	0.082
IOHR	3.255	3	196	0.023

Source: compiled by the author.

If the significance value is higher than 0.05, the variances can be considered homogeneous. In Table 5, except for the IOHR variable, all other variables are above 0.05 (sig.: 0.921, 0.120, 0.227, 0.082). Since the basic assumption of analysis of variance is met, we can say that the results obtained from the analysis of variance are reliable. An ANOVA table is used to examine differences between groups in their responses to barriers. In this analysis, if the F-value exceeds the significance value at the 95% significance level, the hypothesis is accepted, or if the p-value is less than 0.05. The data are shown in Table 6.

Table 6. ANOVA – difference between groups in terms of barriers

Indexes		Sum of Squares	df	Mean Square	F	Sig.
LOIS	Between Groups	0.337	3	0.112	0.839	0.474
	Within Groups	26.258	196	0.134		
	Total	26.596	199			
MB	Between Groups	1.097	3	0.366	0.962	0.412
	Within Groups	74.496	196	0.38		
	Total	75.593	199			
LOI	Between Groups	0.745	3	0.248	0.935	0.425
	Within Groups	52.103	196	0.266		
	Total	52.849	199			
LORL	Between Groups	2.214	3	0.738	3.452	0.018
	Within Groups	41.904	196	0.214		
	Total	44.118	199			
IOHR	Between Groups	0.453	3	0.151	0.536	0.658
	Within Groups	55.182	196	0.282		
	Total	55.634	199			

Source: compiled by the author.

Table 6 shows that only the LORL value falls below the 0.05 level. This indicates that there are significant differences in how firms of different ages are affected by this variable. However, to understand between which specific groups these differences exist, Post Hoc tests are conducted. These tests help to identify the specific groups that show differences in their response to this variable. More data can be seen within Table 7, in particular the changes depending on the time of business existence.

Table 7 shows information only on the LORL variable. The test results show that there is a difference between businesses that have been operating for 5-10 years and businesses that have been operating for 16-20 years. These differences are indicated by an asterisk. According to this difference, businesses with a longevity of 5-10 years face more problems due to the lack of rule of law compared to other businesses with a history of 16-20 years. Given that there is a significant difference in the impact of barriers according to intentions and intentions to increase business longevity, hypothesis H2 can be considered confirmed.

Table 7. Assessment of barriers in terms of the time of business existence

Dependent variable	Longevity of business (I)	Longevity of business (J)	Mean difference (I-J)	Std. error	Sig.	95% confidence interval	
						Lower bound	Upper bound
LORL	5-10 years	11-15 years	0.077	0.078	0.755	-0.124	0.278
		16-20 years	0.228	0.083	0.032	0.014	0.443
		21-25 years	0.431	0.213	0.184	-0.122	0.984
	11-15 years	11-15 years	-0.077	0.078	0.755	-0.278	0.124
		16-20 years	0.151	0.086	0.296	-0.072	0.374
		21-25 years	0.354	0.215	0.354	-0.202	0.91
	16-20 years	11-15 years	-0.228	0.083	0.032	-0.443	-0.014
		16-20 years	-0.151	0.086	0.296	-0.374	0.072
		21-25 years	0.202	0.217	0.786	-0.359	0.763
	21-25 years	11-15 years	-0.431	0.213	0.184	-0.984	0.122
		16-20 years	-0.354	0.215	0.354	-0.91	0.202
		21-25 years	-0.202	0.217	0.786	-0.763	0.359

Source: compiled by the author.

As can be seen from the above study, the distribution of firms by type of activity is more or less standardised across manufacturing, trade, and services, but the impact of barriers varies by activity. To confirm H3, formulated above, it is worthwhile to first check the homogeneity of variances for the ANOVA analysis. This is shown in Table 8, while Table 9 shows the actual data for the ANOVA test:

Table 8. Checking the homogeneity of variances based on the average of variables

Indexes	Levene Statistic	df1	df2	Sig.
LOIS	0.183	2	197	0.833
MB	2.068	2	197	0.129
LOI	1.138	2	197	0.322
LORL	0.762	2	197	0.468
IOHR	1.263	2	197	0.285

Source: compiled by the author.

Table 9. Difference between barrier groups based on the ANOVA test

Indexes		Sum of squares	df	Mean square	F	Sig.
LOIS	Between groups	0.002	2	0.001	0.431	0.651
	Within groups	0.437	197	0.002		
	Total	0.438	199			
MB	Between groups	0.018	2	0.009	1.074	0.344
	Within groups	1.626	197	0.008		
	Total	1.643	199			
LOI	Between groups	0.048	2	0.024	3.47	0.033
	Within groups	1.374	197	0.007		
	Total	1.423	199			
LORL	Between groups	0.003	2	0.002	0.661	0.517
	Within groups	0.485	197	0.002		
	Total	0.488	199			
IOHR	Between groups	0.028	2	0.014	2.713	0.069
	Within groups	1.023	197	0.005		
	Total	1.051	199			

Source: compiled by the author.

According to the data in Tables 8 and 9, there is a difference between the groups only on the LOI variable. To understand the differences between the groups, the results of the Tukey test are used. Below you can see the results of the test for this variable (in Table 10):

Table 10. Multiple comparison of barriers (LOI) by business type

Dependent variable	(I) Type of business	(J) Type of business	Mean difference (I-J)	Std. error	Sig.	95% confidence interval	
						Lower bound	Upper bound
LOI	Production	Trade	-0.003	0.017	0.978	-0.042	0.036
		Services	0.03	0.017	0.192	-0.011	0.071
	Trade	Production	0.003	0.017	0.978	-0.036	0.042
		Services	0.033	0.013	0.032	0.002	0.065
	Services	Production	-0.03	0.017	0.192	-0.071	0.011
		Trade	-0.033	0.013	0.032	-0.065	-0.002

Source: compiled by the author.

As can be seen from Table 10, there are differences between trade and service firms in terms of their attitudes towards infrastructure barriers. According to this difference, trade-type firms face more infrastructure-related barriers than service-type firms. This difference is 0.03341 and is significant at the 0.032 level. In addition, the results of the barrier differ by business type and intention to grow, and therefore it can be concluded that hypothesis H_3 is supported.

Based on the information analysed above, some policy measures can be suggested that could improve the situation in the country as a whole. It is crucial to provide better access to finance, in particular through loan guarantee schemes, micro-loans and incentives for the creation of venture capital funds. It would be effective to strengthen cooperation with such organisations and provide them with guarantees to enable them to better provide loans to SMEs (Alsaaty and Makhlouf 2020; Liepert 2024). In addition, it is important to review tax policy and simplify the tax code to reduce the burden on small businesses (Leontyev and Ketners 2023). Improving the country's institutional framework, strengthening the rule of law, and improving the fight against corruption remain important. Investments in infrastructure could also help to improve the efficiency of SMEs. Such policies could help to significantly improve the ease of doing business in Kosovo.

3. Discussion

In general, there are quite a few barriers in Kosovo, as evidenced by the respondents' testimonies. This affects the plans and goals of companies, their intentions to develop their business in the future, expand. Although the intentions may vary depending on the type of activity and, for example, the age of the companies and some other indicators, in general, they drive companies to develop despite the uncertainty and existing barriers to SME development. A negative set of factors, such as insufficient access to finance, tax policy, lack of sufficient infrastructure and loyalty to corruption, lead to all the negative consequences (Giunipero *et al.* 2022; Kraus *et al.* 2023).

The obstacles to growth and potential solutions for new small and medium-sized enterprises were studied by M.A. Khan (2022). As part of his research, he examined various obstacles that affect the performance of entrepreneurial SMEs, including financial and economic obstacles, management skills, and corruption. The research was based on data from Pakistan. He noted that the main obstacles to the success of entrepreneurial SMEs in Pakistan are the lack of funds to start their own business and high-interest rates on loans. In addition, the lack of management skills of SME owners was another disadvantage. Corruption in Pakistan also affected the registration and financing of SMEs, while insufficient infrastructure hurt business development by increasing production costs due to inadequate bridges, roads. In the work above, similar indicators were shown for Kosovo, which hurt the development of small and medium-sized enterprises. This suggests that the set of SMEs is generally identical for many countries, and therefore the needs for financial policy are also similar. In the current context, both Pakistan and Kosovo require active support from the state to ensure that such enterprises can develop effectively in both countries.

F. Takacs *et al.* (2022) also investigated the existing barriers to the development of small and medium-sized enterprises and their integration into a sustainable strategic management system. The study identified six internal barriers, including risk aversion, short-term orientation, economic thinking, unwillingness to compromise, lack of resources, and lack of knowledge. In addition, 12 external barriers were identified in the technological, market, legislative and societal aspects. In general, the barriers described by scientists are similar or often identical to those studied in the paper above. This once again demonstrates the relevance and importance of studying this topic in the current environment.

D. Tsuruta (2018) studied whether small and medium-sized enterprises have barriers to growth and transition to larger firms. The researchers noted that the financial capabilities of the company, as well as the business environment for such companies, prescribed by law, played an important role. The study found that an increase in shareholder capital had a positive impact on firm growth, in particular on the growth rate of total assets. However, the equity requirements in the SME definitions have hurt the accumulation of additional equity capital, thus hindering the growth of SME firms. Thus, SME policies, while important for addressing market failures, should be implemented carefully, as they may hinder their growth.

B. Prakash *et al.* (2021), in their study, identified the obstacles and barriers faced by SMEs in India. They included poor road quality, high electricity tariffs, insufficient electricity supply, transportation problems, marketing problems, gender inequality, and some others. Particular attention was paid to the latter component, as it limited the country's economic development opportunities. Scientists believe that to overcome these obstacles, effective government policy and proper public policy in this area are needed. Businesses themselves have also shown that they expect to receive assistance from the government, given the difficulties they face in running their businesses. It is worth noting that in the analysis of the situation in Kosovo above, similar barriers to the development of small and medium-sized enterprises in the country were identified (Loxha 2019). To overcome them, the country's government authorities should also consider providing more active support to small and medium-sized companies. It should be understood that such support can be either financial (*i.e.*, direct allocation of funds from the budget for them, or introduction of tax benefits) or have other configurations. For example, the creation of bodies that will provide various services for such companies. In addition, general economic reforms aimed at fighting corruption or improving the level of education in the country often prove to be effective. Nevertheless, the effects of these policies are quite long-term, meaning that they will not be able to solve the existing difficulties in the short or medium term. That is why it is important to combine them with other components of the government's SME support policy (Engidaw 2022).

The factors of influence (barriers) of non-exporting enterprises were studied by C. Morini *et al.* (2020). The study combines existing knowledge on incentives and export barriers and introduces a component for analysis such as 'entrepreneurship', which is inherently a factor in the activities of company managers. The types of barriers studied by the researchers included the following: financial/fiscal barriers, business development barriers, technical/technological barriers, corruption barriers, knowledge management barriers, and project acquisition barriers. The researchers D.M. Madiyarova and A.A. Argyngazinov (2022) showed that all the factors assessed had an impact on the business opportunities of exporting companies. Among the factors that were not investigated in the above study on the example of Kosovo are 'knowledge management' and 'technological barriers'. For many enterprises, the use of the latest technologies in production or service delivery processes plays an important role (Shtal *et al.* 2021; Kryvovyazyuk 2023; Kuznietsova and Bonar 2023). Thus, it is worth investigating in future work for Kosovo and the Balkan countries in general to understand the sufficiency (or insufficiency) of this component in the countries. The growth of a company is a complex phenomenon that is influenced by numerous factors, including resources, management, goals, and the business environment. It combines the view of resources, motivation, and strategic adaptation of enterprises. In turn, the intention to grow is a key factor in stimulating firm growth. Success in entrepreneurial development depends on several elements, including a clear vision, efficiency, passion, and hard work.

In general, the crucial aspects of entrepreneurial activity include corporate entrepreneurship, innovation, risk-taking and firm activity. These aspects are key to the creation of firm wealth and growth, as they promote economies of scale and market power, giving firms a competitive advantage. As such, the growth of small firms plays a vital role in the economic development of a country, especially during the transition from a centrally planned economy to a free market economy (Kireyeva *et al.* 2021). Entrepreneurial skills are indispensable to overcome uncertainty and competition in these contexts. The existing institutional structure and rules governing entrepreneurial activity have a significant impact on entrepreneurial behaviour. An entrepreneurial mindset can lead to competitive advantage and wealth creation, allowing businesses to thrive in a turbulent business environment. Therefore, the state should make every effort to foster the development of small and medium-sized businesses as efficiently as possible.

Conclusions and Further Research

This study provided insights into the role of entrepreneurs in the growth process, including their behaviour and intentions in the challenging business environment of Kosovo. A significant percentage of entrepreneurs in Kosovo express an intention to grow, which is higher than in highly developed countries. This high motivation to grow can be partly explained by the determination of young entrepreneurs to advance their careers and contribute to a more favourable business environment. Importantly, these growth intentions have a positive and significant impact on the development of small businesses in Kosovo. Perceptions of barriers and how they affect growth intentions and behaviour differ from country to country, especially between developed and transition economies. In the case of Kosovo, owners and managers often perceive barriers as daunting challenges, which motivate them to overcome them, but this is not the case everywhere.

To promote a more favourable environment for small business development, it is recommended that efforts be made to encourage enterprises to enter the formal economy. Regulatory changes that make it easier to enter the formal sector would allow more small businesses to access credit and finance, solve business problems, and contribute to the overall development of a market economy and job creation. The Government of Kosovo should take decisive steps to develop a comprehensive strategy to support small businesses, including reforms in the justice system and other areas affecting small business development. In addition, there is a need for better coordination between institutions supporting small businesses, including line ministries, business agencies, innovation centres and educational institutions. It should facilitate the exchange of relevant information and address the training needs of small business owners and their staff. Educational institutions also need to modernise their curricula to meet labour market demands, ensuring that graduates have the necessary skills for employment and entrepreneurship. This adaptability to modern business practices is vital in an evolving economic landscape.

Further research is needed to compare the experience of Kosovo's entrepreneurs with other countries to find new opportunities for entrepreneurship development. In addition, it is important to investigate in more detail the psychological aspects of entrepreneurs' intentions and behaviour, as well as the impact of government policies and support programmes on small business development.

Credit Authorship Contribution Statement

Shaip Gashi: Conceptualization, Project administration, Writing – original draft, Supervision, Validation, Visualization.

Declaration of Competing Interest

The author declares that has no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Declaration of Use of Generative AI and AI-assisted Technologies

The authors declare that they have not used generative AI and AI-assisted technologies during the preparation of this work.

References

[1] Akpan, Ikpe Justice, Elijah Abasifreke Paul Udoh, and Bamidele Adebisi (2022). Small Business Awareness and Adoption of State-of-the-Art Technologies in Emerging and Developing Markets, and Lessons from the COVID-19 Pandemic. *Journal of Small Business and Entrepreneurship,* 34(2): 123-40.

[2] Alsaaty, Falih M., and Hany H. Makhlouf (2020). The Rise and Fall of Small Business Enterprises. *Open Journal of Business and Management,* 8(4): 1908-16.

[3] Bartik, Alexander *et al*. (2020). When Should Public Programs be Privately Administered? Theory and Evidence from the Paycheck Protection Program. *NBER Working Paper* 27623. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3665894

[4] Chudyk, Nataliia, and Oksana Vivchar (2023). Strategy of Strengthening the Economic Security of Enterprises of Network Structures: Pragmatics and Key Vectors of Development. *Law, Policy and Security,* 1(1): 55-67.

[5] Ciekanowski, Zbigniew, and Henryk Wyrebek (2020). Impact of Micro, Small and Medium-Sized Enterprises on Economic Security. *Polish Journal of Management Studies,* 22(1): 86-102.

[6] Engidaw, Abriham Ebabu (2022). Small Businesses and Their Challenges during COVID-19 Pandemic in Developing Countries: In the Case of Ethiopia. *Journal of Innovation and Entrepreneurship* 11: 1.

[7] Fabeil, Noor Fzlinda, Khairul Hanim Pazim, and Juliana Langgat (2020). The Impact of COVID-19 Pandemic Crisis on Micro-Enterprises: Entrepreneurs' Perspective on Business Continuity and Recovery Strategy. *Journal of Economics and Business,* 3(2): 837-44.

[8] Fairlie, Robert (2020). The Impact of COVID-19 on Small Business Owners: Evidence from the First Three Months after Widespread Social-Distancing Restrictions. *Journal of Economics and Management Strategy,* 29(4): 727-40.

[9] Giunipero, Larry C., Diane Denslow, and Ania Izabela Rynarzewska (2022). Small Business Survival and COVID-19 – An Exploratory Analysis of Carriers. *Research in Transportation Economics,* 93: 101087.

[10] Hoxha, Rifat, and Hamdi Hoti (2019). Impact of Gender, Age and Management Style on the Success of family Business in Kosovo. *European Journal of Sustainable Development,* 8(5): 153-60.

[11] Jahmurataj, Veton et al. (2023). Unveiling the Determining Factors of Family Business Longevity: Evidence from Kosovo*. Journal of Business Research,* 159: 113745.

[12] Khan, Muhammad Asif (2022). Barriers Constraining the Growth of and Potential Solutions for Emerging Entrepreneurial SMEs. *Asia Pacific Journal of Innovation and Entrepreneurship,* 16(1): 38-50.

[13] Kireyeva, Anel et al. (2021). Managing Research and Development Process in Conditions of Economic Growth of Kazakhstan: Methods and Analysis. *Problems and Perspectives in Management,* 19(3): 185-96. DOI: https://doi.org/10.21511/ppm.19(3).2021.16

[14] Krasniqi, Fehmi, and Hysni Terziu (2021). Challenges of Kosovo Micro Businesses. *European Journal of Economics and Business Studies,* 7(1): 23-36.

[15] Kraus, Sascha, Raj V. Mahto, and Steven T. Walsh (2023). The Importance of Literature Reviews in Small Business and Entrepreneurship Research. *Journal of Small Business Management,* 61: 1095-106.

[16] Kryvovyazyuk Igor (2023). Management of Business Risks of Wholesale Companies. *Economic Forum,* 1(2): 81-90. DOI: https://doi.org/10.36910/6775-2308-8559-2023-2-12

[17] Kuznietsova, Tetiana, and Oksana Bonar (2023). Strategic Management Approach to Digitalization of Business: The Impact of Euro-Atlantic Integration on the Modernization of Ukrainian Enterprises. *University Economic Bulletin,* 18(3): 74-83. DOI: https://doi.org/10.31470/2306-546X-2023-58-74-83

[18] Leontyev, Alexey, and Karlis Ketners (2023). The Improvement of Decision-Making in the Latvian Tax System: Cases of Irreducible Incompatibility Taking into Account Reliability, Equity and Efficiency Criteria. *Intellectual Economics,* 17(2): 322-43. DOI: https://doi.org/10.13165/IE-23-17-2-04

[19] Liepert, Maximilian (2024). Increasing the EBITDA of Private Equity Portfolio Company through Digital Enablement. *Economics of Development,* 23(1): 70-77. DOI: https://doi.org/10.57111/econ/1.2024.70

[20] Loku, Afrim, Nadire Loku, and Naim Baftiu (2021). Small and Medium Enterprises: Importance for the Kosovo Economy. *Technium Social Sciences Journal,* 18(1): 215-21.

[21] Loxha, Arbëresha (2019). Do Remittances Reduce Poverty in Kosovo? - A Counterfactual Analysis. *South East European Journal of Economics and Business,* 14(2). DOI: https://doi.org/10.2478/jeb-2019-0018

[22] Madiyarova, Diana M., and Aibol A. Argyngazinov (2022). Export Potential of Small and Medium Enterprises of Kazakhstan: Analysis Of Regional Opportunities. *Research in Economic Anthropology,* 42: 207–17. DOI:https://doi.org/10.1108/S0190-128120220000042020

[23] Morini, Cristiano et al. (2020). Export Barriers for SMEs from Emerging Market: A Model of Analysis for Non-Tech Companies. *Brazilian Administrative Review,* 18(4): e200121.

[24] Peci, Florin *et al*. (2012). Small and Medium Enterprises Facing Institutional Barriers in Kosovo. *International Journal of Marketing Studies,* 4(1): 95-107.

[25] Prakash, Bishwajeet, Indrajit Kumar, and Jainendra Kumar Verma (2021). Barriers and Potential Solutions for MSMEs in Developing Economies: Evidence from India. *Problems and Perspectives in Management,* 19(4): 325-37.

[26] Saranda, Lajqi, Peci Florin, and Krasniqi Besnik (2019). Mapping Business Start-Up Ecosystem in Kosovo. *Econviews,* 2: 477-86.

[27] Shtal, Tatyana V. *et al*. (2021). Digitalization as a Tool for Ensuring Innovative Development of Restaurant Business. *Estudios de Economia Aplicada,* 39(5). DOI: https://doi.org/10.25115/eea.v39i5.4898

[28] Takacs, Fabian, Dunia Brunner, and Karolin Frankenberger (2022). Barriers to a Circular Economy in Small- and Medium-Sized Enterprises and Their Integration in a Sustainable Strategic Management Framework. *Journal of Cleaner Production,* 362: 132227.

[29] Tsuruta, Daisuke (2018). SME Policies as a Barrier to Growth of SMEs. *Small Business Economics,* 54: 1067-106.

[30] Varenyk, Viktoriia, and Zhanna Piskova (2024). Soft, Hard, and Digital Skills for Managers in the Digital Age: Business Requirements and the Need to Master Them. *Development Management,* 23(1): 46-61. DOI:https://doi.org/10.57111/devt/1.2024.46

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Specifics of Using C.G. Jung's Archetypes in Business Consulting Activities: Myths and Reality

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Abstract: A trend of accelerated production and, consequently, consumption has led to the growing role of marketing in business consulting activities. The relevance of this research is conditioned upon the crisis in the marketing sphere, the inability of marketers to understand consumers in the era of market saturation, and the great significance of the practical application of C.G. Jung's archetypes to express brand identity. The purpose of this research is to identify the specifics of using Jung archetypes in business activities, to identify specific valid archetypes that can personalise a brand, to debunk myths regarding the effectiveness of using Jung's theory. The theoretical foundation of the research is Jung's archetypes model, further research and applied scientific developments of scientists, were devoted to the problem of archetypes theory and their application to increase the effectiveness of branding. The methodological approach is based on a qualitative combination of modelling and system analysis methods. The main results obtained in the framework of this scientific research should be considered the identification of specific valid Jung archetypes for improving the effectiveness of business consulting activities, exposing myths and reality in the outdated theory of archetypes, identifying ways and means of developing archetypes on the example of specific brands. The results of this scientific research and the conclusions bear significant significance for employees of the marketing sphere. The article identifies the cultural influence on the brand archetype, which is an essential criterion for marketers, economists and generalists when choosing a business marketing strategy.

Keywords: consumer behaviour; marketing; brand personality; psychology; brand personalisation.

JEL Classification: D11; M31.

Introduction

One of the pressing subjects of the 21st century is research on consumer perceptions of brand personality. Brand archetypes personalise the brand, due to which marketing professionals can apply archetypal theory to brand personality. It will help to determine the brand perception and consumers' perception of the brand (Högström *et al.* 2015). Thus, first and foremost attention should be paid to the relationship between the consumer and the brand. The product, on the other hand, is the means of achieving brand awareness. Based on this, the archetype marketing paradigm has achieved its popularity and has become a global, widely used practice. With the globalisation of world processes, the archetype paradigm attracts the attention both of scientists and marketing researchers, including Mark and Pearson (2001). Initially, the theory of archetypes was developed by the Swiss psychologist Jung (2017). His theory differs from classical psychoanalysis. As a result of his research and observations, Jung concluded that the human psyche contains both individual and collective thinking. This thinking is represented by archetypes and is inherited from ancestors. Through the investigation and analysis of his patient's dreams, he discovered strong psychic primordial images, the so-called archetypes. Mark and Pearson (2001) in their joint work summarise that the main prerequisite for the implementation of archetype theory in global marketing is the association of archetypes with brand products to provide symbolic meaning. Thus, consumers of these products identify the brand regardless of cultural boundaries (Özcan 2021; Shahini and Shtal 2023).

The research on the problem of the theory of archetypes is devoted to the works of such a scientist as Robertson (1987). In his works, he argued that archetypes cover the gaps between the sale of goods and the motivation of consumers. In addition, the specifics of a product or service, according to the theory of archetypes, depend on the established image, which is reflected in the depths of the human psyche. According to the scientist, brand archetypes should both help to establish customer loyalty and maintain it at a particular level. The studies of modern authors are notable, which analyse the role of archetypes theory in business consulting, revealing the influence of archetypes on consumer ability. For example, Goncharova (2020) explored the specifics of building a brand identity based on the theory of archetypes. Akbudak (2020) devoted his work to the research of personality archetypes in the three-dimensional design of brand characters. Researchers Gülcan (2020) and Türk (2019) explored the psychological aspects of the influence of C.G. Jung's archetype theory on the global information market.

Nowadays, the theory of archetypes is applied by famous advertising campaigns of such brands as Intel, FedEx, GoPro, and Disney (Maidment 2021). With their practice, they demonstrate that the correct application of the archetype theory helps to make a brand recognisable and successful. Therewith, the main problem is the presence of hundreds and even thousands of different archetypes in the world culture, which are not fundamentally fixed and are not the embodiment of basic human needs and, thus, do not carry any essential information and motivation. A properly used archetypal approach should personalise the brand, namely answer the questions of what the brand represents and what associations it evokes in consumers. However, in the current practice of marketers, there is a significant problem and misunderstanding of how to properly apply archetypal theory to the establishment of brand personality.

To solve this problem, research on the conceptual framework of the archetype theory invented by Jung and developed by his school has been conducted, and based on it, a model capable of transforming an archetype into a brand icon has been established. This model is developed in line with the philosophy of comprehensive brand management, the application of which will be of benefit to leading marketers. In addition, broad research on the perception of brand personality will make a great contribution to the science of marketing and advertising, thus, is an important subject for further research. Thus, the purpose of this research is to determine the role of archetypes in brand personalisation and to identify the specifics of Jung's use of archetypes in business. The results of the research will allow marketers to increase the effect of the archetypal approach, choose new research tools and develop the right strategy for any brand. The scientific originality of the research lies in identifying the links between myths and reality in the development of brand strategy and determining the impact of Jung's theory of archetypes on consumer power.

1. Method also Called Materials and Methods or Experimental Methods

The foundation of the methodological approach in this research work is based on the methods of empirical research, namely the method of observation, comparison, and material modelling. In addition, in the process of analysing the features of Jung's archetypes in business consulting activities, theoretical methods were used: analysis and synthesis, induction and deduction, generalisation and classification. These methods helped to determine the specific features of establishing and applying archetypes according to Jung. Since archetypes are a universal tool that can be applied in different channels of brand communication with consumers, it is very important to know the specific features of the application of Jung archetypes in business and understand the myths imposed by society. The empirical study was conducted by analysing consumer perceptions of five famous global brands such as Apple, Samsung Electronics, Amazon, Google and Tencent. The establishment histories of these brands and their marketing strategies were analysed to analyse the conceptual framework and identify patterns of archetypes. Therefore, this research relies on comparing the analysed brands with the corresponding hero archetype. Western and Asian brands were analysed to determine the specific application of archetypes to brands of different cultures. For better understanding, a diagram has been provided to demonstrate the cultural patterns and features of the application of archetypes. Thus, this analysis helped to determine consumer attitudes towards the researched brands and to evaluate myths and reality of archetypes application in business.

The theoretical foundation of this research work consists of the results of completed scientific research designed to explore some problematic issues related to the application of archetypes in business consulting activities. To determine the specific features of the application of archetypes and to identify their role in brand personalisation, this research relies on the 'theory of imagination', which was developed by Jung (2017), and further investigated by the Jungian school. To evaluate the role of Jung's archetypes in marketing, the work considers and analyses the book 'The Hero and the Rebel' by Mark and Pearson (2001), written based on the teachings of Jung. The book notes that the archetype does not replace the brand strategy but is an additional tool that can unite the target audience with the mission of the brand.

In this scientific-theoretical research of the problem of using Jung's archetypes in business-consulting activity three stages can be distinguished. In the first stage, the theory of the origin and development of archetypes was considered, the 'model of 12 archetypes' proposed by Jung was analysed, and the role of archetypes theory as one of the marketing tools was discussed. In the second stage, the specific features of archetypes theory application in business were explored, and archetypes of five world brands were examined based on the history of their promotion, marketing strategy, applied advertising campaigns and associations that these brands evoke in consumers. The third stage analysed the methodology used by marketers to explore brand archetypes, investigating the influence of cultural characteristics and patterns of Western and Asian countries on the establishment of brand archetypes, and putting Jung's archetype theory into practice. In addition, conclusions were drawn about the role archetypes play in developing an image in the consumer's subconscious and their purpose in business consulting activities.

2. Research Results

2.1. Archetype Theory: The Role of Myths in Brand Individualisation

The foundation of branding is a story developed for a particular brand to which consumers are emotionally attached. The story, in turn, identifies the brand and reflects the archetypal myth that consumers believe in (Türk 2019). Brand personalisation through archetypes allows consumers to connect with the brand unconsciously or consciously. It is the most crucial aspect of developing brand loyalty (Signorelli 2012). To establish a meaningful brand with a large audience loyalty, marketers resort to such a tool as a brand archetype. Through this tool, it is possible to interact with customers and their motivations and to give meaning to brands' products and services (Mark and Pearson 2001). Marketing will develop further due to the understanding of the collective unconscious and its influence on consumer perceptions and actions (Corlett and Chisholm 2021).

Brand archetypes and myths are allegories that preserve and customise the relationship between brand and customer (Akbudak 2020; Shcherban *et al.* 2022). Therefore, brands frequently embody a particular myth that contains emotional elements and unconscious processes (Mirzaee and George 2016). Archetypes are universal themes of human existence that are manifested in common character traits and storylines of myths, fairy tales, novels and films (Schmitt 2012). In the field of marketing, a brand archetype is defined as a symbol that is assigned to a brand. If a brand uses an archetype for personalisation, it can be easily identified among other similar brands and establish an iconic image (Turk and Bayrakci 2020). Consumers naturally associate with and trust the brand archetype. Therefore, if a brand archetype is stable, its consumers appreciate the strength and constancy of the brand (Signorelli 2012).

In the modern world, there is a serious transformation of the relationship between buyer and seller, which provokes among marketers a growing interest in brand archetypes, the search for a variety of ways to attract and retain long-term customers, to preserve the identity and relevance of the brand. Jung (2017), a Swiss physiologist, was the first to define the concept of brand archetype. He labelled an archetype as a psychological playout that provokes people to behave in a specific way. The scientist argued that the human psyche is represented by patterns of archetypes that underlie every culture. This statement suggests that the archetype is not an individual indicator but a reflection of the cultural environment.

After C.G. Jung, the archetypal model was used by Mark and Pearson (2001) for further development. The scholars argued that the symbolic meaning of a brand is manifested when the product or service of the brand is associated with the brand archetype. In the pioneering model presented by Mark and Pearson, 12 archetypes are categorised into four basic human drives: 'belonging and pleasure', 'independence and satisfaction', 'stability and control', and 'risk and mystery'. In addition, they proposed a biaxial structure for grouping archetypes into clusters, while maintaining the claim that each archetype is autonomous in terms of personality traits. Their research and development regarding the brand archetype's ability to reinforce brand identity unfolded a new paradigm of archetype in marketing. According to the archetype theory, Mark and Pearson combined Jung's 12 archetypes into 4 groups (Mark and Pearson 2001; Jung 2017):

1. Freedom: the innocent, the sage, the explorer.
2. Belonging and enjoyment: the good guy, the jester, the lover.
3. Individualism: the hero, the magician, the rebel.
4. Order: the ruler, the guardian, the creator.

Notably, the theory of archetypes plays an essential role in the personalisation of brands, as due to archetypes marketers can segment the audience, find points of contact between brands and customers, develop a communication system, and establish relevant content for the brand. Jung (2017) wrote: 'Myths are primarily psychic phenomena that expose the nature of the soul'. Myths are part of reality and carry life experiences. The scientist argued that myths are both significant psychological elements and social components that regulate the life of society. Currently, there is no unified theory of myths. Researchers such as Hogstrom *et al.* (2015), Mark and Pearson (2001), and Jung (2017) believed that myth reflects social thinking and represents information about the world and being. Therefore, myths will inevitably be present at different stages of social development, representing the culture and values of society.

In the 21st century, the word 'myth' evokes in society associations something fairy-tale and is perceived as something unreal or untrue. However, according to Jung (1919), myth is the foundation of society's culture and explains certain processes occurring in nature and the world. Based on this, modern myth is a story about nature, family, man, and woman. Nowadays, myths are faced with such a problem as science. Science is believed in by society as it carries the explanation of everything that happens in the world. But science has not been able to displace myth from the human subconscious but has given it a new meaning. Therefore, modern myth is not just a fantasy or a fairy tale but a social tool that explains processes and phenomena through symbols. In addition, after the prosperity of industrial society, consumption became a crucial sphere of social life, which changed the idea of myths, but society did not abandon them. Myths have moved from religious and divine representation to secular representation, where goods and services are the main criteria, and brands carry specific symbols (Schmitt 2012). Through symbols, brands express their ideas, evoke associations, and establish close communications with consumers. Through myths, brands represent reality and promote their products. Thus, an archetype is an important component of a brand that links culture, values, and myth. Analysing the essence of brand archetypes, the following features can be highlighted (Mark and Pearson 2001; Jung 2017):

- archetypes allow developing a target audience with similar opinions and cultural values;
- archetypes develop a specific image in a person's subconscious mind that helps to identify a brand;
- archetypes can reflect the experience of society and influence the development of new value systems;
- archetypes establish attachment and a deep connection between consumers and the brand.

When establishing an archetype for a brand, marketers use myths. The tools for establishing a myth are marketing strategies and tactics, product design and packaging. However, to bring the myth to the minds of consumers, they use advertising. Therefore, the most prominent use of myths by brands is advertising (Mirzaee and George 2016; Dmytriiev *et al.* 2022). Advertising, like a myth, includes a storyline, characters, and a certain moral. Thus, brands carry cultural standards and values, inform society about innovations, influence the subconscious of consumers, and stimulate constant consumption.

2.2. Specifics of Establishing Archetypes for a Brand

Consumers' imagination is developed under the influence of common experiences. Therefore, the marketing purpose is achieved in the process. Therewith, it is necessary to identify the correspondence between the archetypal representation of the brand and the consumer's perception. To identify the application of Jung's archetypes in business consulting, this research focused on analysing customer perceptions of five well-known brands; Amazon, Apple, Samsung Electronics, Google and Tencent. All five brands can be associated with specific archetypes and clusters. Through extensive investigation of the research 'Brand Archetype – Creator' written by Noor (2019), it was found that Apple is associated with the archetype 'creator'. Based on the study by Chang (2008), Samsung Electronics can be attributed to the archetype 'magician'. Analysing the work of Chamat (2019), Amazon can be assigned to the archetype 'researcher'. Based on analysing the data of Sheikh (2021), Google can be attributed to the archetype 'sage'. In their development, Greeven *et al.* (2021) disclose the archetype of Tencent as a 'magician'. When defining the archetype of a brand, an important aspect is the history of its establishment and development. Each brand has its history, which affects the development of marketing strategy (Zakharchyn and Sytnyk 2023), the latter, in turn, determines the archetype. The archetype is a tool for developing a link between the brand and the product. Therefore, it is necessary to analyse the activities of the five brands examined.

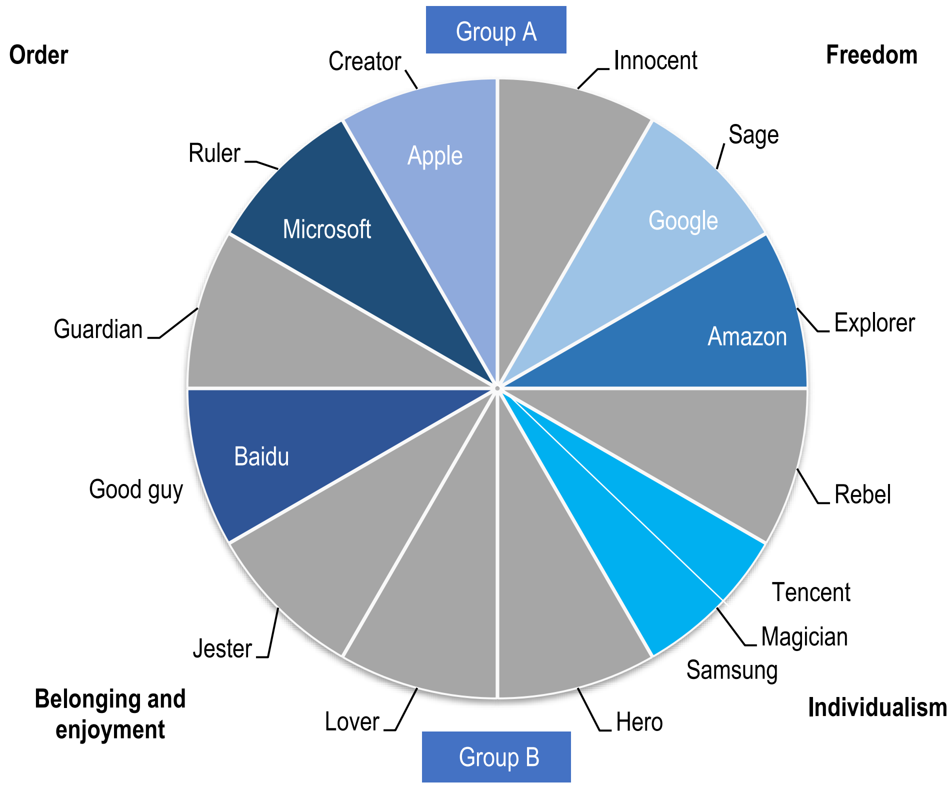
Apple has a universal way of business development and its own sustainable culture. The brand offers consumers all the essentials, relying on the human emotional state and psyche. With Apple adhering to its marketing strategy, the relationship between the audience and computers has been taken to a new level. In today's world, most Apple customers cannot imagine their way of life without Apple's technology and gadgets and consider their products essential for self-realisation, creativity, and aesthetic. It is why the brand is considered innovative and associated with the archetype of the 'creator'. Importantly, Apple has managed to influence the entire technology industry (Noor 2019). The Samsung brand is known for its versatile smartphones. But after Apple launched its iPhone range in 2009, Samsung was labelled as a copycat campaign. After this failure, the brand had to challenge the big company and design a new line of smartphones keeping in mind all the wishes of its customers. Therefore, the Samsung brand has the archetype of the 'magician', able to challenge and implement the dreams of its users. Notably, Samsung's strategy is to implement desires and turn conceptual ideas into reality (Chang 2008; Sargsian 2023).

Amazon began by selling books and has achieved great success in the market. Today, Amazon provides users with a personalised shopping experience. In addition, the brand invests revenue in exploring new technologies and adapting them into its business model. The main driving force behind Amazon is the desire to learn new things. Thus, the brand is associated with the archetype of 'explorer'. The brand's value lies in its individuality and passion for learning and exploring the world (Chamat 2019; Brand Archetypes: Examples… 2022). Google's strategy is to help people make a difference in the world. The brand focuses on knowledge and solving humanity's problems. It applies technology, and intelligence to provide information that people can use to improve their lives. The brand has the status of an expert in technology and information. Google has influenced the minds of people and the information world. Since the brand has launched its search engine, and established a large range of products, it has earned the status of a sage. Due to this, people can learn more about the world (Sheikh 2021). The Tencent brand centres on the quest to empower consumers and overturn stale conventional attitudes. The company sells innovation, thereby demonstrating its influence and rapid growth in the Chinese technology market. Tencent's strategy is to integrate and modernise all services to establish an ecosystem for business. The brand is associated with a magician as it offers ways to design an improved world (Greeven *et al.* 2021). Thus, the establishment of a brand archetype depends on the history of the brand's emergence, their behavioural culture, strategy, and purpose of implementing their policies.

2.3. Cultural Patterns in the Application of the Brand Archetype

The strategy and advertising campaign of a brand is strongly influenced by cultural characteristics, which, in turn, affect the process of interaction with consumers (Sung and Tinkham 2008). This analysis of archetypes of five brands demonstrated that each company has its path, in the process of which a specific marketing strategy is developed and archetype is defined. To identify patterns between brands of similar cultures and to demonstrate the influence of cultural boundaries on brand archetypes, a diagram of archetypes of different brands of Western and Asian cultures is presented below (Figure 1).

Figure 1. Seven brand archetypes by group



Source: compiled by the authors based on Hwang, Sooa (2017).

Figure 1 demonstrates that the 12 archetypes are divided into 4 groups: individualism, order, freedom, belonging, and pleasure. Each group includes three types of archetypes that have common features:

1. Individualism: the archetypes of this group are characterised by courage and are capable of breaking traditions. Brands belonging to this category can take risks, break statutes and rules. Thus, the brand establishes and adheres to its own regulation. It includes the magician, the rebel and the hero.
2. Belonging and enjoyment: archetypes demonstrate joy and pleasure as the most important elements of life. Therefore, brands belonging to this category establish their customers with convenience and comfort, and present a world filled with love. The lover, the jester and the good guy belong to this category.
3. Order: the brand archetypes of this group are ready to manage and control the entire market and care for all consumers. The archetypes in this category are guardian, ruler, and creator.
4. Freedom: archetypes are fixated on self-improvement and implementing their capabilities. Brands in this group invest their revenues in the technological development of the company, conduct constant training and are focused on the future of their company. Thus, the customers of these brands are independent individuals who love to discover new things. Innocent, explorer, and sage belong to this category.

In addition, Figure 1 demonstrates examples of the seven brands, which are divided into two large groups: A and B. Group A, which is in the top half, includes brands such as Microsoft, Apple, Google, and Amazon. Their archetypes have commonalities and are in the areas of control, stability, independence and self-actualisation. Group B, the bottom half of the chart, includes brands such as Baidu, Tencent, and Samsung Electronics. This group covers the range from belonging and enjoyment to mastery and risk. All four brands at the top, in group A, belong to Western brands, and at the bottom, in group B, belong to Asian brands. From the analysis, there are patterns and clear differences between the archetypes of Western and Asian brands. Western brands in Group A are focused on freedom and uniqueness and strive for self-realisation and perfection. Their value is individuality and everyday pleasures. Asian brands or Group B brands can take risks, are adept at breaking established rules and are willing to establish their own. Brands in this group are willing to take control of everything to gain more credibility and establish security for themselves and their customers. Thus, Western and Asian brands have clear differences in their business strategies. It suggests that there are cultural patterns in the application of archetypes in business consulting. It is an obvious fact that companies incorporate cultural trends into their brand archetype, thus, brands

3. Discussions

Monitoring and analysing consumer perceptions of a brand can help in establishing the right marketing strategy and in conducting business effectively, both locally and globally. Frequently, companies neglect to build consumer associations with brand products, establishing an archetype, which leads to the loss of brand personality. Therefore, responsible marketing managers should take the establishment of brand archetypes seriously to develop strong communications between consumers and the brand. This research work uses the theory created by Jung (2017) and the methodology developed by Mark and Pearson (2001). The Jungian model is based on the assertion that 'people feel more secure with what they can perceive as directly relevant to their culture' (Jung 2017). The model states that brands that utilise ingenuity can create a sustainable archetype. It is what makes them strong and independent. Notably, Jung defined archetype as the psychic 'substrate of human nature' or the cultural 'contents of the collective unconscious' of any individual. The scientist concluded that archetypes exist in human consciousness in the form of myths and fantasy, thus, they cannot be inherited, preserved, or made statutes.

Turow (2013), based on the developments of Jung (2017), Mark and Pearson (2001), explored the problem of brand archetypes and argued that freedom of choice is the result of democratic participation in consumer culture. In addition, he argued that information and technology play a major role in socio-economic progress. Other scholars have devoted their works to the issue of brand archetypes and their role in business consulting. Attention should be paid to the research of Haule (2010), who noted in his treatises that it is an experience that demonstrates collective influence and not anything else. Cultural determinism is embedded in human psychology, thus, there is a constant evolution that determines human behaviour. The scholar argued that archetypal patterns or associations can enrich the human mind. The author considered archetypes as shapes, symbols and motifs that are designed to establish associations in the human subconscious mind. In addition, he noted that archetypes influence collective experiences within the same culture.

Some scholars exploring the theory of archetypes, on the contrary, have argued that as such a collective concept of myths and symbols does not exist or is hidden. In the opinion of Franzen and Moriarty (2009), a person is not able to understand that myths and symbols are in their consciousness. The presence of many works on the subject of brand archetypes and the influence of cultural patterns on their application indicates the ambiguity and controversy of this issue and requires further research. In this context, marketers should centre their attention on building brand communications with cultural boundaries in mind. For this purpose, it is essential to develop and promote an identical brand structure that will include the management of associations and customer perceptions of the brand (Iorgachova and Kovalova 2023).

This research work identified that there are cultural patterns between the application of brand archetypes in Western and Asian countries. Scholars such as Sung and Tinkham (2008) in their collaborative work argued that brands represent the culture of the country where they are based. They stated that brand personality is determined by external factors and internal ones, namely culture, the background of the CEO of the company, and the experience of consumers. Such statements by the scholars gave the understanding that brand archetypes are significantly influenced by culture. It follows that the specificity of defining brand personality lies in the different attitudes of people and their cultural values. It is particularly clear between Western and Asian cultures. However, the professors stated that the West and Asia cannot be divided into two radically different cultural groups. They believed that Western brand archetypes reflect individuality, uniqueness, self-improvement, and self-development, while Asian brands express courage and the ability to take any risk. Their conclusion supports the findings of this research work.

In addition, the subject of the differences between the perception of brand archetypes of different cultures is devoted to the work of professors of psychology Pickren and Rutherford (2010), who indicated cultural differences in the establishment of archetypes for brands. The scientists considered the concept of the private self and named the reasons that influence the patterns in the perception of brands of different cultures. Elements of archetypal theory have a way of manifesting themselves in a symbolic culture of meaning. There are many controversies in the current literature where the main issue is trying to bridge the gap between theory, knowledge and its practical application in consumer marketing. The controversies concern the field of behavioural sciences and consumer marketing where researchers argue that it is becoming increasingly difficult to make decisions considering the needs and tastes of consumers. Posavac (2012) noted that the reason for this issue is the difficulty in determining consumer tastes and preferences, and the non-serious attitude of many brands towards archetypal principles.

Analysing the research in archetypal marketing, it is possible to identify other approaches to brand management. For example, Haynes *et al.* (1999), Sirgy and Johar (1999), and Tsai (2005) argue that brand management should be comprehensive and integrated. This approach includes all aspects of marketing, with the archetype acting only as a part of the strategy rather than being the main one. Some of the main elements influencing the establishment of consumer loyalty to a brand are product quality, user-friendly design, and efficiency of use. This approach varies from the theory used in this research, which indicates that there are controversial points and unresolved problems in determining the role of archetypes in business consulting. In the field of marketing and advertising, brand personality is defined as 'a set of characteristics associated with a brand'. A great contribution to the subject of 'brand personality' was made by the scientist Aaker (1997), who developed and presented to the world a general structure of brand personality. This structure includes five parameters of brand personality; thus, it was named 'Big Five' by Aaker. Five parameters of the 'Big Five':

- sincerity;
- inspiration;
- competence;
- sophistication;
- rigidity.

The developments of J.L. Aaker were the foundation for many of the following studies. For example, such scientists as Wimmer and Dominick (2013) used the Aaker (1997) model in their work. Wimmer and Dominick in their work used the model of Aaker to determine the attributes of brand personality and identify their significance. The subject of brand archetypes, their role, and the specifics of their application in business require further study, relying both on the theory of Jung and innovations of the modern world. Other theories and methods of cultural diversification can be used for future developments, which will make a great contribution to the field of marketing, give more knowledge about brand personalisation, and help to build proper and strong communications between consumers and brands. In addition, through further research, new tools, ways, and methods for expressing brand personality can be obtained. In addition, the sophisticated quantitative methods with numerical scales already presented in the literature need research. This method can be useful for marketers as it allows for detailed data analysis, relying on tests and a validation scale. The problem of applying archetypes on a global level and capturing global marketing should be considered. This research and future developments will help marketers establish effective marketing strategies for brand promotion and build sustainable customer-brand relations.

Conclusions and Further Research

Thus, using C.G. Jung's theory of archetypes allows uncovering a brand's personality and identifying the associations it evokes in consumers. With knowledge of consumer perceptions of the brand, professionals can establish an effective marketing strategy, add value to the brand's products and elevate the brand's value with a wider audience. However, global marketing requires an integrated approach that will include both the archetype paradigm and ensuring the utilitarian quality of brand products and promoting customer values. This research analysed C.G. Jung's theory of archetypes and outlined its role in marketing. In addition, the methodology that was developed and refined by M. Mark and C.S. Pearson, to measure the perceptions and associations that a brand evokes in consumers. Drawing on the scholars' developments, and analysing the history of five global brands, this research work identified the specifics of the application of archetypes in business consulting activities. A diagram of brand archetypes of Western and Asian cultures was presented to identify patterns and features between brands of close cultures. As a result, the influence of cultural boundaries on the establishment of a brand archetype and its perception by consumers was identified.

Based on the literature review and research works it was identified that the area of using brand archetypes in modern marketing has been understudied, which indicates the need for further developments. Global marketing requires updated branding tools to be able to personalise brands from different industries, *i.e.* with different cultural attributes. Such a shift in science would provoke new knowledge on brand personalisation, developing modern methodology and user-friendly tools for marketers. After all, the real problem is not the presence of an archetypal approach to brand definition, but the content of symbolism that appears in the consumer's imagination. Marketers may not get fixated on establishing a universal brand archetype. Their efforts should be focused on a set of measures that give the brand personality and value. Therefore, one of the main tasks of a marketer is to establish strong, sustainable communications between the brand and the consumer.

Credit Authorship Contribution Statement

Burhan Reshat Rexhepi: Writing – review and editing, Project administration, Supervision;
Labeat Mustafa: Writing – original draft, Methodology;
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Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Declaration of Use of Generative AI and AI-assisted Technologies

The authors declare that they have not used generative AI and AI-assisted technologies during the preparation of this work.

References

[1] Aaker, Jennifer L. (1997). Dimensions of Brand Personality. *Journal of Marketing Research,* 34(3): 347-56. DOI: https://doi.org/10.1177/002224379703400304

[2] Akbudak, Sadi (2020). *Examination of Personality Archetypes in Three-Dimensional Brand Character Design*. Istanbul: Isık University Institute of Social Sciences.

[3] Chamat, Ramzi (2019). *12 Brand Archetypes: Which One Are You?* Available at: https://www.8ways.ch/en/digital-news/12-brand-archetypes-which-one-are-you

[4] Chang, Sea-Jin (2008). *Sony vs Samsung: The Inside Story of the Electronics Giants' Battle for Global Supremacy*. Hoboken: John Wiley and Sons.

[5] Corlett, John. G., and Laura F. Chisholm (2021). C. G. Jung's Thoughts on the Concepts of Leader and Leadership. *Journal of Jungian Scholarly Studies,* 16(1): 6-23. DOI: https://doi.org/10.29173/jjs143s

[6] Dmytriiev, Illia *et al*. (2022). Development of a Marketing Strategy to Improve the Market Activities of Agricultural and Processing Enterprises on the Example of Company Policy. *Scientific Horizons,* 25(8): 125-33. DOI: https://doi.org/10.48077/scihor.25(8).2022.125-133

[7] Franzen, Giep and Sandra E. Moriarty (2009). *The Science and Art of Branding*. New York: Routledge.

[8] Goncharova, Daria Yu (2020). Features of Building Brand Identity based on the Theory of Archetypes on the Example of a Language School. *Journal of Economy and Business*: 12-1(58): 109-12. Available at: https://sciup.org/osobennosti-postroenija-identichnosti-brenda-na-osnove-teorii-arhetipov-na-170181346

[9] Greeven, Mark J., Katharine Xin, and George S. Yip (2021). *How Chinese Retailers are Reinventing the Customer Journey*. https://hbr.org/2021/09/how-chinese-retailers-are-reinventing-the-customer-journey

[10] Gülcan, Cem (2020). An Evaluation on Psychological Types and Jungian Psychology. *The Black Sea Journal of Social Sciences*, 12(23): 284-97. Available at: https://dergipark.org.tr/en/pub/ksbd/issue/58799/685872

[11] Haule, John Ryan (2010). *Jung in the 21st Century Volume One: Evolution and Archetype*. London: Routledge.

[12] Haynes, Andy, Conway Lackman, and Audrey Guskey (1999). Comprehensive Brand Presentation: Ensuring Consistent Brand Image. *Journal of Product and Brand Management,* 8(4): 286-300. DOI:https://doi.org/10.1108/10610429910284229

[13] Högström, Claes, Anders Gustafsson, and Bård Tronvoll (2015). Strategic Brand Management: Archetypes for Managing Brands through Paradoxes. *Journal of Business Research,* 68(2): 391-404. DOI:https://doi.org/10.1016/j.jbusres.2014.06.009

[14] Hwang, Sooa (2017). *Storytelling in Branding: The Difference in Brand Archetypes between Western and Asian Tech Companies – Based on Carl Jung's 12 Archetypes Model*. Espoo: Aalto University School of Business.

[15] Iorgachova, Maria, and Olena Kovalova (2023). Directions for Increasing the Efficiency of the Company's Cash Flow Management. *Scientific Bulletin of Mukachevo State University. Series 'Economics',* 10(4): 20-31. DOI:https://doi.org/10.52566/msu-econ4.2023.20

[16] Jung, Carl Gustav (1919). Instinct and the Unconscious. *British Journal of Psychology,* 10(1): 15-23. DOI:https://doi.org/10.1111/j.2044-8295.1919.tb00003.x

[17] Jung, Carl Gustav (2017). *Psychological Types*. Abingdon: Routledge.

[18] Maidment, Adam (2021). *Brand archetypes*. Available at: https://marchbranding.com/buzz/brand-archetypes/

[19] Mark, Margaret, and Carol S. Pearson (2001). *The Hero and the Outlaw: Building Extraordinary Brands through the Power of Archetypes*. New York: McGraw Hill Education.

[20] Mirzaee, Sarah, and Babu P. George (2016). Brand Archetypes: An Experiment with the 'Demeter'. *Journal of Applied Economics and Business Research,* 6(2): 93-105. Available at: http://www.aebrjournal.org/uploads/6/6/2/2/6622240/joaebrjune2016_93_105.pdf

[21] Noor, Slava (2019). *The Creator Brand Archetype*. Available at: https://arte8lusso.net/creative-lab/the-creator-brand-archetype/

[22] Özcan, Zeynep (2021). An Archetypal Analysis of Social Media Phenomena as New Generation Storytellers in Relationship Management Perspective. *Istanbul Aydın University Journal of Social Sciences,* 13(1): 285-312. Available at: https://dergipark.org.tr/en/pub/iausos/issue/60205/872343#article_cite

[23] Pickren, Wade E., and Alexandra Rutherford (2010). *A History of Modern Psychology in Context*. Hoboken: John Wiley and Sons.

[24] Posavac, Steven S. (2012). *Cracking the Code: Leveraging Consumer Psychology to Drive Profitability*. New York: Routledge.

[25] Robertson, Robin (1987). *C.G. Jung and the Archetypes of the Collective Unconscious (American University Studies)*. New York: Peter Lang.

[26] Sargsian, Meri (2023). *Branding Strategy of Samsung*. Available at: https://thesocialgrabber.com/branding-strategy-of-samsung/

[27] Schmitt, Bernd (2012). The Consumer Psychology of Brands. *Journal of Consumer Psychology,* 22(1): 7-17. DOI: https://doi.org/10.1016/j.jcps.2011.09.005

[28] Shahini, Ermir, and Tetiana Shtal (2023). Assessment of the Level of Competitiveness of Ukrainian Holdings in International Markets. *Ekonomika APK,* 30(6): 45-56. DOI: https://doi.org/10.32317/2221-1055.202306045

[29] Sheikh, Mahnoor (2021). *12 Brand Archetypes by Carl Jung (and How to Use Them)*. Available at: https://visme.co/blog/brand-archetypes/

[30] Shcherban, Tetiana et al. (2022). Empathic Features of Conducting Negotiations in an Entrepreneurial Environment. *Review of Economics and Finance* 20(1). DOI:https://doi.org/10.55365/1923.x2022.20.48

[31] Signorelli, Jim (2012). *Storybranding: Creating Stand-Out Brands through the Power of Story*. Austin: Greenleaf Book Group Press.

[32] Sirgy, M. Joseph, and Jotindar S. Johar (1999). Toward an Integrated Model of Self-Congruity and Functional Congruity. *European Advances in Consumer Research* 4, 252-6.

[33] Sung, Yongjun, and Spencer F. Tinkham (2008). Brand Personality Structures in the United States and Korea: Common and Culture-Specific Factors. *Journal of Consumer Psychology,* 15(4): 334-30. DOI:https://doi.org/10.1207/s15327663jcp1504_8

[34] Tsai, Shu-pei (2005). Impact of Personal Orientation on Luxury-Brand Purchase Value: An International Investigation. *International Journal of Market Research,* 47(4): 427-52. DOI:https://doi.org/10.1177/147078530504700403

[35] Turk, Gül Dilek, and Serkan Bayrakci (2020). Modern Man's Search for Meaning during the Pandemic: Social Media and the Global Spiritual Market. In: *Social Media Psychology* (pp. 159-97). Ankara: Nobel.

[36] Türk, Gül Dilek (2019). Global Information Market and Commodified Information on Social Media. In: *Interdisciplinary Approaches to Communication in a Globalizing World* (pp. 187-215). Konya: Literaturk Publications.

[37] Turow, Joseph (2013). *The Daily You: How the New Advertising Industry is Defining your Identity and Your Worth*. New Haven: Yale University Press.

[38] Wimmer, Roger D., and Joseph R. Dominick (2013). *Mass Media Research: An Introduction*. Boston: Cengage Learning.

[39] Zakharchyn, Halyna, and Yosyf Sytnyk. 2023. Construction and development of corporate knowledge in modern conditions. *Economics, Entrepreneurship, Management,* 10(1): 40-50. DOI:https://doi.org/10.56318/eem2023.01.040

[40] Brand Archetypes: Examples from Leading Brands and How to Find Yours (2022). Available at: https://www.templafy.com/blog/brand-archetypesand-how-to-find-yours/

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Role of Festivals in Stimulating the Development of Event Tourism

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Abstract: The research topic related to the role of festivals in event tourism is relevant as the impact of this tourism on the world economy and socio-cultural development is currently growing. Festivals have become key elements of event tourism, attracting huge numbers of tourists, and influencing regional economies, and with increasing globalization and accessibility of travel, festivals are becoming magnets for those seeking new cultural and entertainment experiences. The research aims to analyze and interpret the impact of festivals on the development of event tourism, considering current socio-cultural and economic trends. Among the methods used, analytical, statistical, functional, system analysis, deduction, synthesis, and comparison methods were applied. The study analyzed various aspects of the impact of festivals on event tourism such as economic benefits to regional communities, cultural exchange, media attention (media) and large-scale tourist influx. Different types of festivals (for example, music, culture, sports) and their impact on attracting different types of tourists were examined. The economic benefits that festivals bring to regional communities have been highlighted, which includes an assessment of employment, business growth, impact on trade, investment, and other aspects. The impact of festivals on the socio-cultural dynamics of regions is analyzed, and effective strategies for planning and promoting festivals to maximize their impact on event tourism are investigated. The practical significance lies in the application of the findings to address issues related to festivals to effectively develop event tourism.

Keywords: economic development; management; media exposure; tourist flows; event marketing.

JEL Classification: O10; Z33.

Introduction

In the modern world, event tourism is gaining prominence as a key component of the international economy and a platform for cultural exchange. However, among the various factors supporting the active growth of this sphere, festivals occupy a special place. By presenting a diverse world of cultural, musical, sporting, and other unique events, festivals go far beyond mere entertainment (Kozlovska 2023). They become powerful engines for stimulating the development of event tourism, and their organization and attendance by millions of people are aimed at opening up new horizons. The role of festivals in tourism development is becoming particularly pronounced, and the study of these dynamics is of interest to both academic and practical fields. This impact encompasses many aspects, including economic growth, enriching cultural experiences, and fostering international linkages (Marmul *et al.* 2023). Festivals are thus becoming key factors that have a profound and multifaceted impact on the global event tourism scene. Festivals actively shape the image of regions and countries in the world, attracting the attention of millions of travelers. These events become magnets for cultural explorers, art lovers, and those seeking to learn about local traditions and customs (Dashchuk 2023). The importance of this phenomenon is confirmed by the active activity of governments that invest in the organization and promotion of festivals.

According to Dyusekeeva and Ibrayeva (2021), the study of the role of festivals in stimulating event tourism involves analyzing the cultural dynamics they generate. The role of festivals as a platform for cultural exchange and heritage preservation requires addressing ethnic, religious, and local aspects, as well as understanding how these events contribute to the formation of tourist identity. Ibragimova (2019) emphasizes that media attention is a determining factor for the successful presentation of festivals. Organizers who strategically and actively use a variety of media communication channels, such as social networks, press releases and participation in media events, can be seen to have a significant impact on the inflow of tourists. The study by Gadzhiyeva *et al.* (2020) states that festivals have a significant and long-term impact on the increase of regional income. It is confirmed that positive economic dynamics continued to manifest itself for several years after the event.

According to Faizieva and Ruziev (2023), successful festivals give high priority to creating a unique brand and accurate market positioning. Research on marketing strategies has confirmed that defining a clear image and target audience has a significant impact on the ability to attract and retain tourists. Rakhmanov *et al.* (2020) state support plays a significant role in the success of festivals and their impact on the development of event tourism. This support can manifest itself in financial terms, provision of infrastructure, simplification of procedures for obtaining permits and licenses, and promotion of events. Overall, understanding and comprehensively analyzing all the aspects highlighted by different researchers greatly enriches the understanding of the key role that festivals play in helping to stimulate the development of event tourism. These aspects, viewed from different angles, together create a picture of the impact of festivals on various aspects of the tourism industry and socio-cultural dynamics.

The research aims to provide an in-depth analysis and comprehensive understanding of the multifaceted impact of festivals in stimulating the development of event tourism in the world. The study seeks to combine and synthesize the various aspects highlighted in the works of different researchers to provide a comprehensive overview of the impact of festivals on different areas of the tourism industry.

1. Literature Review

The phenomenon of festivals, as a multifaceted and rich cultural phenomenon, attracts the attention and interest of researchers from different parts of the world. The concept of 'festival' can be considered from different perspectives, and for a more complete and in-depth understanding of this phenomenon, it is necessary to refer to the opinions and views of a variety of scholars. An analysis of the definitions provided by these scholars allows to identify key aspects and elements that characterize festivals as a phenomenon.

Taylor (2016) emphasizes that festivals represent a special way of cultural self-realization, providing an opportunity to unite in festive creation, exchange ideas and strengthen socio-cultural ties. He emphasizes that festivals have an impact, contributing to the creation of unforgettable experiences, as well as allowing a deeper insight into the history and cultural traditions of society. On the other hand, the view of Eshuis *et al.* (2020) is based on a managerial approach to understanding festivals. He expresses the opinion that festivals carry not only short-term events but also form long-term consequences in the spheres of tourism, culture, and economy. In his work, he analyses how festivals become key elements in shaping the image and increasing the attractiveness of regions.

In the context of festivals as an instrument of socio-cultural dynamics and transformation of society, the study by Richards (2006) demonstrates that the concept of the festival can be considered as part of a wider process of festivalization of society. This process encompasses the growing impact of festivals on socio-cultural structures, influencing people's lifestyles and values. The presented concept emphasizes that festivals are no longer isolated events and are becoming key components in shaping the cultural landscape. Nordvall and Brown (2020) emphasize the economic aspects associated with festivals. It is important to note that festivals have a significant impact on the economy of the region in which they are held. One of the key points that the authors emphasize is the ability of festivals to attract a large number of tourists.

Carlsen *et al.* (2010) analyzed festivals with a focus on the aspects of innovation and potential failures. This approach allows to look at festivals as dynamic events that can introduce new ideas and formats into the cultural environment. However, they also emphasize that innovation carries risks and festivals can face various difficulties and failures in the process of implementing new approaches. Picard (2016) provides a perspective on the phenomenon of festivals, where he highlights that festivals not only create moments of joy and entertainment but also have a profound impact on social structures and dynamics of society. The author emphasizes that festivals are a strong catalyst for the formation of new social ties and communities. A study conducted by Duffy and Mair (2021) introduces dynamics into the discussion of the relationship between festivals and local traditions. They provide an analysis that raises doubts about whether festivals are always inextricably linked to unique local customs and practices. Instead, the authors identify that the impact of globalization and commercialization can influence festivals, changing their character and impact on culture and tourism.

Thus, a variety of studies by scholars allow to highlight more fully the multifaceted and multidimensional concept of a festival. Festivals are not only cultural events but also play an important role as an instrument of socio-cultural dynamics, contributing to economic development, shaping the image of the territory, and stimulating innovation processes.

2. Materials and Methods

Official documents and reports were used in the research, namely Statista (Götting 2022) and Zivefirmy.cz, a catalogue of Czech companies, as an example of effective event tourism in Europe. Conducting a scientific study on the impact of festivals on tourism development was carried out with the help of methods that reveal the content of the object. The analytical method was used to divide and investigate in detail each aspect of the impact of festivals on tourism, namely economic indicators, cultural aspects, media impact and environmental sustainability separately from each other, identifying the main success factors and weaknesses. The functional method was used to explore in more depth the functional aspects of festivals, such as their role in creating cultural exchange, educational opportunities, and socio-cultural integration, as well as their impact on the development of tourism and service sectors.

The systemic analysis method was used to examine festivals as a complex system, including the interaction of different elements. This allowed to understand the long-term influences and interrelationships within a broader contextualized system. The deduction method was used to explore general concepts of the role of festivals in tourism in more depth and to explore specific factors and examples coherently, building on existing theory and research. The synthesis method was used to explore the impact of festivals on tourism development by considering it in the light of combining different aspects such as economic benefits, socio-cultural exchange, media coverage and environmental sustainability by synthesizing data from different sources. The comparison method was used to compare different types of festivals and approaches to their organization, allowing to understand common trends, differences and best practices that can be applied to better stimulate event tourism.

The study was carried out revealing some aspects including theoretical and practical components. The theoretical aspect includes the study of the economic impact of festivals, including cost-effectiveness evaluation models, which provide an understanding of how festivals contribute to the flow of investment, create jobs, and stimulate economic development (Jawabreh *et al.* 2023). Concepts of cultural exchange and the impact of events on cross-cultural interaction, media influence and the impact of media platforms on tourist attraction, and environmental sustainability were explored. Another aspect of the study is to analyze case studies of successful festivals, thus revealing the marketing strategies used to attract tourists, create unique images, and position the events. Analyzing the data on media coverage of festivals and their impact on the number of visitors allows to assess the practical importance of media platforms in attracting tourists. Based on the findings, the necessary recommendations were considered in highlighting specific problems in the event tourism sector that will help to address the issues and improve the level of festivals. As a result, these actions were applied to consider the feasibility of festivals, for the successful development of tourism and countries in general.

3. Research Results

The concept of festivals encompasses a variety of scales, from local and regional events to international festivals attracting participants and visitors from all over the world. The types of festivals cover a variety of interest areas and attract different types of tourists, creating unique platforms for interaction, entertainment and enriching cultural experiences. The main types include music, culture, sports, theme, and entertainment. Music events attract fans of different genres and styles. From rock festivals to jazz and classical events, they provide an opportunity to enjoy live music and performances by famous and emerging artists. Cultural events allow audiences to immerse themselves in the world of art, traditions, and customs of different cultures. These can be festivals of national cuisines, religious festivals, theatre arts, literary meetings, and exhibitions. Sports events attract participants and sports fans from all over the world to a variety of events including football matches, marathons and many more. Themed and entertainment festivals can range from science forums and science fiction festivals to cookery shows and light festivals (Pirnar *et al.* 2019).

Festivals have a significant impact on event tourism, providing a range of benefits to regional communities and tourism industries. These impacts cover a variety of aspects. Festivals stimulate regional economic development. They increase consumer spending and create jobs in hospitality, restaurants, transport, and other services. The influx of tourists generates significant revenue, including from event ticket sales, souvenir purchases, accommodation, and food. Festivals promote cultural exchange by providing an opportunity to experience a variety of traditions, arts, and customs. Participants and tourists have a chance to deepen their cultural experience and enrich their knowledge and respect for different cultures, which promotes understanding and tolerance. Festivals attract the attention of the media (mass media), which helps to disseminate information about the region (Gursoy *et al.* 2020). This enhances its popularity as a tourist destination and helps attract more attention from both locals and potential tourists. Festivals attract tourists from different regions and countries. The large scale of the events, as well as the unique atmosphere created at festivals, contribute to attracting tourists of different ages and interests.

Studying the importance of festivals in stimulating the development of event tourism, the significance of the largest international festivals in the world should be noted. A prominent example of such a festival is the Edinburgh International Festival (Stewart *et al.* 2022), which played an important role in the cultural revival of Europe after the Second World War. First held from 22 August to 11 September 1947, the festival was conceived as a platform for uplifting the human spirit and enriching the cultural life not only of Scotland and Britain but of the whole of Europe. Today, the Edinburgh International Festival is an annual event in the world of performing arts, attracting creative groups from around the world for three weeks. The Winter Light in Kuwana, Japan, takes place between November and March Festival (Nabana no Sato Winter Light Festival… 2024). The famous botanical garden Nabana no Sato is decorated with lots of lights, thanks to millions of bright LED lights that create light cascades in the gardens and greenhouses. Here, light installations and paintings emerge that can attract many connoisseurs. All lights are solar-powered, charging during the day and creating a glow in the evening. During the last Tuesday in January, the largest Viking festival, Up Helly Aa, takes place, allowing visitors to see the past of famous warriors (Johnson 2019). In Scottish towns, torchlight parades are organized each year by locals dressed in carnival costumes. The parade is often accompanied by fire performances and music. The Dia de los Muertos (Day of the Dead) festival is an event that is not only one of the most important holidays in Mexico but is also popular in many other parts of the Latin American world (Gutierrez *et al.* 2015). Every year when November begins, people come together to embody the spirit of this holiday and honor their deceased relatives and friends.

The modern era has seen the rapid growth and diversity of film festivals around the world. The International Federation of Film Producers Associations (FIAPF) has accredited 51 film festivals. Among them, five of the most prestigious and popular ones stand out: the Venice, Cannes, Karlovy Vary, Locarno and Berlin Film Festivals (de Valck and Damiens 2020). Apart from film festivals, music festivals are unique events that attract travelers from all over the world. Among the most famous and significant music festivals that have become cultural phenomena and attract the attention of thousands of tourists are the following: Eurovision Song Contest (Eurovision), Stockholm Jazz Festival (Stockholm Jazz Festival), Tomorrowland (Belgium), Electric Daisy Carnival (EDC) – USA, Verona Opera Festival (Italy), International Music Festival dedicated to Uzeyir Hajibeyov in Baku (Azerbaijan). Table 1 presents the highest-grossing festivals in the world; in which country they are held annually and the approximate number of visitors.

Table 1. The highest-grossing festivals (2019)

Country	Category	Name	Attendees, thousand people	Income, mln. USD
USA	Musical	Outside Lands Music and Arts Festival	200	29.63
USA	Musical	Life is Beautiful Festival	170	17.7
Brazil	Musical	Lollapalooza Brazil	100	14.48
Mexico	Musical	Corona Capital Festival	100	12.23
Germany	Musical	Southside Festival	60	11.93
Germany	Musical	Hurricane Festival	70	11.38
Switzerland	Musical	Paleo Festival	230	11.26
Australia	Musical	Bluesfest Byron Bay	100	11.12
Other countries	Musical	EDC	100-400	10.54
Ireland	Musical	Longitude	40	8.66

Source: compiled by the author based on Götting (2022).

The COVID-19 epidemic has created major obstacles for the global music festival industry in 2020. Numerous festivals around the world have been canceled, rescheduled or turned into virtual events to comply with health and safety laws and reduce the spread of the virus. The abrupt shutdown has had a profound impact not only on festival organizers, but also on artists, vendors, and local economies that depend on these events for revenue and cultural development.

The COVID-19 epidemic caused substantial disruptions to the music festival sector in 2021 and 2022. However, the industry progressively showed indications of recovery and resilience. In 2021, numerous festivals saw significant effects, including widespread cancellations, postponements, and transitions to virtual or limited in-person formats in order to adhere to health restrictions. As a result, there was a substantial decrease in both attendance and income compared to levels before the pandemic (Table 2). Nevertheless, in 2022, with the rise in vaccination rates and the relaxation of certain restrictions, the festival industry began to recover, witnessing a surge in major events that were held in person. These events reported attendance and income levels that were either on par with or even surpassed the numbers seen before the COVID-19 pandemic, especially in the United States, Brazil, and Germany (Table 3-4).

Table 2. The highest-grossing festivals (2021)

Country	Category	Name	Attendees, thousand people	Income, mln. USD
USA	Musical	Outside Lands Music and Arts Festival	223	33.20
USA	Musical	Life is Beautiful Festival	162	18.3
USA	Musical	Aftershock Festival	145	16.44
Mexico	Musical	Pa`L Norte	120	8.15
Austria	Musical	Nova Rock Encore	15	1.122
Germany	Musical	Metal Hammer Paradise	4	1.2
Other countries	Musical	EDC	10-140	6.81

Source: compiled by the author based on TOP 20 Worldwide festival grosses (2021).

Table 3. The highest-grossing festivals (2022)

Country	Category	Name	Attendees, thousand people	Income, mln. USD
USA	Musical	Outside Lands Music and Arts Festival	222	33.9
Brazil	Musical	Lollapalooza Brazil	267	21.7
Germany	Musical	Rock Im Park	69	18.4
Germany	Musical	Rock am Ring	90	16.6
Australia	Musical	Bluesfest	101	11.5
Austria	Musical	Nova Rock Festival	55	10.1
Mexico	Musical	Vive Latino	97	8.18
Italy	Musical	Una. Nessuna. Centomila	96	6.18
Sweden	Musical	Rosendal Garden Party	15	5.35
Other countries	Musical	EDC	20-200	11.12

Source: compiled by the author based on TOP 20 Worldwide festival grosses (2022).

Table 4. The highest-grossing festivals (2023)

Country	Category	Name	Attendees, thousand people	Income, mln. USD
USA	Musical	Outside Lands Music and Arts Festival	225	40.1
USA	Musical	Hard Summer Music Festival	75	29.9
Mexico	Musical	Phish: Riviera Maya	25	22.1
Mexico	Musical	Tecate Pa`l Norte	238	20.7
Mexico	Musical	Corona Capital Festival	242	20.5
Germany	Musical	Hurricane Festival	233	20.1
Brazil	Musical	Lollapalooza Brazil	227	19.7
USA	Musical	CMA Music Festival	204	19.3

Source: compiled by the author based on The World's Most Successful Music Festivals (2024).

However, the recovery was not consistent, as several festivals still saw cancellations or reduced attendance due to ongoing concerns about the pandemic and changing laws. This necessitated organizers to be vigilant and adaptable in their planning and operations. The industry experienced a transitional phase during the 2021-2022 period, as it recovered from major disruptions and showcased its ability to adapt to changing conditions through innovative measures (Pohuda 2023).

The highest-grossing festivals tend to be music festivals because music has the unique ability to bring people of different ages, cultures, and nationalities together. Music festivals attract a huge number of visitors because of their diversity and wide range of genres, from popular music to rock, electronic music and hip-hop. This diverse selection caters to the interests of many people, making music festivals appeal to a wide audience. The various festivals make a significant economic contribution by contributing to various areas of financial activity. One of the key areas they influence is tourism. By attracting participants and spectators from different regions and countries, festivals stimulate demand for hotel services, transport facilities, restaurants, and other types of tourism infrastructure. Tourists also contribute to the local economy by spending money on souvenirs, local products, and services. Restaurants and catering also benefit from festivals as increased numbers of visitors seek out places to eat. This boosts the profits and revenue of restaurants, cafes, and food tents. Festival ticket sales and sponsor recruitment are significant sources of revenue. Ticket sales bring in additional funds and sponsors invest money into the organization of the event, contributing to its success. These are additional financial resources that flow into the economy. Many festivals have markets with souvenirs, clothing, accessories, and other merchandise. Sales in these markets boost local commerce and support businesses (Mair and Weber 2019).

Thus, the economic contribution of festivals includes not only direct revenues from ticket sales and services but also indirect effects such as increased consumption, job creation and maintenance of local infrastructure. Festivals can be a platform to showcase innovations, promote products and draw attention to the region, thus reinforcing the effect of Special Economic Zones. This effect aims to attract local and foreign investors, which favors the development of manufacturing and innovative enterprises and generates jobs (Akhundova 2022). The tourism industry is faced with the task of developing the sphere of cultural and event tourism, which represents one of the promising directions in world tourism activity. The object of study is the annual multi-genre open-air music festival 'Colors of Ostrava', which has been held since 2002 in the city of Ostrava in the Czech Republic (Kiralova 2019). The festival is a positive example of a cultural event that has gained popularity in Eastern Europe. Over the years, the festival has become an important phenomenon not only in the musical life of the Czech Republic but also in the whole of Europe. Table 5 presents the economic efficiency and impact on the regional economy of the music festival 'Colors of Ostrava'. It is important to note that the event has been canceled in 2020 and 2021 due to the COVID-19 pandemic.

Table 5. Economic efficiency of the music festival 'Colors of Ostrava'

Year	2016	2017	2018	2019	2022	2023
Number of visitors	27000	35000	36000	37000	40000	16000
Organizers' costs, million CZK (million USD)	100.8 (3.7)	123.3 (4.8)	130 (5)	138 (5.4)	160 (6.8)	200 (8.4)
Cost per 1 attendee, Czech crowns (USD)	3733 (138.3)	3523 (138.2)	3611 (138.9)	3730 (146.3)	3748 (159.6)	4250 (192.1)
Organizers' profits, million CZK (million USD)	105 (3.9)	133 (5.2)	142 (5.5)	153 (6)	158 (6.7)	82 (3.4)
Return on investment	0.04	0.08	0.09	0.11	0.13	0.07
Number of labor contracts with people	958	1251	1350	1280	1320	1360

According to a study conducted by representatives of the CzechTourism organization, one-third of the participants of the music festival come from abroad, another third are residents of Ostrava, and the remaining third are from various cities in the Czech Republic (Colors of Ostrava is a Profit... 2017). These data suggest that the maximum number of people requiring accommodation is approximately 5500. In the context that some visitors prefer to stay in hotels and hostels, a tented camp with a capacity of 8000 people provides the peak load due to the different distribution of visitors during the 4 days of the festival. An examination of the ROI data presented in the graph demonstrates the profitability of the festival from 2016 to 2019. Overall, it can be concluded that the investment in the Colors of Ostrava event has a low return on investment, ranging between 0.04 and 0.11. However, it should be noted that this festival has a significant economic impact on the region (Shayakhmetova *et al.* 2020).

Analyzing data from a survey conducted during the festival, it became known that foreign visitors spend on average about two thousand CZK (78.4 USD) per day, while local visitors spend 806 CZK (31.6 USD). The organizers and participants of the event spent about CZK 100 million (USD 3.9 million) in Ostrava to prepare and hold the festival, which has a significant impact on the economy of the city and the region as a whole. In addition, the number of people employed at the festival increases not only during the festival but also throughout the year (Colors of Ostrava, 2017). After a two-year hiatus due to COVID-19, the festival is back with grander plans. The organizers strive to create an event that not only delights music fans but also ensures the safety and comfort of all participants. When organizing the festival, special attention is paid to safety measures and hygiene standards. All visitors and staff were screened for symptoms of illness before entering the festival grounds. To ensure the social distance and comfort of the participants, the festival territory was expanded. Rest areas, picnic areas and comfortable places to listen to music were organized to maintain a safe distance between visitors. Also aware of the importance of the digital space, the organizers provided the opportunity for online broadcasting of performances, allowing audiences from all over the world to participate in the festival virtually (Madiyarova *et al.* 2018).

COVID-19 had a significant impact on event tourism, including the organization of festivals. The recovery of the industry has been uneven, depending on many factors, including the availability of vaccinations, travel restrictions, security measures and tourist confidence. The speed of industry recovery varies across regions and countries. Some events and festivals may have experienced a decline in the post-Covid period due to unpreparedness for new realities, difficulties with security, lack of adaptation to the online format, or lack of flexibility in scheduling. The lagging can also be due to economic difficulties and loss of sponsorship. To avoid festival decline, organizers must adapt to the new reality. This may include introducing hybrid event formats, creating strict security measures, strengthening the online presence for remote participants, attracting a loyal audience, and working with local communities.

To maximize the impact of festivals on event tourism, it is important to develop effective planning and promotion strategies. First of all, it is necessary to analyze the potential of the region, identifying unique features and resources that can be translated into a festival concept. It is important to consider the interests of different target groups to create a programme that will appeal to the widest possible range of visitors. Promotion strategies should include the use of a variety of media channels, including social media, websites, print materials and media broadcasts. It is important to create a unique and memorable festival brand that will be associated with certain values, emotions, and experiences. Actively engaging with the public, using interactive events, competitions and interesting promotions also help to increase tourist interest and participation. In addition, it is important to pay attention to partnerships with local businesses, cultural institutions, and authorities. Effective cooperation will ensure funding, infrastructure, security, and other important aspects of a successful festival. Overall, the proper planning, organization, and promotion of festivals, combined with consideration of the characteristics of the region and the needs of tourists, can maximize their impact on event tourism, contribute to economic, and cultural development and enrich the cultural life of the region.

Festivals that strive for environmental sustainability can also implement measures to manage waste, use resources efficiently, and reduce energy consumption and carbon emissions. The introduction of renewable energy technologies, the use of biodegradable materials and the reduction of water consumption help to reduce the ecological footprint of events. The environmental sustainability of festivals has a positive impact on public perception and attracts environmentally conscious tourists (Sutbayeva *et al.* 2021). Organizers who follow sustainability promote environmental awareness and a more responsible attitude towards the environment.

4. Discussions

Festivals, regardless of their theme, musical orientation, or cultural characteristics, play a key role in attracting tourists and stimulating the development of the tourism industry. It is important to emphasize that the role of festivals extends far beyond entertainment, transforming them into powerful instruments for influencing the economy, cultural enrichment, and social dynamics of regions. Festivals become not only events that attract tourists, but also a source of significant income for local communities. Festival participants spend money on accommodation, food, souvenirs, and other services, which boosts local economies and creates new jobs. Festivals become platforms where different cultures and nationalities can meet and share traditions, arts, and experiences. In addition, festivals are often targets of interest for journalists and media companies, which helps to promote both the festival itself and the region where it is held. Active use of social media, press releases and media events can increase media attention to festivals and regions.

This study shows that festival planning and promotion strategies are needed to stimulate the development of event tourism. The effectiveness and success of a festival in attracting tourists, creating a positive image of the region, and maximizing its economic impact depends on properly developed strategies. Modern festivals, regardless of their theme or format, have become not just events for entertainment, but powerful tools for attracting and retaining tourists. Focused strategic planning becomes the starting point for success. By approaching planning with a focus on visitor needs and expectations, it is possible to create a unique event that is guaranteed to attract attention (Trusheva *et al.* 2022). Collecting and analyzing data on attendance, revenue, satisfaction, and media coverage also provides insight into how successful the festival is in achieving its goals. This information not only helps to evaluate the results of the current event but also serves as valuable experience for future planning.

Drummond *et al.* (2021) emphasized a detailed study of the economic aspects influencing the development of event tourism through festivals. The key role of festivals is revealed not only in the context of cultural and entertainment enrichment but also as a powerful catalyst of economic progress for the regions. The authors focused on the economic potential that awaits regional communities through the organization and implementation of festivals. The manifestation of festival activities, according to this study, leads to a direct impact on the financial health of regional economies. This perspective reveals the opportunities that lie in the organization of festivals as a tool for developing event tourism and enriching local economies. It is worth adding that analyzing the revenues generated by festivals, as well as their contribution to job creation and local entrepreneurial initiatives, represent important components not only for specific regions but also for countries as a whole. These aspects are of great importance in the context of socio-economic development and sustainability. Considering additional revenues from ticket sales, revenues from souvenirs, services, as well as tourists' expenditures on accommodation, food and entertainment also contribute to the cash flow in the region.

Perry *et al.* (2020) emphasized the role of festivals as cultural mediators facilitating the mutual exchange of traditions, ideas, and experiences between different cultures. Festivals, as unique cultural events, provide a platform for people from different parts of the world to meet and interact, who are united by the common goal of celebrating and experiencing cultural heritage. One of the key functions of festivals highlighted by the authors is to stimulate cultural exchange. Through the participation of artists, craftsmen, groups and creative teams from different countries and regions, festivals provide a unique opportunity to present and promote diverse cultural expressions. In addition, in the context of event tourism, festivals can play a role not only as cultural events but also as economic stimuli, attracting tourists from all over the world. The open platform for cultural exchange that festivals provide can significantly enrich the tourism experience and attract the attention of those who seek a deeper understanding of and respect for the diversity of the world's cultures.

Laing (2018) demonstrated an in-depth analysis and comprehension of key aspects of festival tourism development. The central factors contributing to the sustainable development of this important area of the tourism industry were highlighted. By developing sustainable festival tourism, the formation of sustainable infrastructure can be promoted, and the desire for development and innovation can be stimulated. Successful sustainable development in tourism also impacts the ability to create a harmonious and open society, fostering increased cooperation between people from different countries in a global partnership. The author's research puts forward important concepts and notions that are important for understanding the role of festivals in the development of event tourism. But it is also worth paying attention to the fact that these aspects may be more complex in real-life contexts, especially in the context of a post-code situation.

Sun *et al.* (2019) presented an in-depth analysis of the concept of festivals, considered as a key component of the tourism experience industry. The main emphasis was placed on the role of festivals in the context of event-based territorial marketing, which emphasized their importance as a tool for attracting tourists. The classification of festivals revealed the diversity of their types and destinations, which contributes to a deeper understanding of their role in tourism. The coverage of the functional aspects of festivals highlighted helps to perceive them not only as cultural events but also as a means of forming tourist impressions and creating a unique tourist product. The author's research is an important contribution to understanding the role of festivals in the modern tourism industry and emphasizes their function as a territorial marketing tool, but it is worth considering that the factors influencing the success of festivals can be dynamic and multifaceted, especially in the post-Covid period.

Zou *et al.* (2021) delved into the aspect of sustainability and environmental friendliness of festival organizations. Their study highlighted that festivals that integrate sustainable practices can significantly reduce negative environmental impacts and even create a positive image by attracting tourists who value environmentally responsible behavior. Festivals that integrate environmentally responsible practices create a positive image among tourists who are now increasingly orientated towards eco-friendly and sustainable entertainment and travel options. Such events can become not only a place of entertainment, but also an educational platform where tourists can learn more about the importance of caring for nature and environmental responsibility. It is also worth adding that the environmental significance of festivals has the potential to enhance the reputation and image of tourist regions. Such events can be an effective tool for creating a positive image of the region, attracting tourists interested in environmentally responsible and sustainable forms of tourism.

In general, the analysis and comparison of the results of studies by different authors show the versatility and importance of the role of festivals in stimulating the development of event tourism. They not only contribute to the economic growth of regions but are also cultural mediators, enriching the exchange of traditions. Festival planning and promotion strategies play a key role in maximizing their impact on tourism by attracting diverse audiences. Considering environmental sustainability, socio-cultural dynamics, and innovative practices in the organization of festivals contributes to an enhanced impact on the development of the tourism industry and further enriches the tourist experience. The interaction of all festival participants, considering various aspects, creates favorable conditions for the diverse development of regions and the formation of sustainable tourism regions.

Conclusions and Further Research

This study characterized the concept of festivals and their types, which cover a variety of interest areas and attract different types of tourists, namely: musical, cultural, sports, thematic and entertainment. The impact of festivals on event tourism was analyzed, which provides several benefits to regional communities and tourism industries: regional economic development, tourist inflow, cultural exchange, and media attention. The world's largest international festivals such as the Edinburgh International Festival, Winter Light Festival, Up Helly Aa Viking Festival, and Dia de los Muertos Festival were described. The highest-grossing festivals in the world, which country they take place in and the approximate number of visitors are presented. The biggest festivals are Outside Lands Music and Arts Festival in the USA, Life is Beautiful Festival in the USA and Lollapalooza Brazil in Brazil.

The economic contribution of festivals is described, which includes not only direct revenues from ticket sales and services but also from hotel services, transport facilities, restaurants, and other types of tourist infrastructure. The economic efficiency of the music festival 'Colors of Ostrava' was also determined, highlighting such indicators as the number of visitors, organizers' costs, costs per spectator, revenue, return on investment, and number of employment contracts with people. It was concluded that the festival has a significant economic impact on the region. In conclusion, festivals play an important and multifaceted role in stimulating the development of event tourism. They not only enrich the cultural and entertainment life of regions but also contribute to economic growth, job creation and strengthening of local communities.

Credit Authorship Contribution Statement

Aytakin Akhundova: Writing – original draft, Writing – review and editing, Conceptualization, Investigation, Methodology, Project administration, Formal analysis, Supervision, Data curation, Validation, Visualization.

Declaration of Competing Interest

The author declares that she has no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Declaration of Use of Generative AI and AI-assisted Technologies

The author declares that she have not used generative AI and AI-assisted technologies during the preparation of this work.

References

[1] Akhundova, Ayatkin (2022). Special Economic Zones as a Tool for Sustainable Tourism Development in the Republic of Azerbaijan. *Review of Economics and Finance,* 20: 1101-8. https://refpress.org/ref-vol20-a123/

[2] Carlsen, Jack *et al*. (2010). Festival Management Innovation and Failure. *International Journal of Event and Festival Management,* 1(2): 120-31. Available at: https://doi.org/10.1108/17852951011056900

[3] Dashchuk, Yuliia (2023). Directions of Researching the Competitiveness of Tourist Destinations. *Economic Forum,* 1(2): 11-17. DOI: https://doi.org/10.36910/6775-2308-8559-2023-2-2

[4] de Valck, Marjike, and Antine Damiens (2020). Film Festivals and the First Wave of COVID-19: Challenges, Opportunities, and Reflections on Festivals' Relations to Crises. *European Journal of Media Studies*, 9(2): 299-302. DOI: https://doi.org/10.25969/mediarep/15321

[5] Drummond, James, Jen Snowball, Geoff G. Antrobus, and Fiona Drummond (2021). The Role of Cultural Festivals in Regional Economic Development: A Case Study of Mahika Mahikeng. In: *Creative Tourism in Smaller Communities: Place, Culture, and Local Representation* (pp. 79-107). University of Calgary Press.

[6] Duffy, Michelle, and Judith Mair (2021). Future Trajectories of Festival Research. *Tourist Studies,* 21(1): 9-23. DOI: https://doi.org/10.1177/1468797621992933

[7] Dyusekeeva, Mayra M., and Aigerim I. Ibrayeva (2021). Cultural Interaction between Kazakhstan and Azerbaijan. *Bulletin 'Historical and Socio-Political Sciences',* 4(67). Available at: https://bulletin-histsocpolit.kaznpu.kz/index.php/ped/article/view/357

[8] Eshuis, Jasper, Bonno Pel, and J. Andres Coca-Stefaniak (2020). From Ephemeral Events to Multiple Legacies: An International Comparison of Festival Demarcations and Management Approaches. *Event Management,* 24(5): 579-96. DOI: https://doi.org/10.3727/152599519X15506259856192

[9] Faizieva, Saiora F., and Sobyrjon S. Ruziev (2023). Forming a Brand of the Tourist Region, with the Influence of the Gastronomic Brand. *Education, Science and Innovative Ideas in the World,* 16: 128-33. https://uniwork.buxdu.uz/resurs/13048_1_BFA456846F438E71635933DDED23A89E36456F7A.pdf

[10] Gadzhiyeva, Nushaba, Sevinj F. Babakishiyeva, and Arzu T. Pasha (2020). New Silk Road as an Opportunity to Accelerate Tourism Development in Azerbaijan. *Science and Reality,* 1: 61-63.

[11] Götting, Marie Charlotte (2022). *Highest Grossing Festivals Worldwide in 2019*. Available at: https://www.statista.com/statistics/306095/highest-grossing-festivals-worldwide/

[12] Gursoy, Dogan, Robin Nunkoo, and Medet Yolal (2020). *Festival and Event Tourism Impacts*. Abingdon: Routledge.

[13] Gutierrez, Isabel T., Karl S. Rosengren, and Peggy J. Miller (2015). Dia de los Muertos: Learning about Death through Observing and Pitching in. *Advances in Child Development and Behavior,* 49: 229-49. DOI:https://doi.org/10.1016/bs.acdb.2015.08.004

[14] Ibragimova, Sonakhanum G. (2019). The Main Directions in the Development of Music Management in Azerbaijan. *Culture and Civilization,* 9(6A): 115-24. Available at: http://publishing-vak.ru/file/archive-culture-2019-6/13-ibragimova.pdf

[15] Jawabreh, Omar *et al*. (2023). Fractional Calculus Analysis of Tourism Mathematical Model. *Progress in Fractional Differentiation and Applications,* 9: 1-11.

[16] Johnson, Karl (2019). Fuel for the Fire: Tradition and the Gender Controversy in Lerwick's Up Helly Aa. *Scottish Affairs,* 28(4): 459-74. Available at: https://www.euppublishing.com/doi/10.3366/scot.2019.0298

[17] Kiralova, Alzbeta (2019). Creative Use of Industrial Heritage as a Possible Development Tool in less Competitive Destinations. In *Creating and Managing Experiences in Cultural Tourism* (pp. 273-87). Singapore: World Scientific Publishing. DOI: https://doi.org/10.1142/9789813233683_0017

[18] Kozlovska, Maryna (2023). Virtual and Global Holiday: Competition in the Space of National Traditions. *Journal of Kryvyi Rih National University,* 2: 10-15. DOI: https://doi.org/10.32461/2226-0285.2.2023.293737

[19] Laing, Jennifer (2018). Festival and Event Tourism Research: Current and Future Perspectives. *Tourism Management Perspectives,* 25: 165-68. DOI: https://doi.org/10.1016/j.tmp.2017.11.024

[20] Madiyarova, Ainur, Sayabek Ziyadin, Aigerim Blembayeva, and Raigul Doszhan (2018). Modern Trends in Digitalization of Tourism Industry. *Proceedings of the 32nd International Business Information Management Association Conference, IBIMA 2018 - Vision 2020: Sustainable Economic Development and Application of Innovation Management from Regional expansion to Global Growth* (pp. 7990–7997). Seville: International Business Information Management Association.

[21] Mair, Judith, and Karin Weber (2019). Event and Festival Research: A Review and Research Directions. *International Journal of Event and Festival Management,* 10(3): 209-216. DOI: 10.1108/IJEFM-10-2019-080

[22] Marmul, Larysa, Iryna Romaniuk, and Oksana Marchenko (2023). Organisation of Accounting for Travel Agents. *University Economic Bulletin,* 18(3): 54-60. DOI: https://doi.org/10.31470/2306-546X-2023-58-54-60

[23] Nordvall, Anders, and Steve Brown (2020). Evaluating Publicly Supported Periodic Events: The Design of Credible, Usable and Effective Evaluation. *Journal of Policy Research in Tourism, Leisure and Events,* 12(2): 152-71. DOI: https://doi.org/10.1080/19407963.2018.1556672

[24] Perry, Beth, Laura Ager, and Rike Sitas (2020). Cultural Heritage Entanglements: Festivals as integrative Sites for Sustainable Urban Development. *International Journal of Heritage Studies,* 26(6): 603-18. DOI:https://doi.org/10.1080/13527258.2019.1578987

[25] Picard, David (2016). The Festive Frame: Festivals as Mediators for Social Change. *Ethnos,* 81(4): 600-16. DOI: https://doi.org/10.1080/00141844.2014.989869

[26] Pirnar, Ige, Sinem Kurtural, and Melih Tutuncuoglu (2019). Festivals and Destination Marketing: An Application from Izmir City. *Journal of Tourism, Heritage and Services Marketing,* 5(1): 9-14. DOI:https://doi.org/10.5281/zenodo.2640987

[27] Pohuda, Nataliia (2023). Research of the Implementation Level of Information and Communication Technologies by Tourism Enterprises. *Economics of Development,* 22(1): 8-19. DOI:https://doi.org/10.57111/econ/1.2023.08

[28] Rakhmanov, Farhad P., Elchin B. Suleymanov, and Elmira M. Gojayeva (2020). Effects of Coronavirus Pandemic Influence on the Tourism Development in Azerbaijan. *Tourism and Hospitality* DOI: 2: 76-88.

[29] Richards, Greg (2006). The Festivalization of Society or the Socialization of Festivals? The Case of Catalunya. In *Cultural Tourism: Global and Local Perspectives* (pp. 257-80). New York: Routledge.

[30] Shayakhmetova, Liliya, Aigul Maidyrova, Marat Moldazhanov (2020). State Regulation of the Tourism Industry for Attracting International Investment. *Journal of Environmental Management and Tourism,* 11(6): 1489-95.

[31] Stewart, Hannah, Jane Ali-Knight, Garry W. Kerr, Kristen Holmes (2022). *Covid and Innovation within Edinburgh's Festivals: Post-Covid-19 Recovery, Innovation and Technology*. Edinburgh: Edinburgh Napier University.

[32] Sun, Huan, Shaofeng Wu, Yanning Li, and Guangquan Dai (2019). Tourist-to-Tourist Interaction at Festivals: A Grounded Theory Approach. *Sustainability,* 11(15): 4030. DOI: https://doi.org/10.3390/su11154030

[33] Sutbayeva, Raikhan *et al.* (2021). Impact of Social Economy on Environmental Protection. *Journal of Environmental Management and Tourism,* 12(3): 690-702.

[34] Taylor, Jodie (2016). *The Festivalization of Culture*. Abingdon: Routledge.

[35] Trusheva, Sharafat *et al*. (2022). Assessment of the Impact of Regional Characteristics and the Development of Event Tourism on Business Tourism in the Republic of Kazakhstan Based on Clusterization and a Regression Model. *Journal of Environmental Management and Tourism,* 13(4): 985-94.

[36] Zou, Yongquang, Fang Meng, Jian Bi, and Qing Zhang (2021). Evaluating Sustainability of Cultural Festival Tourism: From the Perspective of Ecological Niche. *Journal of Hospitality and Tourism Management,* 48: 191-99. DOI: https://doi.org/10.1016/j.jhtm.2021.06.009

[37] Colors of Ostrava are a Profit for the Region (2017). Available at: http://www.ostravanews.cz/colours-of-ostrava-ziskem-kraj/

[38] Nabana no Sato Winter Light Festival Japan 2023. (2024). Available at: https://www.travelbeginsat40.com/event/nabana-no-sato-winter-light-festival-japan/

[39] The World's Most Successful Music Festivals (2024). https://www.statista.com/chart/32085/highest-grossing-festivals-worldwide/

[40] TOP 20 Worldwide festival grosses. (2021). https://data.pollstar.com/chart/2021/12/Top20FestivalGrosses_982.pdf

[41] TOP 20 Worldwide festival grosses. (2022). https://data.pollstar.com/chart/2022/12/121222_ye.top20.festival.grosses_1028.pdf

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Economic Dimensions of Agrarian Contracting

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Abstract: The achievements of the interdisciplinary New Institutional Economics are adapted and a holistic approach to the definition, classification, evaluation, and improvement of contracts and contractual relations is justified. A critical analysis of the contemporary development of Contractual Economics is made and the specificity of the economic study of agrarian contracts is summarized. A 'new' Agents-Means-Process-Order (AMPO) approach for economic analysis, evaluation and improvement of agrarian contracts is presented, including: (1) economic definition of agrarian contracts and characterization of their place in the system of agrarian governance as bilateral or multilateral agreements related to agricultural production and services; (2) economic characteristics of the agents participating in the contractual relations (interests, awareness, risk-taking, capability, tendency to opportunism, etc.); (3) economic characteristics of different types of agrarian contracts (for purchase and sale, hire of labor and resources, services, loan, insurance, marketing, coalition, etc.); (4) economic characterization of the agrarian contracting process (technological, transactional, institutional, etc. factors for managerial choice); (5) economic characterization of the outcome of the contractual process and the dominant governance order in the agrarian sphere (rule of law, rule of force, contractual structure, etc.); (6) characterization of the stages for the improvement of agrarian contracts and governance (identification of problems and failures of the market, private contracting, and public modes; needs and forms of new public intervention, etc.); (7) identification of needs and sources of new information for analysis and evaluation of agrarian contracts.

Keywords: agricultural finance; agents; process; order; transaction costs.

JEL Classification: Q12; Q13; Q14; Q15; Q18; Q56; R11.

Introduction

A large part of contemporary agrarian activity and resources is governed by some kind of contracts. Nevertheless, many modern economic studies either ignore or considerably neglect the important role of contracts in agrarian governance and associated with contractual relations costs. What is more, existing economic studies of agrarian contracting in Bulgaria and elsewhere are episodic, with diverse and debatable definitions, methodologies and scopes. This study tries to fill the enormous gap and answer several important academic and practical (forwarded to supporting farm and agri-business strategies and public policies) questions: what is an economic contract and how does it differ from other (legal, sociological, etc.) approaches to study contractual arrangements; what is the role of economic contracts in the system of agrarian governance; why there is such a huge variety of contracts used by agrarian and related agents; what are the main types of economic contracts and what are their comparative advantages and disadvantages; how to improve the system of agrarian contracting, etc. The article adapts the achievements of the interdisciplinary New Institutional Economics and offers a holistic Agents-Means-Process-Order (AMPO) framework for the definition, classification, evaluation, and improvement of contracts and contractual relations in Bulgarian agriculture.

1. Literature Review of Economic Studies of Agrarian Contracts

The analysis of agrarian contracts and contractual relations in agriculture has been at the center of economic science from its classical period to the present day (Furuboth and Richter, 2000; Goodhue, 2022; Michler and Wu, 2020; Massey, Sykuta, Pierce, 2020; Otsuka, Chuma, Hayami 1992; Mishra, Kumar, Joshi, 2022). This is due to their important economic role as a means of coordination, stimulation, distribution of risk, minimization of costs for the supply of resources and marketing of produce, as well as for the maximization of the output, income, and competitiveness of economic activity. In the last few decades, a new and modern direction of economic research has even developed and emerged – Economics of Contracts and Contractual Relations.

Around the globe, large number of theoretical and empirical studies and publications have been done on diverse aspects of agrarian contracting. Some research relates to the different forms of land ownership and the management of relations between land owners and labor (Land tenure systems), and more recently on the various contracts for the supply of land, manpower, credit, marketing, etc. in agriculture (Bellemare M. 2015; Dinterman, 2022; Deshpande, 2005; Mishra, Kumar, Joshi, 2022; Otsuka, Chuma, Hayami, 1992; Stebek, 2011; Voutos, Drakopoulos and Mylonas, 2019; Villaume, 2011; World Bank, 2015). Other studies focus on the diverse types of contracts in the agrarian sphere - for trade, resource coalitions, joint activities, formal, informal, internal, external, bilateral, multilateral, classical, neoclassical, rational, short-term, long-term, relational, interlinked, futures, etc. (Deshpande, 2005; Goodhue, 2022; Ikeda and Natawidjaja, 2022; Mishra, Kumar, Joshi, 2022; Technical support, 2002; Veldwisch and Woodhouse, 2021; Villaume, 2011; Voutos, Drakopoulos and Mylonas, 2019).

Many publications investigate the personal, historical, institutional, economic, natural, etc. factors for choosing a certain contractual form by agents (Alulu, Otieno, Oluoch-Kosura, Ochieng, Moral, 2021; Goodhue, 2022; Schieffer and Vassalos, 2015; Stebek, 2011; Voutos, Drakopoulos and Mylonas, 2019; Wu and MacDonald, 2015; World Bank, 2015). Others deal with assessment of the comparative effectiveness of different types of contracts to overcome information asymmetry, control opportunism, share risk, and minimize agents' costs, maximize total output and income, and enhance farm competitiveness and sustainability, etc. (Alulu, Otieno, Oluoch-Kosura, Ochieng, Moral, 2021; Bellemare M. 2015; Dinterman, 2022; Deshpande, 2005; Michler and Wu, 2020; Mishra, Kumar, Joshi, 2022; Schieffer and Vassalos, 2015; Stebek, 2011; Technical support, 2002; Veldwisch and Woodhouse, 2021).

There are huge number of studies on the agents' motivation and criteria for choosing a contractual form, and for vertical integration - make or buy decision, partial, quasi or full vertical integration along the supply and/or food chain (contract farming and marketing), etc. (Bellemare, 2015; Deshpande, 2005; MacDonald, 2015; Mishra, Kumar, Joshi, 2022; Technical support, 2002; Villaume, 2011). Some researchers investigate the evolution of contracts and contractual relations over time, related to the development of agents' preferences, the need for collective actions of different kinds (multilateral and collective contracts, codes of conduct, standards, etc.), public intervention and state involvement (cross compliance, eco-contracts, etc.), the modernization of technology and trade (automation and robotization of processes, digitization of production, management and trade, etc.), innovations in contracting (multilevel, multilateral, network, smart, carbon, etc. contracting), globalization ('European' contracts, transnational contracts and agreements), etc. (Bellemare, 2015; Dinterman, 2022; Goodhue, 2022; MacDonald, 2015; Mishra, Kumar, Joshi, 2022Stebek, 2011; Technical support, 2002; Villaume, 2011; Voutos, Drakopoulos and Mylonas, 2019; World Bank, 2015).

Individual schools of economics use different approaches to the analysis of economic contracts in general, and those in the agrarian sphere in particular. The Classical Economic school emphasizes and models mostly market (Spot-light) and standard and self-enforcing (Classical) contracts. Traditional institutional economics, on the other hand, emphasizes the determining role of property rights (property rights and enforcements) and the external (normative, societal, and institutional) environment for governing the behavior and relationships of agents. The popular Agency theory focuses on the different interests and unequal information of the contracting parties, and ways to overcome the related problems between the Principal and the Agent (Co-ownership, Output-based compensation, Neoclassical contracts, etc.). The Nexus of Contracts theory considers the company only as a center of contracts (nexus of contracts), reconsidering the traditional understanding of the company and business organizations.

Multiple theories of economic organizations attempt to combine some of these approaches to explain the nature, comparative effectiveness, and economic boundaries of organizations of different types (sole proprietorship, partnership with closed or open membership, corporation, cooperative, etc.). For a more complete understanding and adequate study of contracts, an inter- and interdisciplinary approach(s) combining law, economics, organization, sociology, political, and behavioral sciences is increasingly applied, with individual disciplines borrowing concepts and categories from each other and expanding the scope and studying approaches.

Regardless of all this development, however, the Neoclassical approach continues to dominate the economic analysis of contracts and governing structures, in which they are studied independently of each other and the specific institutional environment (Nirvana approach), without taking into account (zero transaction costs) or only partially take into account (Agency costs) the significant transaction costs related to the various forms of governance of the agrarian activity and relations.

In response to many of the contemporary scientific, social, and business challenges, in recent decades, a rapid evolution has been experiencing the 'New' Institutional Economics (New Institutional Economics) and Transaction Costs Economics (Coase, 1991, 1998; Furubotn and Richter, 2005; Ostrom, 1999; Williamson, 2005; North, 1990). This interdisciplinary methodology (combining economics, management, organization, law, sociology, behavioral and political sciences), which is constantly enriching its scope and toolkit, makes it possible to better understand the system of economic governance and to evaluate the diverse market, contractual, private, public and hybrid forms and mechanisms of governance. It studies contracts and other forms and mechanisms of governance (institutional environment, market, internal, public, and hybrid forms) not separate from each other, but as an integral part of the overall system of economic governance. Moreover, it evaluates individual contracts not absolutely, but relative to other alternative contractual and governance structures for organizing transactions and minimizing transaction costs.

Increasingly, the achievements of this new scientific approach are also being adapted in the analysis of governance structures and contractual relations in the agrarian sphere (Bulte, Richards, and Voors 2018; Ducos and Dupraz 2006; James, Klein, and Sykuta 2011; Hayami and Otsuka 1993; Kuzilwa *et al.* 2019; Ronaghi *et al.* 2020; Santiago and Sykuta 2016; Sykuta 2010; Sykuta and Cook 2001; Sykuta and Parcell 2003; Mugwagwa, Bijman, Trienekens 2020), including Bulgaria to a lesser extent (Bachev 2010a,b,c, 2013, 2021, 2023; Bachev and Terziev 2001, 2002a,b,c; Georgiev 2011; Georgiev, Stoeva, Dirimanova 2023; Kocheva 2018; Radeva 2017; Sarov 2017; Terziyska 2016). However, the 'great' potential of the New Institutional Economy has not yet been fully used for more complete identification of the variety of specific mechanisms and forms governing the behavior and actions of the various agrarian agents; to evaluate the relative and absolute effectiveness of the different types of contracts in the specific conditions of each country, sub-sector, region, etc.; to modernize contractual, organizational and institutional design; to improve public policies, farming and business strategies and the collective action of agrarian and related agents.

In Bulgaria, the studies of agrarian contracts are episodic, focused on individual types of contracts, or aspects, levels, or functional areas of management, or 'simple' forms, and for the most part are unrepresentative. Moreover, individual researchers apply 'their own' definitions and methodologies, which are often contradictory, broad, and highly debatable. This does not provide an opportunity to understand well and adequately assess the effectiveness, driving factors for development, and limitations of the structure of agrarian contracts and the system of agrarian governance in the country, and to analyze the overall benefits and effects of the specific and most often 'complex' forms of governance used by different agrarian agents, individual types of farms, sub-sectors of production, and in specific agro-ecosystems and/or regions of the country.

2. Economics of Agrarian Contracting

The evolution of the economy is based on the specialization of activity and the need for exchange (of products, resources, rights, obligations, etc.) between individual agents, and therefore on the needs for 'coordination of activity' and 'managing relations' with other agents. This coordination and governance can be done completely 'centrally' by someone or something, for example a regulatory document (law, regulation, etc.), a government body, an entrepreneur, a company manager, etc. Coordination and management can also be carried out by the 'invisible hand of the market and market competition' and be a 'side' result of fully 'decentralized initiatives and actions' of autonomous agents (individuals, households, firms, etc.) that adapt their behavior to changing 'free' market prices and conditions of exchange. In modern society, to an increasing extent, the coordination and governance of the activities of individual agents is carried out by detailed negotiation of special terms of exchange or joint actions between interested parties - negotiation of obligations, transfer of rights, specification of prices, quality, terms, technologies, method of payment, adaptation and dispute resolution mechanisms, forms of joint actions, etc.

For economists, contract is an 'abstract' category that characterizes any agreement between individual agents. In modern settings, individual agents are largely 'free' to manage their activities and relationships according to their interests and preferences, including choosing partners for exchange, trade, coalition, and cooperation, negotiating prices and terms of exchange, etc. Consequently, a significant part of economic and overall social activity is governed by some sort of private contracts (agreements) between individual agents. For example, when the farmer buys seeds, feed, chemicals, property, etc. from the market, a 'spotlight contract' is used, with which, at the moment of exchange ('on the spot'), a private purchase-sale agreement is reached and a given commodity is acquired (ownership transferred) from the farmer for payment of a certain ('market') price to the seller. When renting a certain natural or material resource (land, plantations, buildings, equipment, etc.), a lease contract is used, which stipulates rights and conditions of use, term, amount and method of payment of rent, etc. When hiring a workforce, an employment contract is concluded, with which the employer and the hired worker agree on terms and conditions of work, method of payment, social security and additional benefits, etc. In the sale of farm produce, long-term marketing contracts with processors or food chains are often practiced, which specify quantities, standards, delivery times, prices, interlinked-crediting, etc. When establishing or joining a collective organization (company, cooperative, corporation, association, etc.), the farmer signs a coalition (founding, partnership, membership, etc.) contract that regulates the rights and obligations of the co-owners and members of the collective organization.

There has long been a consensus among economists about the comparative advantages of a system of economic governance based on private property and free (market) negotiation between agents in terms of maximizing individual and overall welfare and minimizing individual and aggregate costs. Along with this, the examples of the recent past of Bulgaria and other former communist countries, proved the high inefficiency (and failure) of another 'model' of economic governance based on centralized management of economic activity and relationships of agents and strong limitation of their free initiatives and private contracting.

Private negotiation is the main form of governance of economic activity and in modern conditions there is a great variety of practically used and actually possible agreements (contracts) between individual agents. In the specific socio-economic environment in which individual agents function, there are always some institutionally ('externally') determined and sanctioned mandatory rules (for behavior, activity, trade, etc.) that (pre)determine to some extent their behavior and relationships (North 1990). However, the governance of the overall economic activity is also carried out by means of other mechanisms such as market competition, collective decision-making, direct orders from a manager, etc.

In modern settings, individual agents have 'full' freedom to coordinate and manage their activities and optimize resources through various types of contracts. In this sense, negotiating the 'private' terms and conditions of exchange and controlling the fulfillment of contractual obligations is a main function (part) of the management of the individual, household, company, etc. activity. Externally determined rules and constraints (should) facilitate the relationships of economic agents. This 'Public Order', however, cannot regulate all their sides for the diverse conditions of individual participants (Furuboth and Richter 2005). Contract is that means of 'Private Ordering' by which individual agents optimize their relationships, creating private rules for their exchange adapted to their specific conditions and needs (Williamson 2005). The only institutional restriction is that private contracts do not contradict the laws and do not harm the interests of others[1].

Each distinct type of contract has its own specific 'economic' characteristics - different attributes, capabilities, advantages, disadvantages, limitations, costs, etc. for participating agents. Therefore, in economic analysis, each principal type of contract is evaluated as a specific element of a structure of social governance. Modern economics, distinguishes as fundamentally different structures of governance the 'market management' (based on numerous 'external' standard contracts based on 'founded' by agents 'market' prices and conditions of exchange and competition) from 'internal-firm management' (based on special contracts for 'internal' integration, full control and direction of manpower and other resources).The relationships between an employer and an employee is also negotiated through an employment contract, which establishes general conditions and obligations. After signing of the contract, however, the worker is obliged to carry out the orders of the employer during the contracted period, without having to make constant (re)negotiations during the use of the hired worker. Therefore, the labor contract is considered as a special governance structure (intra-firm integration of labor, 'management by fiat'), which has its own economic advantages (lack of need for permanent bargaining at every change in the conditions of production and exchange) and costs (additional costs for directing, motivating, controlling, socially insuring, etc. of the hired labor). Between the two extremes of market and intrafirm governance there exists a wide variety (spectrum) of special 'non-market' contractual forms designed or adapted by the participating agents to their specific preferences and needs and the socio-economic, institutional and natural conditions of their activity and exchange.

That is why, in the analysis of the overall system of social (and particularly agrarian) governance, it is said that part of the aggregate agrarian activity is governed (coordinated, directed, stimulated, sanctioned, etc.) 'externally' by the movement of market prices and market competition (the 'invisible hand of the market'), another part is guided 'inside' an organization by means of orders (directly from the 'visible hand' of a manager or governing

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[1] 'The contract is an agreement between two or more persons to create, settle or terminate a legal relationship between them. Individuals use their rights to satisfy their interests. They cannot exercise these rights contrary to the interests of society... The parties can freely determine the content of the contract, as long as it does not contradict the mandatory norms of the law and good morals' (ZZD, 2021).

body), and a third by means of 'free' negotiations between interested parties (Bachev 2010a,b). In the process of identification and comparative assessment of the diverse contractual forms that individual agents use, design or develop to coordinate and manage their activities and relations (market, bilateral, multilateral, short-term, long-term, etc.), their economic role in the overall system of economic and social governance is revealed.

The object of economic negotiation and exchange can be a given product, resource, service, activity, behavior, obligation, etc. Modern (New Institutional) economics studies contracts as a means of exchanging rights and obligations between agents (Bachev 2010c). In this study, the contract is defined and studied as a means of voluntary exchange of rights and obligations between two or more parties, by which they govern their relationships, behavior and activities in mutual interest. The rights that agents exchange (give and receive) can be over natural resources (land, water, biological resources, etc.), things (short-term and long-term tangible assets), knowledge, information and innovations (intangible assets), actions (provision of services, joint actions), or behavior (including limitation of certain actions), financial means, obligations, taking of certain risk, etc. The objects of the contract are only the rights that the given agents actually possess, as in relation to economic resources, these are rights of ownership, rights of management, rights of use, rights of extracting income, rights of transfer, etc. (Furuboth and Richter 2005). In modern conditions, the scope of the rights of contractual trade and exchange is constantly expanding to include new objects (origins, trademarks, waste, virtual objects, etc.), activities (control of technology and agrotechnics, access to private lands and resources, improvement the quality of air, water, soil, etc.), use of new energy sources (solar, wind, bio, recycling or use of 'waste', etc.), interests of third parties, groups and future generations, improving the 'welfare' of animals and plants, ecosystem services (biodiversity protection, combating climate change), etc.

Free private negotiation implies (mutual) benefit to all parties to the contract - 'economic equivalence' of what each party gives and receives from the exchange ('mutually beneficial exchange'). For example, the classical contract for the purchase and sale of a resource, good or service usually involves the payment of some (negotiated or market) price in money, in kind with another resource or product, in services, etc. In a contract for joint actions (collective actions), on the other hand, the individual benefit can be expressed in additional profit, economies of scale, confrontation of monopoly, efficient 'production' of public and local goods such as ecosystem services, etc. However, the contractual exchange is not always 'fair' and mutually beneficial, especially in the agricultural sector, where there is often a monopoly or quasi-monopoly situation in the supply of critical resources (*e.g.* water for irrigation, energy, etc.) or in the marketing of agricultural products and services – undeveloped markets, single or few buyers or sellers. Under these conditions of 'contractual asymmetry', farmers are forced to accept 'contractual terms' drawn up by and for the benefit of a particular supplier or buyer.

In the modern economy also there are many cases of pre- and post-contractual opportunism, when one of the parties hides his intentions of 'cheating' in the negotiation process (mismatch of experience or willingness for productive efforts of the hired worker, real fertility of the soil in the case of land for lease and etc.) or takes advantage of changed conditions (market prices, demand, natural disasters, etc.) in the process of implementation of contractual arrangements at the expense of the other party. In the agrarian sector, there are also cases of unwanted 'contractual exchanges' (forced transactions) due to 'power positions' of certain individuals or groups in the distribution and trade of critical resources or products. The latter are essentially direct trespass to property, not much different from criminal theft, and are not contracts in the economic sense.

In contemporary conditions of developed markets and competition, the variety and scope of contractual benefits obtained is constantly expanding - maintaining business relationships, accompanied or related benefits, rights to participate in profits or in ownership, facilitating access to markets or resources, lobbying to obtain public support and subsidies, etc. Along with this, the forms of 'free', including contractual, provision of resources, products or services from private, state, local, non-governmental, international, etc. organizations and agents are also increasing. For example, many farmers provide a free 'service' (give the right to outsiders) of free access to (certain) territories of the private farm for trespassing, excursions, events, hunting and fishing, etc. When the free provision is not institutionally determined (formal or informal obligation), or a 'new' initiative of certain individuals or groups[2], the private benefits of this type of agreement are expressed in the satisfaction of the charity activity of one (the donating) party and some need (lack of access to finance, land resources, training, and other products and services) of the other (beneficiary) party to the contract.

[2] For example, the movement for sustainable agriculture initially emerged as an informal initiative of certain (green) farmers and interest groups, and subsequently became institutionalized and a part of the official policy of the state (including the EU CAP), international, non-governmental, business and other organizations.

Agents can only negotiate, exchange, grant and trade rights that they actually own. In this sense, economists distinguish between 'absolute' and 'relative' property rights of individual agents (Furuboth and Richter, 2005). Agents' absolute property rights are determined by the prevailing institutional order ('Institutions' or 'Institutional Environment'). The 'initial' distribution of rights and obligations between individual agents in society (or the 'rules of the game') is made both by formal laws and normative documents, and is also determined by tradition, moral, religious and ethical norms, etc. (North, 1990). In modern conditions, much of the property rights of agents are determined by formal laws and the normative system and protected by state and judicial power. For example, the right to private ownership, management and trade in agricultural land in Bulgaria was restored by the Law on the Ownership and Use of Agricultural Land and its amendments after 1990. 'Inviolable' private ownership of the means of production (including the right of private inheritance) creates strong incentives for their effective preservation and management by agents, and this is guaranteed by the country's constitution. In the conditions of democracy and EU membership, a large part of rights and rules are defined by 'social consensus' (agreement) in a political decision-making process, by common EU policies and also by international agreements in which the country participates.

Bulgaria membership in the European Union provided many new rights and better enforcements of the existing rights of citizens, including in the agrarian sector (private property, free contracting, income protection, nature conservation, food safety, etc.). Along with this, there is also a tendency to institutionally limit absolute private rights in the European Union and on a global scale. For example, formal restrictions are constantly introduced on the way of use and trade of agricultural lands, production of outputs[3], application of technologies, use of chemicals, etc. In the agrarian sector there are also many informal rights and rules predetermined by tradition, historical development, ideology, cultural, moral and ethical norms and rules. For example, free access to private, municipal or state lands in mountainous, etc. areas for grazing of private animals, of rivers, lakes and groundwater for irrigation of private property, watering of private livestock, fishing, etc.

Creation, identification, maintaining, inheriting, defending and contesting absolute rights involves significant private and social transaction and overall costs. For example, the political discussions and the modernization of the legal framework for the restoration of private ownership of agricultural lands and property (of the existed public agricultural farms), and the process of restitution of the lands in 'real borders' and the individual shares in the other assets after 1990, took almost 10 years, and they were associated with enormous public and private costs. Currently, private agents pay significant fees for mandatory registrations and taxes of land property, movable and immovable assets, agricultural and animal husbandry activities, trade name and license, when establishing a cooperative, agro-company, professional association, non-governmental organization, etc. Agents also have substantial transaction and overall costs to protect private, municipal and public property from misappropriation and misuse (theft), damage or destruction as a result of accidents, wildlife, natural disasters, etc.

Relative property rights are those that are negotiated (transferred, granted, exchanged, traded, etc.) between private agents by contract. The contract can transfer owned absolute property rights in full (sale, donation, exchange, participation in an organization) or in part (rent, loan, etc.). For example, the private owner of a plot of agricultural land can transfer with a lease contract to a farmer partial property right, such as the right to cultivate and receive income for a certain period of time against a certain price (rent), services (preservation of soil fertility, ecosystem, etc.) or free of charge. At the same time, the lease agreement does not give the right for non-agricultural use of the land, construction, prospecting for minerals, provision to third parties, sale of the plot, etc.

Bulgaria's membership in the European Union has significantly improved the protection of the contracted rights of citizens (legal consultations on the rights of agents and ways to protect them, antitrust protection, consumer protection, etc.), including administrative and judicial procedures. However, at the same time, there is a process of institutional limitation of the contract rights in the European Union and on a global scale. For example, agricultural products that do not meet minimum quality and safety standards cannot be produced and traded; the object of sale can only be the right to use the labor force, and not the personality of the worker[4]; the use of child labor is prohibited; the sale of certain products or services is to be carried out at fixed prices or through licensed organizations, etc. Negotiating, transferring, defending and disputing relative rights is also associated with significant transaction costs for individual agents and society as a whole – for finding interested parties for contacting, for negotiating terms of trade (exchange), for writing and registering the contracts, for the execution and control of conditions of agreements, for disputing and resolving conflicts, for termination or conclusion of contracts, for failed transactions, etc.

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[3] For example, the production of cannabis is prohibited in many countries, like Bulgaria.

[4] In some countries and regions, certain segments of population have no right to work (*e.g.* asylum seekers in EU, women in Afghanistan, etc.), while in other 'illegal' child labor is widely used, and even people slavery exists.

For economic governance it is very important the absolute rights of agents over resources, activities, etc. to be well defined and enforced, and the contracted rights effectively enforced. If the rights to a given resource or activity are not (well) defined and sanctioned, this creates high difficulties (costs, inefficiency) in the optimal distribution and use of overall economic resources. For example, if the right to clean water is not defined, provided and enforced, it leads to serious conflicts between the polluter (livestock farmer) and other agents (consumers, interest groups, etc.) that cannot be resolved through private contract between the parties. Coase proved that 'the problem of social cost' does not exist in conditions of well-defined property rights and low (zero) transaction costs (Coase 1960). In this situation, agents easily and 'costlessly' trade the rights they own, optimize the allocation of resources in their own interest, and maximize the total product (welfare) without the need for external government or other intervention in private contractual relations. Either the polluting farmer 'buys' the right to pollute by paying a corresponding price to the affected agent (who has the right to clean water), or the negatively affected agent pays the necessary price to the farmer not to pollute (when the latter owns the right to pollute).

Absolute rights can only be defined, extended, amended, or taken away through formal or informal institutional modernization, with any 'illegal' theft being prosecuted and punished by the state, community, or public. Relative rights, on the other hand, can be stolen through the contract – for example, the sale of poor quality or inauthentic (fake) goods in an instant exchange. Most often, there is also a time period between the contracting (and the signing of the contract) and the fulfillment of the assumed ('promised' future) obligations in the agreement - for example, the sale of a future crop, the lease of land, a loan in money or in kind, etc. This time lag between contracting and fulfillment of the contracted agreements gives one of the parties the opportunity to 'steal' the rights and change the rules (failure to fulfill the promises) established in the contract - delay or failure to deliver the promised harvest, non-payment of the agreed land rent, non-return of the loan with interest due etc. Therefore, selecting or designing an efficient and inexpensive contractual form to protect the interests and investments of the participating agents, adapted to their specific needs, risks and conditions of production and exchange is an important part of governance (Williamson 2005).

The economics study of contracts differs significantly from the legal understanding of this category. For lawyers, the contract is only a legal document for registering a unilateral or bilateral legal relationship - volition or agreement (ZZD, 2021). Contracts are the only formal agreements between agents that are legally permitted, legally prepared, and legally protected. Moreover, for each individual type in the variety of legal contracts (for sale, lease, exchange, loan, donation, construction, order, deposit, financial provision, association, etc.) a 'large' part of the conditions and restrictions (agents, object, content, maximum or minimum term, method and amount of payment, main obligations of the parties, order of compensation, method of amendment and termination, etc.) are regulated in detail. The contract is usually in writing, often requiring mandatory notarization, presence of witnesses, use of formal forms (template), registrations, entries, public discloser, provision of copies to authorities, etc.

The object of legal contracts are only the exclusively formal rights that agents possess and can (legally) exchange in a given country, region, sector, field of activity, etc. At the same time, lawyers distinguish between rights, obligations, powers, etc., with the rights being material, intellectual, commercial, (fundamental) personal, organizational, property, etc. Each type of legal rights is usually established and regulated by general or special law or court decisions - Constitution, Law on Obligations and Contracts, Labor Code, Law on the Ownership and Use of Agricultural Lands, Law on Agricultural Tenancy, Commercial Law, Law on Cooperatives, etc. The only way is the 'legal' protection and disputing of the arrangements through a public institution in the given jurisdiction - court, arbitration, administrative body, etc. The 'economics of contract' from a legal point of view is solely related to the (monetary) costs, fees, payments, and compensations, associated with the drafting, registration, and contestation of the various types of contracts.

For economists, on the other hand, what matters are not the 'de-jure' (written), but the 'de-facto' rights that economic agents actually possess and can use and manage[5]. For economists, there are only the agent rights[6], all of which are property rights established and enforced either by formal laws and regulations, or provided and sanctioned by informal institutions (including self-enforced by individual agents). Economic contracting is a fundamental part of the management process, in which two or more parties always participate, and in which 'some' rights are voluntarily granted, established or exchanged between agents (agreed upon by the parties, including informal and illegal agreements). The object of economic study are all types of agreements (oral, written, standard,

[5] For example, in Bulgaria, private ownership of agricultural land was formally preserved in the communist period before 1990. In practice, however, the landowners did not have any de facto power to use, benefit or manage the private ownership of this basic resource included in the assets of the various collective organizations (TKZS, DZS, APC, etc.) during this period.

[6] 'Obligation' is also a right granted by one party to the contract to the other.

complex, bilateral, multilateral, legal, informal, national, transnational, etc.) that govern the activity, behavior and relationship of agents.

While jurists distinguish contracts for purchase, exchange, donation, deposit, loan, etc. for economists, they are all mutually beneficial contracts for 'purchase and sale' - of permanent transfer of ownership rights to a thing or resource (natural, material, financial, intangible, etc.), temporary transfer of right of use (rent of labor, lease of land or property, loan), temporary transfer of risk (insurance), etc. At the same time, the price of this transfer can be in money, resource, product, service or other benefit, and also be zero - a free temporary or permanent transfer for one of the parties to the contract. In addition, economists distinguish between contracts for (temporary or permanent) transfer of rights and obligations when organizing coalitions (combination of ownership of resources or 'selling' shares in ownership) and joint activity (for realization of economies, benefits, effect of 'collective' activity or behavior) to achieve common socio-economic, environmental, political, etc. goals of agents.

The economic contract is a basic means for governing transactions between agents and for minimizing transaction costs, which are turned into a 'basic unit' and the center of economic analysis (Williamson 2005). The transfer of rights (transaction) occurs with the signing of a contract, but the management of contractual relationships and transactions is a process. It often covers long periods of time and is associated with significant transaction costs - for finding partners, for negotiations and bargaining related to the terms of exchange and the obligations of the parties, for writing and registering contracts, for implementing contracted agreements, for control and verification, for subsequent adaptation in accordance with the current changes in conditions of exchange, for the resolution of contradictions and disputes (including with the participation of a third party), for termination, conclusion or resumption of the contract. Economists are interested in the total effect (economic and other benefits) and total (transaction and other) costs for agents in the process of negotiating, implementing, and concluding contractual arrangements.

In Economics, contracts are a means of governance and optimizing the allocation of resources. Therefore, of interest are their absolute and comparative advantages and disadvantages (potential, efficiency, and costs) for managing diverse transactions of agents - to minimize transaction costs and maximize transaction benefits (coordination, incentives, control, investment protection, adaptation, 'internal' dispute resolution, etc.). Economic contracting and economic contracts are part of overall economic governance[7] and through them a significant part of the aggregate economic activity of agents is managed. However, only a small part of economic contracts concerns legally established rights and obligations and/or can be legally protected by a third party (state, court, etc.).

Agrarian contracts are a whole class of contracts of different types related to the agrarian sphere. There is no generally accepted official legal or other definition of agrarian contracts, but their economic definition is easy – sectoral (industry) characteristics. Agrarian contracts are all bilateral or multilateral agreements related to agricultural production - the production of crop and livestock products and agricultural services.

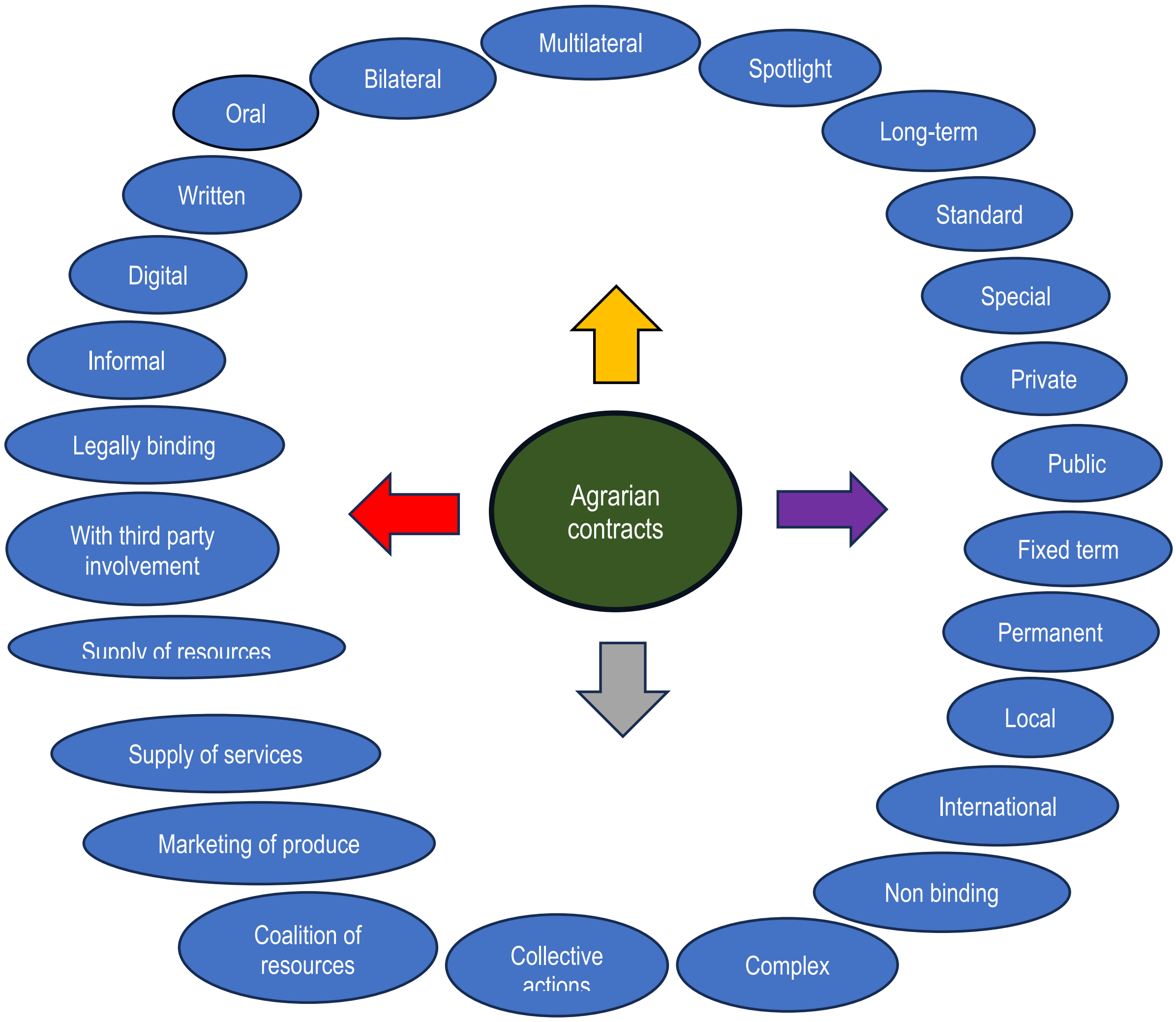
The farmer and the farm entrepreneur are the main agents in agricultural production and all the contracts and contractual forms they use to supply the necessary land and natural resources, labor, services, material, biological and intellectual assets, finance, sale or sharing of risk, marketing of products and services, lobbying for public support, etc. are classified as agrarian. All coalition contracts of owners of resources (land, labor, capital, know-how) related to the organization and implementation of farming activities are also agrarian - partnership associations, companies, corporations, cooperatives, associations, etc. According to this logic, by definition, all contracts that the collective organization (most often registered as a legal entity) concludes on behalf of and 'in the interest' of its members (partners in the coalition) are agrarian. Agrarians are also the various agreements for collective actions of agricultural producers (with competitors, with other farmers or interested parties), regulating general (professional, etc.) norms of behavior, standards for the use of resources, production and trade, provision of ecosystem services, protection of special origins and trademarks, etc.

In some cases, agreements between agricultural producers - competitors aim to realize (impossible within the border of the individual farm) economies of size or scale (for example, joint marketing or inputs supply), respond to the problem of 'missing markets' (for example, agrarian credit, sharing economic or natural risk, etc.) or a means of countering an existing monopoly in supply or purchase. In other cases, contracts are a means of implementing formal regulatory requirements (*e.g.* registration of group farming, joint project, association for the protection of geographical designations and origins, etc.) or to circumvent formal institutional restrictions (*e.g.* formal division of a farm/organization into several smaller ones to make it possible to manage more agricultural land, receive certain or more public subsidies, etc.).

[7] Economics of governance is 'lens of contract construction' (Williamson, 2005).

Agrarians are also the public contracts in which farmers and their organizations voluntarily join to receive European, national and local support (subsidies, financing) and services against payment, free of charge or against the assumption of some obligations (for example, cross-compliance, inclusion in a public initiative, public-private partnership, etc.). On the other hand, contracts related to the agrarian sphere, which state bodies conclude on behalf of citizens of a country (*e.g.* Bulgarian Agreement on Accession to the European Union and application of the CAP, Green Deal of the European Union, etc.) are not considered agrarian. Like the general institutional arrangement (laws, official norms and standards, etc.), which is also the result of some formal or informal 'social contract', they represent an institutional environment with which agrarian agents must comply and in which they manage their contractual relations.

Figure 1. Types of agrarian contracts depending on basic economic dimensions



Source: author.

Agrarian contracts have different economic dimensions and characteristics. Depending on various economic characteristics (form, number and type of participants, object, period, compulsority of obligations, method of protection, complexity, etc.), different types of agrarian contracts observed in modern Bulgarian and international practice can be distinguished (Figure 1). In contemporary conditions, each individual agrarian agent and the organizations he/she creates or is a member, participate in a large number and different types of contracts. In modern conditions, the system of agrarian contracts develops as a complex, networked and multi-layered system, including various agrarian and non-agrarian agents participating in the process of agrarian contracting, who manage their relations and activities by means of various contractual means (types of agrarian contracts), as a result of which in any given period of time in a given country, region, sub-sector, type of farming, agro-ecosystem, etc. a certain contractual and managerial order dominates.

Therefore, the holistic economic analysis of agrarian contracts, say in in Bulgaria, is to include all these components - analysis of the type and economic characteristics of the **A**gents participating in agrarian contracts in contemporary Bulgarian conditions; classification and economic analysis of practically used and other feasible contractual **M**eans or types of agrarian contracts in modern Bulgarian conditions; economic analysis of the **P**rocess of agrarian contracting and contract implementation in the specific socio-economic, international, natural, etc. conditions of Bulgaria; economic analysis of the 'created' specific contractual **O**rder in the agrarian sphere of Bulgaria - the result (outcome) of the contracting process between the agents and the choice of effective forms for governing their relations. The holistic economic analysis of contracts is to employ **AMPO** framework and include all components of the system – **A**gents, **M**eans, **P**rocess, and **O**rder.

3. Agents of Agrarian Contracts and Their Economic Characteristics

The farm manager and entrepreneur (the farmer) are the main agent of contractual relations in agriculture, as well as the organizations he/she registers or participates in - family or partnership associations, legal entities (companies, cooperatives, corporations, etc.), professional associations, etc. (Table 1).

Table 1. Elements of the economic AMPO analysis of the system of agrarian contracts

Agents	Means	Processes	Orders
Farmers, farm entrepreneurs and their organizations Owners of agrarian and related resources Suppliers Buyers Consumers Interested persons or organizations State and international organizations Contractual skills Age and preferences Bounded rationality Pre-contractual opportunism Post-contractual opportunism Free riding Trust Reputation Institutional environment Technologies Digitization Power positions Abuse of power	Contracts for the permanent transfer of ownership rights to assets Standard sales contract Special sales contract Comprehensive sales contract Donation contract Public assistance contract Trilateral contract Lease contract (lease) of resources or things Labor contract Service provision contract Relationship Agreement Ecosystem Services contract A loan agreement Insurance contract Coalition agreement Joint Action Agreement Official rules and restrictions Informal rules and restrictions	Preparation and signing of the contract Implementation and control of the contract Renegotiation of contract terms Disputing contract terms Completion or termination of the contract Contract renewal Frequency of transactions between same agents Uncertainty related to transactions Specificity of investments Appropriability of rights Fundamental transformation Neoclassical contract Monopoly relations Unfair practices Clientelization Vertical quasi or complete integration Horizontal integration Interlinked transactions Long-term cooperation Exclusion of small producers from modern food chains Bankruptcy Inefficiency by design of public modes	Market order Contract order Private order Collective order Public order Hybrid forms Efficiency and costs Institutional restrictions Improving public protection of private contracts Modernization of rights and rules Improving public support contracts Improving forms of public intervention (assistance, training, information, regulation) New forms of public-private partnerships Rule of Law Gray and informal sector

Source: author.

Other main agents of agrarian contracts are the owners of agrarian resources – land, labor, capital, biological and intellectual assets, etc. Farm suppliers of services, biological, tangible and intangible assets, financing, insurance, etc., as well as buyers of farm produce and services are other major parties in modern farm business and agrarian contracting. In addition, the various public (state, local, non-governmental, international, etc.) organizations that reach various agreements with farmers and their organizations (for financing projects, subsidizing, providing or buying services, joint activity, partnership forms, etc.) are an important participant in contractual relations in the agrarian sphere at the modern stage. A relatively large part of the public contracts in the agrarian sphere at the current stage are for the implementation of institutionally defined rights ('social contract' for intervention) for public subsidies, training, consultations, etc. services for farmers (for example, area-based payments from the EU CAP, subsidies for number of animals, etc.).

The various agents involved in agrarian contracts often have different contractual needs and interests - supply of necessary resources, business expansion, profit, exploitation of economies of scale and scope, risk minimization, preservation or restoration of traditions, conservation of natural environment, etc. The analysis of the structure of contractual needs and incentives of agrarian agents is an important stage in the analysis of contractual relations. For example, an elderly individual farmer without a successor ready to take over the farm is unlikely to engage in intensive, long-term and high-risk business expansion contractual relationships with suppliers of land, labor, capital, etc., to participate in new organizations or public programs etc. Other important characteristics of participants in agrarian contracts are contractual and production skills and experience, training, personal preferences, etc. For example, good managers will be able to manage more and more complex external contracts, and control more hired workers, higher risk takers will prefer more market counterparties and less protected and cheaper 'simple' contract forms, those who prefer private or family farming will not participate in permanent coalitions such as agro-firms, cooperatives, etc.

Particularly important for the analysis of contractual and overall economic relations are two 'behavioral' characteristics of individual agents - bounded rationality and a tendency towards opportunistic behavior (Williamson 2005). Moreover, these attributes are inherent both to individuals and to collective organizations (legal entities, government agencies, etc.). These 'human nature' characteristics of agents are the reason for the existence of transaction costs in economic and overall (including agrarian) activity and relations. The latter makes them a basic element of economic analysis of contractual relations and diverse organizations in the agrarian sphere.

Agrarian agents do not possess complete information about other agents and their real intentions, and about the economic system as a whole (price levels, available markets, possible partners, evolution of business and trade conditions, etc.), since collection and processing of such information is either very expensive or practically impossible (*e.g.* partner's intent to cheat, multiple markets and prices, future events and institutional changes, etc.). Therefore, they have to make (often) significant costs to 'increase' their rationality - for training, for finding good partners and prices, for hiring consultants, for detailed negotiation and writing of the obligations of the parties, including for possible changes in the terms of exchange, for forecasting, for insurance against possible risks, for adaptation, overcoming disagreements and disputing the arrangements, including through expensive expertise, legal proceedings, etc.

Agrarian agents are also prone to opportunism, and if there is a practical opportunity for one of the parties to the contractual relationship to obtain with impunity an additional benefit ('surplus profit', rent) from the exchange, he/she is likely to take advantage of it[8]. At the same time, three basic forms of opportunism are practically possible, which are well described in the economic literature:

- Pre-contractual opportunism (Adverse selection), when one of the contracting parties takes advantage of the bounded rationality and information asymmetry of the partner and negotiates 'better' terms of exchange - for example, fixing a higher land rent without revealing the actual fertility of the leased agricultural land; negotiating a higher salary without disclosing the candidate's real qualifications and experience or unwillingness to work hard after hiring, etc.

- Post-contract opportunism (Moral hazard), when one of the contracting parties takes advantage of the impossibility of fully controlling his/her activity (by the other partner(s), or a third party) or when he/she receives a legitimate benefit from unexpected changes in the contracted terms of exchange in the process of the contract implementation (for example, a sudden change in costs, prices, regulations, natural conditions, etc.). A typical example of this type of opportunism is when the hired worker, instead of performing his/her work duties ('working' for the farmer) during working hours does other things (internet games, private conversation on the phone, drinking coffee, etc.) or does personal business, often with farm assets (cultivates another farmer's plots for personal pay, carries out transportation for a private agent, etc.). Another typical example of this type of opportunism is in (larger) organizations (cooperative, corporation, state agency, etc.) with 'separation of ownership from management', which is manifested by hired managers who do not 'work in the interest of the owners' of the organization - a problem known in economics as the Agency problem (concluding deals in one's own interest, taking advantage of positions, corruption, etc.);

- opportunism of 'Free riding' type, which manifests itself in the formation and evolution of numerous collective organizations, in which the individual benefits from the new organization are most often not proportional to the individual efforts (costs, investments) for its creation, registration, management and development. A dominant tendency is for each to expect others to invest in organizational development and to benefit from the new organization if successful, so that otherwise effective for participants 'collective organizations' either do not emerge or are not sustainable in the long term. In Bulgarian agriculture there are many 'good' examples in this regard in the last thirty years - failure to develop effective (supply, marketing, processing, credit, etc.) cooperatives and

[8] According to Williamson (2005): 'opportunism is self-interest seeking with guile (which) includes … more blatant forms, such as lying, stealing, and cheating … (but) more often involves subtle forms of deceit.'

professional organizations (to oppose monopoly, sharing of market or natural risk, lobbying for public support, etc.) of farmers.

Most often, it is too expensive or impossible to write a 'comprehensive' contract specifying the obligations of the parties under all possible conditions of their exchange - 'all complex contracts are imperfect' (Williamson, 2005). Moreover, it is costly or impossible to distinguish opportunistic from non-opportunistic behavior due to the bounded rationality of agents (*e.g.*, the farmer finds out that the purchased seeds are not superior quality or authentic variety only after the seeds have germinated or during the sale of the crop, and it is difficult to recover losses). In the absence of opportunism, bounded rationality would not matter much, since whenever the terms of exchange changed, agents would always adapt (optimize) their arrangements in mutual interest. Therefore, contracting 'rational' agents (always) seek to protect their rights, investments, and transactions from risk of opportunism by: 'prior efforts to find a secure partner and design an efficient form for his commitment and subsequent investments to prevent (through monitoring, controlling, encouraging cooperation) of possible opportunism at the contract implementation stage' (Williamson, 2005). Thus, for example, the farmer prefers a contract ('business') with family members or close acquaintances (high mutual trust, goodwill, and common interests of the parties, etc.), or with market or private agents with an established 'reputation' ('well-known' specialists and workers, established suppliers or buyers, famous brands of equipment, chemical preparations, etc.). In addition, mechanisms for 'self-restriction' of opportunism are designed in the process of negotiation (for example, output-based payment of the hired labor or purchased service, practicing share rent when renting land and plantations, advance payment by the buyer when selling farm produce etc.) or includes an 'economic hostage' to limit opportunism (joint investment in a new organization, mandatory collateral for a loan, etc.).

The 'high' bounded rationality and opportunities for opportunistic behavior in the agrarian sphere are the main reason for the dominance of relatively 'small', non-hierarchical, and single or small-ownership farming organizations in Bulgaria and all over the world (in contrast to other sectors of economic activity, where large, shareholding and hierarchical forms on a national and transnational scale is widespread). A large part of the traditional economic discussions related to the choice of the most effective form of organization of land use (Land tenure) and the way of supplying resources and products are also related to 'optimizing incentives' and 'building protection' from possible opportunism in conditions of bounded rationality of agents - 'make or buy an input', 'buy or rent a resource', 'hire a worker to cultivate your land or lease out the land to the worker with a share participation in the product (share rent)', 'to sell a share in the property or buy a loan to finance the farm' (sale share or buy debt), etc. The significant volume of public contracts in the agrarian sphere also provides opportunities for illegal distribution of public funds as a result of bounded rationality and opportunistic behavior on the part of both public officials (abuse of power) and farmers (inaccurately or incorrectly filled declarations of beneficiaries, inefficient management and corrupt practices of responsible government officials and private agents, etc.).

The bounded rationality of agents and their tendency to opportunism are the reason for the existence of transaction costs in agrarian activity and relations, and therefore a basic element of modern economic analysis. In an ideal world with no ('zero') transaction costs (complete rationality, no opportunism, well-defined rights of agents), the contractual form of carrying out the exchange between agents would have no economic significance. In this situation, 'maximum output and welfare' will always be realized (through effective bargaining and adaptation in mutual interest) regardless of whether agents' activities and resources are governed by market price movements and market competition (the 'invisible hand of the market'), by special contractual form (private negotiation), through collective decision-making (cooperative), from the visible hand of the manager (firm), or from a private or national hierarchy (company, state administration) (Bachev, 2010a). Therefore, designing and selecting an effective (contractual, private, hybrid, etc.) form to overcome bounded rationality and safeguard against possible opportunism in the specific socio-economic, institutional, technological, natural, etc. conditions in which agrarian agents carry out their activities and relationships occupies an important place in economic analysis and agrarian management.

The socio-economic and institutional environment is an important factor for increasing the rationality and limiting the opportunism of the agents, and therefore also for intensifying the contractual relations between them. For example, with a good and stable regulatory and legal framework, dominance of the 'Rule of Law', developed markets and strong competition, lack of monopoly structures, effectively working state and judicial system, built 'trust' and 'culture' of cooperation in society, high transparency, social intolerance towards and punishment of offenders, lack of tolerance for the application of 'power' relations, etc. (generally at low 'institutionally determined' transaction costs) more market and standard arrangements between agents are practiced. Conversely, when the socio-economic and institutional environment is 'inefficient' (imperfect formal regulation, poor public enforcement, dominance of 'personal connections', monopoly, corruption, etc.) or dynamically changing, then contractual relations are highly difficult and limited, with smaller, internally-integrated, informal or primitive forms dominating.

The development of knowledge and technology is also an important factor in minimizing transaction costs and modernizing contractual relations at sectoral, national and transnational scale. Here we will only mention the great progress that the modern mechanization, automation and digitization of agriculture and trade provide to facilitate and intensify the activity and relationships of economic agents (standardization of operations, precise measurement, control and reporting, etc.), to diversify and increase the efficiency of their contractual relations (on-line advertising, negotiation and trade, publicizing unfair practices, virtual organizations, satellite control, etc.), and minimizing transactional and overall costs for agrarian activity.

4. Types of Agrarian Contracts and Their Economic Characteristics

There is a wide variety of contractual relationships in which the farm entrepreneur (farmer) and his/her organizations are or may be involved. Individual types of contracts have different specific characteristics – specific object, formal requirements, possibility of effective transfer and protection of various rights, costs related to preparation, execution, monitoring, continuation, dispute and termination of the contractual terms, etc. The economic analysis is to establish the potential, advantages and disadvantages of the individual contractual forms in order to be able to choose the (most) effective form for managing the farmer's relationship with other agents.

For economic analysis, agrarian contracts are to be grouped into several principle types:

- Contract for the permanent transfer of ownership rights to a given resource, asset or thing (Sale, Purchase, Barter Exchange, Donation, etc.).

This type of contract deals with the permanent transfer of rights to a given natural, material, financial or intangible resource or thing in exchange for payment of a certain price or for free. Therefore, it is suitable to manage a large part of farm transactions related to the supply of resources (excluding labor and some nationally owned natural resources) and the marketing of output and services. In the Classic Contract for the purchase and sale of a standard resource or product, there is usually some price in money, in kind (barter transaction with goods and services), another resource, or in some right[9]. In a special or joint donation contract, 'the price is zero' as the benefits to the seller are in 'satisfaction from donation activity' or in the realization of other altruistic goals. A public assistance contract (land, subsidy, project, etc.) transfers rights to critical resources free of charge to eligible and interested farmers under some more general 'social contract' (policy decision, regulatory document, EU CAP, etc.).

In most cases of standard sales between private agents, the relationship is 'impersonal' (the identity of the seller or the buyer is irrelevant), because behind the contract there is always the 'invisible hand' of the market (market prices) and market competition (many participants). Public purchase and sale contracts, on the other hand, allow for great abuses, as there is an opportunity for interested persons or groups to benefit in the process of intervention with public funds (Inefficiency by design) - fictitious tender procedures, inflated prices, 'favorable' contractual conditions, delayed or poor-quality delivery, provision of projects and subsidies to related party, etc.

In the agrarian sphere, non-standard and even 'unique' private arrangements between parties are often used for transfers of specific natural resources, parts or combinations of agro-ecosystems (and ecosystem services), traditions, know-how, original products and 'customized' services etc. where 'the identity of the agent or agents' is relevant (matters). In some sectors of agricultural production, the use of Special and Complex Purchase-Sale Contracts is determined by the specific nature of the product bought or sold by the farmer, special requirements for production conditions, volumes and timing of delivery, or the need to sell it in a 'package' with another product or service. Such contracts most often refer to new varieties of plants, high-quality or new products, organic and eco-products, specially protected origins, production designations, special technology (green harvesting of grapes for high-quality wines, free-range hens for eggs, organic treatment for pest control, low sugar content, cholesterol, etc.), additional services such as slaughtering a purchased animal, sorting the produce, a certain type of packaging, etc. Often, the buyer provides a specification of technology and know-how, and/or resources, financing, or services as part of this type of contract. Some of these types of arrangements include, and often (normatively) require, independent third-party certification and auditing (of organic products, origins, etc.) and are essentially Trilateral contracts regulating the role (certification, control, arbitration and etc.) of the 'third' party.

Buying and selling between private agents can be done with a spotlight, often oral, contract where a standard resource or thing is paid for and taken (Pay and Carry Deal). Often, however, there is a time period between the transaction (conclusion of a contract), payment and the actual transfer of a given resource, asset or thing - a certain period for delivery of the ordered product, for payment for the purchase, for obtaining a notarial deed, for actual

[9] Lawyers distinguish between a Contract of Sale and a Contract of Exchange (ZZD, 2021).

access to purchased property, etc. For a certain type of durable natural and material assets (land, buildings, equipment, etc.), a written, often notarized, contract is also required in order to legally protect (prove) the acquired property or to use this asset for implementation of other contractual relations (for example, use as collateral for a loan, participation in a coalition, subsequent sale, etc.).

In this type of contract, the main risks for the farmer-buyer are from the pre-contractual opportunism of the seller. This is when there is a small number of suppliers (for example, desirable plots of land, pastures, water sources, etc. in the area and even on the farm territory) or a monopoly situation or a strong dependence of the farmer on a certain supplier (irrigation water, electricity, special equipment or technology, etc.) that impose high prices and/or unfavorable terms of trade.

In addition, the buyer-farmer often does not have complete information about the qualities of the acquired thing (due to bounded rationality), and the seller is not interested in revealing its existing shortcomings (due to opportunism). For example, when buying a secondhand tractor, it is difficult to really assess the technical condition and how well it corresponds to the seller's advertisement (defects are usually discovered only after starting to use it); the real yield and productivity of a new variety of seeds is established only when the harvest is obtained, etc. In order to overcome this problem, it is common to practice pre-testing, trial period of use, giving a guarantee, payment in stages, possibility to return in case of dissatisfaction, or choose as partners close and familiar (high trust, good experience from previous transactions), or market agents with an established good reputation (famous brands of equipment, chemicals, etc.). There is also the possibility of post-contractual opportunism if an item (building, facility, machinery, equipment, etc.) is purchased with a commitment to installation, completion or subsequent maintenance. After the sale (payment) is completed, the promise of service is either not kept, or it is done poorly or untimely. Opportunistic behavior of the seller is reduced (self-restricted) with a long-term contract or a high probability of new purchases or business relations (contracts) between partners in the future.

As a seller, the farmer often faces contractual opportunism in the presence of few buyers or strong unilateral dependence on a particular buyer (food chain, processor, exporter, etc.) that impose low prices, unfavorable terms or 'unfair trade practices'. Post-contract opportunism is also often observed, resulting in delayed payment or non-payment for the products or services sold. In order to overcome such risk, protective terms are usually practiced (advance payment, cash payment), interlinking of transactions with counter-crediting, supply of materials, resources and services, or close and familiar partners are chosen (high trust, good experience from previous deals), or market agents with an established good reputation, avoiding traders known for unfair or undesirable trading practices. In public contracts for purchase and sale (state reserve, food for schools, the army, hospitals, etc.) there are great opportunities for opportunism both for monopolistic practices of the state agency and for abuses by government officials and suppliers (farmers, middlemen) due to the non-market nature and low transparency ('single' buyer, inflated prices, waste of public funds, illegal commissions, etc.).

A special type of sales contract is related to the trade of intangible assets and intellectual agricultural products such as new knowledge and information, biological means (seeds and planting material of new varieties of plants, etc.), know-how, new technologies and methods, special origins, protected brands, digital products (software, etc.), etc. Property rights to a large part of these 'intangible' products and resources are difficult to completely and permanently transfer, as these assets do not wear out with use (only moral obsolescence is possible) and their multiplication is not associated with high costs. Therefore, the seller effectively keeps the product he/she is selling as both parties have the new knowledge after the 'deal'[10]. At the same time, it is also possible to easily appropriate (theft) similar products without making a purchase or payment - refusal to purchase after the disclosure of the new knowledge by the seller, easy piracy, imitation, and illegal distribution of innovations, etc. Such 'thefts' are very difficult and expensive to prove in court or through another agent (expert, state authority, etc.).

To limit possible opportunism on both sides of the contract and to effectively carry out the purchase and sale transaction, intangible products are usually offered in a 'package' with tangible products or services - for example, a new chemicals or biological products plus information on how to use it effectively under the specific conditions of a given farm; new machinery or equipment, plus training of personnel in its operation, etc.). Another approach is to design the innovations in a form that does not allow 'uncontrolled' subsequent distribution - hybrid seeds that lose their qualities during reproduction, use of an individual pin code for digital products, the need for additional adaptation to farm conditions of new technologies and production methods, application of blockchain control, use of trade secrets, etc.

[10] Called by Arrow (1962) 'Information paradox' (Arrow information paradox; Arrow's disclosure paradox).

There is a 'particularity' to this principle type of contract regarding the purchase and sale of a ‘eternal’ and movable natural resource such as water from an external supplier to farmers. Ownership of purchased water is usually lost upon use – for example, water for irrigation and other farm needs is included in the natural cycle after irrigation, and in some cases without even being used. Although maintaining the ‘purity’ of water in agriculture is a serious problem, here it is more correct to talk about the purchase and sale not of a ‘water resource’ but of a ‘right to use water’ or a service ‘water supply to the farm’.

In modern agriculture, the so-called Contract farming and marketing, which are essentially special (often complex) contracts between a farmer and a buyer (processor, food chain, etc.), which before starting the production process, they agree on the terms of production and marketing[11]. They have a number of advantages for farmers in terms of cost and investment savings, transfer of know-how and advanced technology, access to 'free' or low-cost advice, machinery, and credit, guaranteed markets and prices, etc., improving coordination and risk management between contracting parties. Production contracts regulate in detail the conditions of production of a certain product by a farmer with his/her land, with the buyer provided technology, inputs and equipment, and becomes the ‘owner’ of the produced goods. Depending on the economic characteristics of the transaction and the degree of vertical integration, these contracts can also be seen as a ‘contract for services’ by the farmer, and in some cases as a ‘contract to hire’ the farmer and his/her land. Marketing contracts focus solely on the commodity being delivered to the buyer and not on the ‘production services’ provided by the farm.

In contemporary conditions, many of the (formal) purchases and sales in the agrarian sphere are also associated with institutional restrictions and costs - mandatory registrations (tax, notarial, as a farmer or livestock breeder, etc.), obligatory product safety tests (safety, levels of pesticides and nitrates, etc.), mandatory guarantees, the possibility of return, exchange or reimbursement of costs, the need for permits (for the sale of lands and natural resources in protected areas), licensing or certification (trade in chemicals and fertilizers, origins and brand names, agricultural use of sludge from sewage treatment plants, etc.), fixing prices for critical resources (irrigation water), ‘free’ provision of additional services (waste management, ecosystem services, etc.), mandatory sales (for new varieties, know-how, software, etc.), distribution of ‘quotas or total ban on trade (harmful drugs, cannabis, etc.), rules and restrictions regarding foreign citizens and organizations for certain resources (agricultural lands, underground resources, etc.) etc. Much of this regulation aims to ‘protect’ the rights of buyers, end users, rural residents, etc. and facilitate contractual relations, but also further raise agents' transaction and aggregate costs. Therefore, there is still a big gray sector in the agrarian sphere in terms of buying and selling.

- Lease (rent) contract of resources or things (items, objects).

This type of contract regulates the transfer of the right to temporary use of a given resource or item against payment of rent or free of charge[12]. Therefore, it is suitable to manage a large part of farm transactions related to the supply of basic inputs (without labor) like lands, buildings, equipment, permanent crops, etc. In a classic lease, there is usually some price in money, in kind, another resource, or in some right. ‘Free rent’ also often applies due to the receipt of some other benefit - for example, keeping vacant arable land, pasture, perennials and livestock in ‘good’ condition (some standards for which resource owners are obliged by formal regulations), other economic benefits, such as maintaining or expanding business relationships, helping partners, etc. or other, including altruistic purposes.

The main risks for the farmer in this type of contract are from pre-contractual opportunism (similar to the sales contract) and from using a fixed rent. When the rent is fixed, the lessee fully assumes the risk of losses (or benefits) from fluctuations in productivity and income from the leased resource (item, land, animal). This risk can be shared with the owner by negotiating a share rent or completely eliminated by applying a market rent. The lease contract also allows for pre- and post-contract opportunism on the part of the tenant. In the first case, he/she does not declare his/her intentions not to use the leased resource (thing) efficiently, but in the second he/she practices it (non-maintenance of the leased buildings and equipment, poor care of the leased animals, improper crop rotation, insufficient compensation of extracted nutrients through fertilization, etc.). Late or non-payment of rent by tenants is also widespread. In order to overcome the risks associated with this contract, close and familiar partners are chosen (high trust, good experience from previous transactions) or market agents with a good reputation, a longer lease term is agreed upon, interlinking of transactions is practiced (simultaneous rental of land and labor, reciprocal trade, etc.), or a permanent transfer of ownership contract is used (purchase-sale, exchange, donation, participation

[11] For example, 34.8% of the value of agricultural production in the USA in 2012 was generated by production and marketing contracts, at 11% in 1969. (USDA, 2012). Marketing contracts are more common in crop production, while production contracts are more common in livestock production reaching 96% of chickens in 2012.

[12] Lawyers distinguish between Object Lease Agreement, Land Lease Agreement, Property Lease Agreement, etc.

in a cooperative or company). For a large part of intangible and intellectual agrarian property, whose property cannot be permanently transferred, this type of contract is preferred - by purchasing a license for use against a one-time or periodic fee.

In modern conditions, there are many institutional regulations and restrictions related to rental and lease agreements, particularly for natural resources like agricultural lands, water sources, agro-ecosystems, etc. – *e.g.* mandatory written form, obligatory formal registrations, a fixed minimum term for land lease (5 years), obligations and restrictions regarding renting and the way resources and objects are used, a way to extend contractual relations, regulations for the participation of foreign citizens and organizations, etc. The institutional arrangement also guarantees the transfer of 'new' rights with the lease agreement - the right to receive public subsidies on the leased agricultural land, permanent crops, animals, etc. All of these formal rules aim to better guarantee the rights of the parties and facilitate contractual relationships, but are also associated with additional transaction costs for agents. In order to save or minimize the costs of formalizing the contracts (writing, legal consultations, notary and administrative registrations, etc.) and the risk of losing the contractual power (Hold ups), agrarian agents still use informal arrangements regarding basic assets such as land, property, animals, etc. and give preference to a contract for a season or a business year. The latter allows for the negotiation of rent at current prices, rapid optimization of the size (expansion, contraction, dislocation) of the farm under the new conditions, renting of new more productive assets (unexhausted new plots of land, new machinery and equipment, younger animals, etc.) etc.

- Labor contract.

This type of contract establishes a right to receive a specified service from a temporary labor force against payment of a wage or salary by the employer. Therefore, it is suitable to manage a large part of farm labor supply transactions. A feature of this type of 'service' contract is that one party (the employer) acquires the right to direct, control and fire the other party - *i.e.* there is a relationship of subordination. This form enables rapid adaptation to the current labor needs of the farm with low transaction costs for both parties - 'management by command'. Otherwise, either a very comprehensive service contract must be prepared (with the respective rights and obligations of the parties in all possible circumstances during the period of their contractual relationship) or new agreements must be continuously negotiated whenever the conditions and needs of the parties change.

The main risks for the farmer in this type of contract are from pre- and post-contract opportunism. In the first case, the worker may misinform about his/her abilities or intentions in order to get assigned to the desired position. To prevent this, the farmer can request references, require a certain professional experience, select candidates with a certain education or diplomas for an acquired qualification, conduct an interview and/or test to establish the candidate's qualities, etc. In the second case, the worker may not put in the necessary (contracted) effort after being assigned to work. This is facilitated by the fact that constantly controlling workers located in remote and often numerous plots of land or agricultural operations (where timing, quality, complexity, etc. is often crucial) is either too expensive or impossible. Along with that, in agriculture, the effectiveness of the activity is not always proportional to the quantity and quality of the efforts - positive or negative influence of the natural factor (climate anomalies, biology of plants and animals, etc.). In addition, an important specialist worker may leave at a critical moment for the farm (for example, a machine operator during harvest, a milker before the animals are milked, etc.) because of an offer of better pay from the farmer's competition or for other reasons (change of employment, work abroad, etc.). In order to avoid these forms of opportunism, the permanent employment contract is used, group managers (controllers) are appointed, incentives are created to increase productivity by involvement in the farm management, applying output-based compensation, payment of bonuses, social security, special training, additional paid leave, provision of free services, housing, etc.

In modern conditions, there are many institutional regulations, inspections, sanctions and restrictions related to labor contracts - limitation of the number of main labor contracts (max 1 in Bulgaria), mandatory use of written form, obligatory formal registrations, statutory minimum remuneration and maximum duration of the working day and week, necessity from a detailed description of responsibilities and obligations, fixing a term, obligations and restrictions in terms of age (*e.g.* child labor is prohibited), citizenship (*e.g.* prohibited employment of illegal immigrants, tourists, etc.), qualification (need for a certificate to practice certain professions (*e.g.* mechanist, driver, etc.) and overtime work, way of using the workforce and termination of labor relations, mandatory labor safety conditions and standards, need for mandatory (agro-ecology, animal welfare, etc.) training and certification, accident insurance, social security, guaranteed right to paid leave, holidays, professional development, etc. In addition, workers receive free legal advice and protection, have the right to participate in trade union organizations, collective (branch) bargaining for wages and working conditions, protest actions and strikes, etc. All these regulations aim to better guarantee the rights of employed workers and employers and facilitate working relations, but they also significantly increase the transaction and overall costs of farmers. Therefore, informal arrangements in labor relations are still widely practiced and there is a large informal sector in the agrarian sphere. In some countries or sector the gig economy take a considerable portion of all labor contracts.

- Service Contracts.

This type of contract establishes a right to receive a certain service against payment of a price or free of charge. Therefore, it is suitable to manage a large part of the transactions related to the supply of the necessary labor and complex (labor plus know-how, materials, equipment, financing, etc.) services for the farm, and for the marketing of its services and products. In the classic contract for the purchase and sale of a service, there is usually some price in money, in another service, resource, or some right. For example, a bee farmer does the service of installing hives and pollinating an orchard in exchange for the right for his/her bees to collect pollen from fruit trees of the orchard farm.

The service can be material (mechanized, plant protection, transport, advertising, software, etc.) or for the performance of certain work (maintenance of the equipment, veterinary services, agronomic advice, training, security, etc.). In contrast to the labor contract, here the two parties are in an equal position (and not of subordination). This contract enables the farmer entrepreneur to effectively carry out the agricultural operations through external services of ploughing, sowing, spraying, harvesting, etc., without hiring laborers and incurring internal costs for management, control, incentives, training, ensuring full employment, payment of insurance and holidays, taking the risk of someone not coming to work at a critical time, etc. In an extreme case, a farmer entrepreneur can specialize only in the management of an agricultural holding and contract as external services all agrotechnical operations (ploughing, sowing, processing, chemical treatment, harvesting) and sale of the produce.[13]

In many cases, the farmer-buyer is not even able to 'manage' the service provider, as in treatment, training, counselling, security, etc. Output based payment can often be applied, which greatly limits opportunistic behavior of supplier. Often, however, the application of time-based or fixed pay is the only possible form. As a rule, a long-term supply contract improves the quality of the provided service - getting to know the specific farm (plots of land, equipment, animals, staff, etc.), wiliness to preserve relationships (keeping the business) or renewing the contract ('fear of punishment' by changing the supplier) etc. In all cases, choosing a supplier with a built established good reputation and an established name reduces the risk of opportunism.

Very often in remote rural areas there is a lack of a developed market for agricultural and related services - few in number (monopoly situation) or a complete absence of suppliers of the required quantity, quality and at the right time services for agricultural producers. In these cases, a long-term relationship ('clientalization', contract) is usually developed with a certain supplier of critical services for the farm - veterinary-medical, agricultural technology, etc. These and other similar arrangements for (more) standard goods and services are known as Relation contracts, which are usually informal (and in some cases formal) agreements that are self-sanctioning due to the 'repetitive trade' between agents. Here there is a benefit of (self-)restricting opportunism to continue business with a particular agent, as the only 'punishment' is the termination of the (mutual) relationship (there is no possibility to dispute through a court or other third party).

For monopolistic and critical services, marginal prices are also fixed by the state authority (electricity, water for farm irrigation, veterinary medical services, soil samples, nitrate tests, notarial and administrative registrations, etc.) or important services are provided free of charge from state organizations (agricultural advice and training system, scientific service, etc.). However, farmers are often in a dependent position and forced to buy at a high ('market', hidden fees and conditions, etc.) price, or not to use some of the services needed for the farm at all. In many cases, to save costs for standard services (transaction, payment of fees and taxes, etc.), informal verbal agreements between private agents are applied. In modern conditions, in addition to supply, some farms also use services in the direction of processing ('*e.g.* processing agricultural produce into juice, wine, cans, etc.), marketing (promotion or advertising of farm produce, a stand in a food store chain, e-commerce on known platforms, etc.), waste management (utilization of manure, compost, sludge, etc.), etc.

Farmers, in turn, also provide a variety of services to other agents, which may have 'private goods' or 'public goods' character. Farm services are either a means of adding value (new business, diversification) or facilitating external (marketing, procurement, etc.) relationships, or a way to make productive use of temporarily idle material assets (machinery, etc.) and labor. In some cases, they are an expression of a narrower specialization of the farm (in the supply of services for other farms and buyers) and a more intensive participation in the market of specialized services (ecosystem and other services). In the case of private services, a standard (mechanized service, kneeling

[13] This example is not hypothetical, since in Japan a large proportion of farm households (rice paddy-field owners) contract out the main or all operations related to rice production to professional farmers.

of sold animals, picking of fruits and vegetables by buyers, etc.) or special (contract for production, educational visits, scientific experiment, etc.) service contract is employed with a certain price, 'interlinking' with other services or products, or free of charge (for example, a large livestock producer provides free manure and transport to the farm of a crop producer). In services with a public contract (protected areas, reserves, national parks, etc.), there are opportunities for opportunism both for monopolistic relations on the part of the state agency (dependence on a 'single' buyer) and for misuse of public funds by state agencies employees and suppliers-farmers (inflated prices, poor quality or fictitious services, illegal commissions, etc.).

Modern agriculture is associated with many positive and negative externalities for which there is no market, and the provision of 'ecosystem services' is an important part of the private, collective or public governance of farming and agrarian activity (Bachev, 2023). In some cases, the preservation and improvement of the natural environment is managed as a voluntary side-activity of the (green, eco, etc.) farmer, as a result of his/her conviction or joint initiative with other interested agents. Such positive services (beautiful landscape, clean waters, rich biodiversity, etc.) are governed by the farmer's 'good will' or informal norms and rules, and their provision does not require a 'contract' for donation.

On the other hand, the negative 'services' of farmers with character of 'private bads' or 'public bads' (such as soil and water pollution, etc.) are unwanted. With strong interest between parties, the efficient provision of a particular ecosystem service can be governed through a Private (individual and collective[14]) ecosystem service contract – for example, a drinking or mineral water supply company pays farmers in catchment areas not to pollute (use) with chemical fertilizers and pesticides, a tourist site agrees with a farmer not to pollute the air or make noise, etc. In contemporary conditions, the 'environmentally friendly' behavior of farmers is also increasingly governed through external pressure from the public, interest groups, affected agents, etc., as well as imposed as a 'contractual term' by large suppliers, processors, food chains and final users.

Often, however, the effective provision of agro-ecosystem services requires external (state, international, non-governmental organization, etc.) intervention through a Public Contract for Ecosystem Service for public or private financing (payment) against the implementation of certain eco-standards, compliance with certain eco-behavior and the implementation of active eco-actions by farmers. In modern conditions, many of the standards for protecting the natural environment and biodiversity, combating climate change, etc. are institutionally defined and binding on agents. Public contracts to support farmers (like direct subsidies from EU) also include as mandatory conditions 'the supply of certain ecosystem services' - compliance with certain minimum eco-standards (cross-compliance), maintenance of agricultural lands in 'good agronomic condition' (even if not cultivated for a long time), biodiversity conservation, respecting animal welfare requirements, etc.

- Loan contract.

This type of contract arranges a temporary transfer of title to a specified amount of money (cash loan) or products (loan in kind) for payment or not of specified price (interest). Therefore, it is suitable to manage a large part of the transactions related to the supply of the necessary finances, raw inputs and materials of the farm, and for the marketing of its products and services. Unlike a lease, the debtor is not obligated to return the identical money or products that he/she borrowed, but the same amount of borrowed assets. Most often, this transaction is related to the payment of some interest over the amount of the loan, but for various reasons (other benefits, regulations, ideology, etc.) an interest-free loan is also practiced.

In modern conditions, the most common is the contract for a money loan from a commercial bank, private person or company. Due to the great 'flexibility' of money, control over its use by the creditor is very difficult (including non-return of the loan). In order to avoid opportunism of the debtor, a strict selection of the applicant is applied (studying the credit history, documents on the property status, requiring references, etc.), a serious collateral, guarantees and/or counter-financing is required. This makes the use of this type of contract significantly more expensive for the farmer. There are also many examples of pre-contractual opportunism by creditors of various types, resulting in undisclosed fees and terms leading to increasing indebtedness and bankruptcies for many farmers.

In modern conditions, other more effective forms of lending in a package with the sale of long-term assets (leasing), short-term assets (instalment payment or deferred payment), interlinked credit against production and/or purchase of farm production, etc. Along with this, the forms of public intervention in the financing of agricultural activity are expanding, including by offering a direct (public agency, program, etc.) or indirect (commercial banks, farmers' organizations, etc.) preferential or interest-free credit for certain activities (modernization of farms,

[14] Many of the ecosystem services require collective actions of farms in a given area, watershed, agro-ecosystem, etc. to achieve a positive effect.

diversification of activity, investments in perennial crops, etc.), types of farmers (small, semi-market, in mountainous and disadvantaged areas, organized, etc.), groups of farmers (young, willing to start a farm, etc.) etc.

- Insurance contract.

This type of contract arranges for the transfer of the assumption of some risk during a certain period of time in return for payment of a certain price. Upon the occurrence of events covered by the contract, the insurer pays an insurance premium according to the contract conditions. This contract is suitable to govern part of the farm transactions related to risk management of accidental events, accidents, natural disasters, etc. The risks for which protections are offered in the agricultural market are for various types of damage to property, crops, animals and people caused by natural (hail, frost, storm, flood, fire, etc.), economic (accident), health (reduced working capacity, illness, death), or social factors (damages, theft, etc.).

Usually, opportunism can be manifested by the insured farmer before signing the contract (failure to disclose the real information about the possible risks) or during its operation (failure to take measures to reduce the damage when the event occurs; knowingly causing the damage to obtain insurance bonus). This significantly increases insurance prices and limits their use in the agricultural sector. For their part, farmers often 'discover' the pre-contractual opportunism of the insurers only after the occurrence of the event, when they understand that not all the details of the insurance (protected risks, degree of damage coverage, method of ascertaining the damage, payments, hidden conditions, etc.) were well explained before the contract was signed. This also raises the transaction and overall costs of farmers and leads to the limitation of this type of contract.

The modern insurance industry offers a wide variety of coverage for different damages, including adaptation to the specific needs of large and (viable) farms. Certain insurances are mandatory (property, plantations, harvest, etc.) when participating in certain public programs and signing contracts for public assistance by farmers. However, for many of the significant risks of farms, there are not offered, can be found, and purchased insurance al all, such as the risk of lack of market demand, price fluctuations, economic crisis, possible opportunism of the contractual partner, change of trade regime, etc. Therefore, agrarian agents have to design and use other contractual and private forms with which to (more) effectively manage the risks in their economic relationships and activity (Bachev, 2013).

- Contract for coalition and collective actions.

This type of contract regulates the rights and obligations in the coordination of actions and/or resources of two or more agents[15]. Therefore, it is suitable to manage much of the transactions related to the pooling of resources and activities, and the joint actions of agrarian agents (collective production, procurement, processing, marketing, lobbying, etc.). It is possible to establish various formal and informal temporary, strategic or permanent coalitions of agrarian agents - for resource management (land, water, ecosystems, etc.), for economic activity (production, processing and trade of farm produce, generation of bio, solar, etc. energy, waste utilization, collective bargaining, etc.), for environmental, innovation, educational, etc. activity in the common interest and for protection of interests of the members. The rules for formation of the different types of formal coalitions are determined by different laws – Commercial Law, Law on Cooperatives, Law on Non-profit Legal Entities, etc.

The members of the coalition exchange with each other certain rights related to the ownership, control and disposal of certain resources, the management of the coalition, the distribution of income and other benefits from the activity, the period of coalition, the ways of expanding the coalition and termination of membership, etc. Depending on the objectives, different types of coalitions can be created – informal partnerships (pooling of resources and/or activity), cooperatives (not for profit), companies (for profit), associations (for collective action), etc. Traditional (Neoclassical) Economics studies this type of contract-organization as a perfectly functioning 'black box' that adapts its behavior depending on the movement of market prices. The New Institutional Economics considers the different types of organizations of this type of contract as alternative structures in the general system of agrarian governance, and evaluates their comparative efficiency and costs to agents. In doing so, it studies the farm and other agrarian organizations as a complex network of internal and external contracts (Nexus of contracts), through which agrarian agents optimize their behavior, activity and relationships in the specific socio-economic, institutional and natural environment.

In coalition and joint action contracts, there is most often a risk of post-contract opportunism, when a member(s) does not fulfill its obligations to the common organization or misuses it for its own private interest. To avoid this risk, high-trust partners are usually selected (family members, close friends, etc.), the number of coalition members is limited (mutual control of opportunism becomes possible), participation is required in the equity and

[15] With the partnership agreement, two or more persons agree to combine their activities to achieve a common business goal (ZZD, 2021).

the risk of the organization, etc. In coalitions with open membership (cooperatives, companies), effective mechanisms are designed for governance (management structure), stimulation of participants (preferences to members working in the coalition), and for direct participation of members in the management and control of the coalition. However, once the organization is established, it has a 'life of its own' and often moves away from the interests and control of ordinary members (separation of ownership from management). Furthermore, some of the rules of the coalitions for collective actions in agriculture (professional standards, norms and 'codes' of conduct, etc.) are advisory or 'voluntary'. This is related to the low efficiency of such organizations in terms of nature protection, ecological, etc. activity that requires certain 'collective actions' to realize the desired positive effect.

In large coalitions with open membership, pre-contractual 'free-riding' opportunism is also widespread. Since the formation and development of such coalitions is associated with significant costs (for initiation, establishment, registration, organizational enhancement, etc.) there are no incentives to participate in this process. However, if the organization turns out to be successful, then those willing to join and enjoy the benefits of the built coalition will increase significantly. In addition, these organizations are also associated with problems related to 'separation of ownership from management', which is why there are very few examples of such business organizations in the agrarian sphere (numerous cooperatives and agro-companies, companies with market-traded shares, etc.). In the last three decades, many efforts have been made to support (by state, international, non-governmental and private organizations) the initiation and development of collective organizations of agricultural producers of different types in Bulgaria - sectoral, branch, regional, etc. organizations, credit, marketing, etc. cooperatives, producer groups, etc. Un to date, however, there are not many good examples of effective and sustainable organizations in the agrarian sphere of the country.

4. The Process of Contracting and Implementation of Agrarian Contracts

The process of negotiation and implementation of agreements is an important element of the economic analysis of agrarian contracts. There is some potential for agents to obtain mutual benefits from agreements, with the various stages of the contracting process associated with significant transactions and overall costs for each party. In the specific socio-economic, institutional and natural conditions, different types of contracts provide different opportunities for agrarian agents to optimize the benefits and costs of relationships with suppliers, buyers, interested agents, public agencies, etc. The choice of the (most) efficient form of contract has an 'additional' economic value for agents. Therefore, identifying the absolute and comparative advantages and disadvantages of different contract types, the associated transaction costs in the process of contracting and enforcing the contracted terms, and the critical factors of managerial choice are a central point of economic study.

The governance of contractual relationship of a farm usually includes the following elements: identifying needs for contractual relations, choosing a contractual form, finding a suitable partner, negotiating terms of exchange, preparing and signing a contract, executing and controlling the contract, adaptation (renegotiation) in the process of implementation of the contract, disputing the clauses of the contract, conclusion or termination of the contract, resumption of the contract.

First, the farm manager is to identify his/her needs for relationships with other agents - suppliers of natural resources, labor, finance, buyers of produce, etc. They derive from the plans and analyzes for the development of the farm and its individual functional areas (production, financing, marketing, etc.), as well as from the operational needs of the business. For example, in the process of strategic planning, it is determined that additional land will be needed to expand the farm. The evaluation of forms of land supply establishes that long-term lease will be most effective for the development of the given farm. Therefore, the manager is faced with the task of finding a suitable landowner with whom to negotiate the lease terms. Also, rising fuel prices often necessitate finding additional external financing, which requires expanding contractual relationships. It becomes imperative to 'supply' the necessary funds through a loan from a private person, company, bank, cooperative, or state program; finding a subsidizing agent, co-investor, etc. Depending on the specific conditions, any of these or a combination of several of these negotiation alternatives may prove effective.

In the second place, when the needs for a certain type of relationship with other agents are established (for example, the need for external supply of materials, feed, etc.), the most effective form for their organization is to be determined. Most often, the farmer can choose between several relationship alternatives – stoplight free market exchange, long-term contract, cooperative, etc. For example, a farmer's need for animal feed can be satisfied by a short-term contract to purchase from the open market, a long-term contract to supply from a specific supplier, through a contract to rent agricultural land and workers for internal feed production, participation in a cooperative for joint production or supply of fodder etc. Usually, alternative forms have different advantages and disadvantages – they give different benefits to the farm, have different organization costs, provide different adaptability, are associated with different degrees of risk, etc. For example, the market realization of the produce (market, exchange) is associated with low costs of negotiation and gives freedom to the farmer to replace the unwanted partner or market. This form, however, is often associated with a high risk of large price fluctuations, lack of demand, and income volatility. Therefore, there is the task of evaluating the practically possible forms of contractual relations and selecting the most effective form for the farm.

Third, once the contract form has been chosen, there is the daunting task of finding a suitable exchange partner. Usually, different agents have unequal qualities – different managerial and contractual skills, unequal ability to fulfill contractual obligations, differing readiness for mutually beneficial cooperation, unequal reputation, etc. The 'personality' of the partner is particularly important for long-term relationships, which are most often associated with great uncertainty, the need for adaptation, conflict resolutions, and the need for cooperation between the parties. For example, when concluding a permanent employment contract, a worker or specialist with a 'good name' is preferred; in a sales contract, an incorrect buyer with a 'bad reputation' is avoided; association is made with close relatives and friends, etc. Searching for and finding a good contracting partner(s) is extremely important and takes up a significant amount of a manager's time.

Fourth, once a potential partner(s) is found, the terms of the exchange are to be negotiated in detail - prices, timing, payment methods, penalties, etc. This stage is extremely important as it largely determines the effectiveness of contractual relations as a whole. For example, if the lease of land (property) does not specify the term or conditions of termination, this can lead to large losses of long-term investments (perennial crops, soil fertility improvements, etc.) of the farm. Also, if the implementation of the contract is associated with significant additional costs (manual or green picking, sorting, special packaging), and no corresponding compensations have been agreed, this can have a significant impact on efficiency.

Fifth, contract preparation and signing is an important element of the management of contractual relationships. Many of the farm's contractual relations do not require a written contract - purchase of materials and fuels, seasonal rental of land and hiring workers, sale of produce on the market, etc. When the terms of the contract are simple and clear, its premature termination is not associated with significant costs, and the partners have a high level of trust, written form is only associated with additional costs. However, oral agreements have serious drawbacks (different subsequent interpretation by the parties, possibility of non-fulfillment of the terms, impossibility of contesting before a third party), which often make a written contract necessary. In the case of some forms of contracts (purchase and sale of land and immovable property, founding contract of a company or cooperative, employment contract, long-term lease of land), written form and notarial and/or administrative registration are mandatory.

The written contract is particularly important for the more complex and long-term relationships of farms with other agents. It must reflect precisely (unequivocally) all the agreed rights and obligations of each of the parties - legal representative, object matter, terms, payments, dispute, method of completion or termination. This supports the implementation and control of agreements, makes it possible to challenge rights before and sanction them by a third party (independent expertise, local and state administration, court, police). The expenses incurred during this stage are justified, as the risk is eliminated and the effectiveness of contractual relations is guaranteed (exact fulfillment of terms, protection of investments, precise control, compensations in case of non-performance). Due to the importance of the good drafting of the contract and the need to comply with a number of regulatory requirements, it is often necessary to use 'expensive' consultation with more experienced farmers, business experts, lawyers, etc.

Sixth, the practical implementation and control of the contracts is a very important part, which is often associated with significant costs of the farms - for the organization of the fulfillment of the assumed obligations, for the control of (non)fulfillment of the partner's obligations, etc. For example, for the majority of Bulgarian farm managers, the control of the hired workforce and the quality performance of the contracted services (irrigation, processing, harvesting) takes up a large part of their total efforts and time.

Seventh, in the process of executing the contracts, significant changes may occur (change in prices, crop failure, reorganization or liquidation of one of the parties), which will require a renegotiation of the contracted arrangements. With the good will of both parties, adaptation to the new conditions can be achieved easily and inexpensively. Situations are not rare, however, when one of the parties additionally benefits from the new situation and does not wish to change the previously made agreements.

Eighth, very often the contractual terms are not interpreted uniformly by the parties and/or are not applied according to the agreement. This may be the result of the lack of a written contract, the poor (incomplete, ambiguous, general) wording of the contract clauses, or the reluctance (impossibility) of one of the partners to fulfill the assumed obligations. With the good will (or interest) of the parties, conflicts arising in the process of contract execution can be easily resolved by the partners. Very often, however, it is necessary to challenge the rights of one of the parties to the contract before a third party - an independent expert, arbitration, court, state authority, etc. The resolution of some of the disputes may be associated with significant costs (for expertise, lawyers, legal fees; financial or production losses) and problems with the implementation of the agreements (violation of deadlines, reluctance to cooperate, premature termination). To increase the effectiveness of more complex contractual relations, the parties have to invest time for a more precise formulation of the clauses of the contract when drafting it, and also include protective mechanisms and 'economic hostages' (advance payment, joint financing of risky inputs, output-based payment of hired labor) to stimulate cooperation of the partner.

Ninth, each contract is to regulate a way of termination or continuation by which the parties terminate or resume their contractual relations (protocol, period of validity, payments, etc.). A good closing of the contracts is extremely important, as it brings the started work to completion (for example, securing a bank loan and full repayment of the loan), and releases the partners from all assumed obligations. Along with this, it creates a good reputation of the parties as a reliable partner, which facilitates future contractual relations between them and with third parties. Every contract must also provide for the conditions for terminating the agreement - notice period, acceptance, compensations, etc. In modern conditions, many contracts have to be terminated prematurely due to changes in the needs of the parties, impossibility of implementation, evolution of socio-economic, institutional, natural, etc. conditions etc. This can be associated with significant costs (for lawsuits, penalties, loss of production and income) if no special safeguard clauses are provided in the contract.

Economic contracts are a means of coordination and governing of transactions between farm entrepreneurs and owners of natural, labor, financial, etc. resources, the sellers of agricultural machinery, materials, services, etc., and the buyers of farm produce and services. 'Rational' agrarian agents (should) design or select such forms of management of their relationships with other agents and organization of activity that minimize their transaction costs and maximize transaction benefits (Bachev, 2010a,b). The form that minimizes transaction and overall costs and maximizes transaction and overall benefits in the contracting process will be most efficient and sustainable.

Sometimes transaction costs are easily determined because they are subject to independent accounting or can be identified without much effort. For example, the costs of registration and notarizations, agricultural market information, advertising, commissions and fees for the sale of the product on the wholesale market or middleman, membership fees in professional organizations, litigation, protection of property, bribes, losses from inefficient transactions (theft, fraud, failed production). However, a large part of transaction costs in the agrarian sphere is difficult (too expensive) or impossible to separate and account for. This group includes the costs of finding a good partner, negotiating, monitoring the implementation of agreements, developing and operating coalitions, interlinked transactions, unrealized or failed deals, etc. It is often difficult to separate transactional from traditional production costs – for example, while working, the farmer also controls the labor force employed; during the transportation of the raw materials or the produce, he/she negotiates the marketing of the produce, etc.

Furthermore, an component comparison of transaction costs does not always provide insight into contract efficiency, as often an alternative form lowers one type but increases another type of transaction cost. For example, when transitioning from an external (market service or product) to an integrated form (hire of labor, land, etc.), there is a reduction of the costs of information (overcoming uncertainty), renegotiation and ongoing adaptation at any change in terms of exchange, protection of investment from external opportunism, etc. At the same time, the costs of internal management - decision-making, directing, controlling and stimulating the hired labor, etc. are increasing. In addition, part of the transactions are governed not by 'pure' but by complex or interlinked contractual forms - for example, supply of material assets 'in a package' with supply of know-how and services; common supply of tangible assets and credit; crediting of production against marketing of produce, etc.

Most often, it is necessary to use another approach to evaluate the comparative effectiveness of the contracting process and the different contractual forms - by means of Discrete Structural Analysis. Since it is too difficult or impossible to determine the absolute transaction costs of the individual forms, the analysis is directed towards an assessment of the comparative costs of the possible alternatives. The quantitative assessment approach is replaced by qualitative (structural) analysis and indirect assessment of transaction costs. In fact, it is not the absolute transaction costs in the various forms that are of economic interest, but the contract with the lowest comparative costs for a given type of transaction (Williamson, 2005).

The 'critical dimensions' of transactions, or the factors that determine the variation of transaction costs in the specific economic, institutional and natural environment, are identified as: frequency of transactions with the same partner; uncertainty surrounding transactions; specificity of assets for supporting a certain transaction; and appropriability of transaction rights[16]. When the recurrence of transactions between the same partners is high, then

[16] The first three factors were determined by Williamson (2005), the fourth by Bachev and Labonne (2000).

the parties have a common interest to preserve and reduce the costs of the relationship (avoiding opportunism, building reputation, introducing incentive and adaptation mechanisms, forms of dispute resolution, etc.). Here, maintaining the relationship with the designated partner/s and developing a special contractual form have great economic value. That is why the parties refrain from opportunism, the detection of which is 'punished' by replacing the partner with its competitors (loss of future business). Furthermore, the cost of elaboration of a special private contract form to facilitate bilateral or multilateral exchange can be effectively recovered through frequent exchanges. For example, the sale of milk is not negotiated 'after each milking', but a long-term purchase contract is signed; the payment of service is not negotiated 'for every accounting' of the farming activity, but an accountant is hired on a permanent basis; participation in a supply or marketing cooperative is practiced to realize economies of scale or scale in repeat transactions, etc. When transactions are occasional (single), then the possibility of opportunistic behavior is high, since cheating cannot be easily punished (reputation with the designated partner is not important).

When the uncertainty associated with transactions increases, the costs of their implementation and protection increase (to overcome the information deficit, protect against risk, etc.). Bounded rationality is critical, opportunism is possible, and agents prefer such contractual forms that reduce transactional uncertainty. While some of the risk can be reduced or eliminated through production management or through a market form (buying insurance), most of the transactional risk requires the use of special private forms – trading with origins, providing guarantees, using equity or performance-based payment, requiring an economic hostage (for example, a mandatory collateral when providing credit), participation in a supply or marketing cooperative, complete integration of transactions.

When transactions with a given partner are incidental, not associated with specific investments and the private appropriability of rights is high, then the most effective form of contract is an impersonal market exchange – a standard contract for the purchase and sale of goods, land, property, services, etc.

Transaction costs become particularly large when specific assets must be committed to the relationship with a particular partner[17]. In this case, it is not possible to change the transaction partner (alternative use of the assets) without a significant loss of the value of the investments. Specific (dependent) investments are 'buried' in the relationship with a certain buyer or seller, and cannot be recovered (rented) through impersonal market transactions ('the personality of the partner' is of decisive importance). If the transaction does not take place, prematurely terminates (before the end of the effective life of the investments) or less favorable terms are renegotiated (after the expiration of the contract and before the complete depreciation of the assets), a cost-free alternative use of the specific assets is impossible (loss of value). For example, investments in organic milk production are highly specific to transactions with a single organic milk processor in the country, and cannot be effectively managed through a spotlight market contract. Therefore, specific investments must be protected by a special form such as a long-term or interlinked contract, with the acceptance of a pledge, joint investment, partial or full integration.

Even the cases when before or during the negotiation process there was a situation of free competition, multiple suppliers and the possibility of a costless change of the partner ('universality' of investments), after signing the contract, during its implementation (making investments to maintain relations with a certain partner) and resumption, there is a situation of 'bilateral exchange' - the assets are in a situation of high specificity. The process of negotiation and implementation of contracts is associated with the Fundamental Transformation, as a result of which assets are locked in a relationship with a particular agent (Williamson, 2005).

With a high symmetrical (capacity, product, timing, territorial, etc.) dependence of the partners' assets ('regime of a bilateral trade '), there are strong incentives on both sides to develop a special private form. In case of high unilateral (asymmetric) dependency, however, the vulnerable party (facing a mini- or full monopoly) must protect the investment from possible opportunism (behavioral uncertainty or 'certainty') through transaction integration (internal organization, co-ownership, cooperation) or an interlinked contract, exchanging an economic hostage, developing a coalition to oppose asymmetric dependency (price bargaining association, lobbying for government regulation, etc.).

Transactions become particularly difficult when appropriability of rights to a product, service or resource is low. Most intellectual products in agriculture have a 'natural' weak appropriability, such as: agricultural market information, agrometeorological forecast, new technologies and varieties, etc. All products and activities with significant positive or negative externalities could be included in this group. For example, combating hail clouds or locust infestations is of low appropriability to the provider of that service, because whether they pay or not, all

[17] Specificity is not a technological but an economic characteristic of investments. Depending on the specific socio-economic conditions, the same assets may have different degrees of specificity.

farmers in the area consume the benefit of the service. Investment in the creation of new technology has low appropriability because it can be acquired with a one-time purchase or freely provided by a neighbor, a friend at a research institute, or find cheaply on the black market, etc.

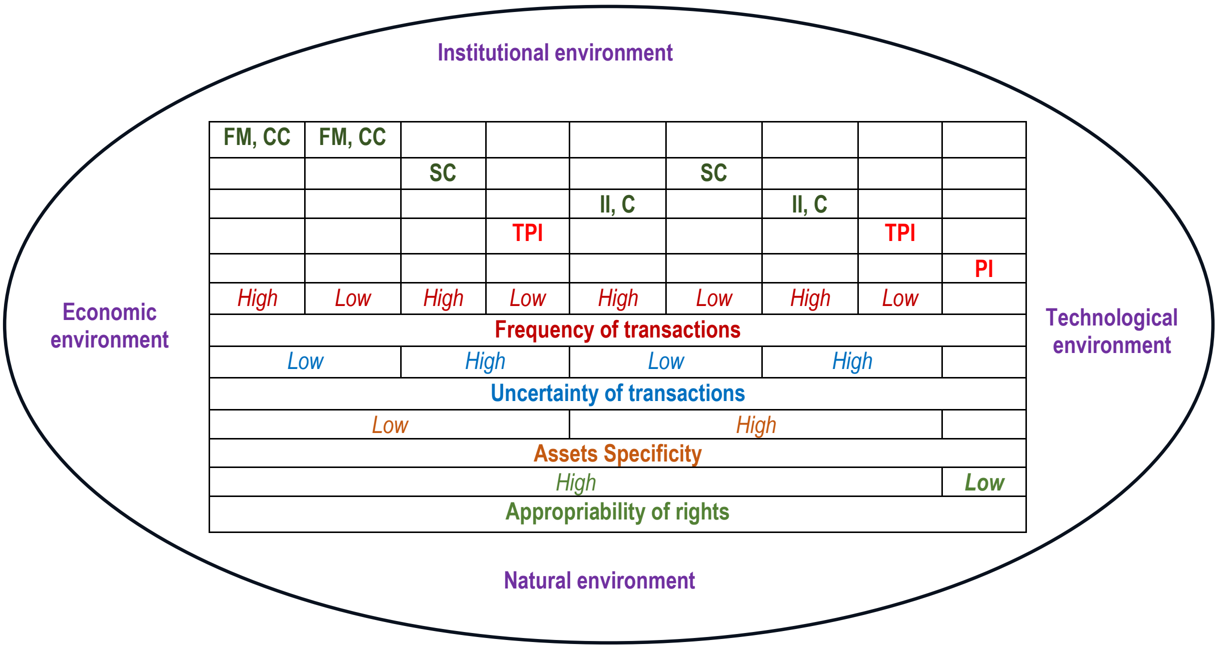
For products with low appropriability of rights, the possibility of unwanted market and private exchange is high, and the costs of protection (safeguarding, detection of fraud, disputing, etc.) of private rights and investments are extremely high. Due to bounded rationality, the costs of protecting, ascertaining, proving, and enforcing by a third party (court) of the unwanted exchange are very high. For low-appropriable transactions, costs and benefits are independent for individual participants. Therefore, agents will either overproduce (negative externalities) or underorganized such activities (positive externalities) if they are not governed by an efficient private or hybrid contractual form - cooperative, strategic alliance, long-term contract, trade secret, public support, etc.

Therefore, the effective potential of alternative contractual forms is to be assessed: to reduce agents' bounded rationality and transactional uncertainty; to appropriate and protect absolute and contractual rights (and related private benefits and investments) from possible opportunism; to recover the one-time/long-term costs associated with contracts through high repeatability of transactions; to exploit economies of scale and scope of specific capital etc.

Individual contract forms have different comparative advantages and disadvantages to maximize benefits and minimize transaction costs with specific critical dimensions. In general, intra-farm/firm integration is advantageous for managing transactions with high uncertainty and high asset specificity (dependency), as it lowers bounded rationality and protects investment from external opportunism. Conversely, transactions with high certainty (bounded rationality does not matter) and asset universality (opportunism cannot occur because the transaction can be done with another partner without additional costs) can be governed through the free market (spotlight or standard contract), without incurring the costs of developing a special contract form.

A special contractual form is effective only for highly frequent transactions between the same partners, since single (occasional) transactions do not provide the possibility to recover ('pay back') the investments for the elaboration of a special private governance (mechanisms for coordination, stimulation, resolution of disputes; formal registration, etc.). Finally, market and special contract forms for suitable for transactions with high appropriability because it is possible to fully recover the investments through exchange. For transaction with low appropriability, private rights to resources cannot be protected (unwanted exchange) or can be enforced with extremely high costs. Therefore, for transactions with similar characteristics, either hybrid (mixed public-private, quasi-public) or fully public forms of governance are required - public contract, public order or public provision.

Figure 2. Principal forms* for governing agrarian transactions



**Free market (FM); Classic Contract (CC); Special contract (SC); Internal integration (II); Coalition (C); (Necessity of) Third Party Intervention (TPI); (Need for) Public Intervention (PI).*
Source: author.

Since transactions have different critical characteristics and governance (contractual) forms have different comparative advantages, 'transactions (which differ in their attributes)' must be 'aligned with governing structures (which differ in terms of costs and competence) in a discriminating (mainly transaction cost economizing) way' (Williamson, 2005). In the specific socio-economic, institutional, technological and natural environment in which the agents operate, depending on the combination of the specific characteristics of each individual (or class) transactions, different most effective forms of contract governance will exist (Figure 2).

Agrarian transactions with good appropriabilty of rights, high certainty and universal character of investments (the partner can be changed at any time without significant costs) can be effectively carried out in the free market through spotlight or classic contracts. Here, the organization of transactions with a special contractual form or inside the farm would only be associated with additional costs without leading to any transaction benefits. Recurring transactions with low asset specificity and high uncertainty and appropriability can be effectively governed through a special contract. The Relational contract for management is used when the detailed terms of the transaction are not known in advance at the starting point (high uncertainty) and the framework (mutual expectations) is negotiated instead of a detailed specification of obligations. Partners are (self) restricted by opportunism and are motivated to resolve emerging difficulties and continue relationships (situation of frequent bilateral trade). In addition, there is not much risk, since the investments can be easily and costlessly redirected to another use or users (no specific assets). The special contract form is also effective for occasional transactions with low uncertainty, high specificity, and assignability. Here, dependent investments can be protected through the contractual clauses, as the respective obligations of the partners are easily defined and enforced under all possible circumstances (lack of uncertainty). In this case, the rare nature of the transactions does not justify internalization within the farm.

Transactions with high frequency, uncertainty, asset specificity/dependency, and appropriability must be organized in the farm (an internal ownership-based organization). For example, managerial and technological knowledge (knowledge of animals, qualities of arable land) are often highly specific to a given farm and their supply is managed through a permanent employment contract combined with property rights (in the product, assets). Long-term investments in land is to be made on own/or long-term leased land, not seasonally leased (high specificity in terms of location and product). All 'critical' material assets for the farm are internally organized - production of fodder for the animals, basic machines, supply of water for irrigation, etc. While universal assets can be financed efficiently through a market form (bank credit), highly specific investments are made only through internal financing (equity, sale of shares, joint venture). If the specific and specialized capital cannot be effectively organized inside the farm (economies of scale or scope realized, financing realized), then it is necessary to use an effective external form/s of governance - group farm, joint ownership, interlinked organization, cooperation, lobbying for public intervention.

If there is a high interdependence of assets (capacity, technology, delivery time, location, origin/brand) with a supply chain and/or food/processing partner, then it is not difficult to govern transactions through the contractual form (strong mutual interests in cooperation and restrain opportunism). In Bulgaria, for example, efficient delivery/supply contracts between farms and processors are widely used in dairy, meat, wine and organic production (symmetrical dependence). Very often, farmers face unilateral dependency and need an effective (property-based) organization to protect their interests. The transaction costs of forming and maintaining such a collective organization are usually high (large coalition, diverging interests of members, free-riding opportunism) and it is either unsustainable or does not evolve at all. This creates serious problems for the efficiency and sustainability of individual farms - missing markets, monopoly/semi-monopoly situation, impossibility to induce public intervention.

Serious transaction problems arise when the asset specificity condition coincides with high uncertainty, low frequency, and good appropriability. Here, the development of a special governance structure for a private transaction is unjustified, the specific investments are not made, and the activity is not carried out at an efficient scale (market failure and private contract failure). Similar difficulties are encountered for infrequent transactions with high uncertainty and appropriability. In all these cases, the intervention of a third party (private, public, non-governmental organization, etc.) is necessary for assistance, arbitration and regulation with a view to making transactions more efficient or possible at all. A special trilateral form, such as the Neoclassical contract, has also been invented, which regulates the participation of the third party and governs transactions with high uncertainty and asset specificity and low frequency. The unprecedented development of special origins, organic farming and the fair-trade system are good examples in this regard. There is a growing consumer demand (premium) for organic, original and 'fairly' produced and traded products. However, their procurement cannot take place until effective trilateral governance including independent certification and control is established.

When the appropriability associated with the transactions or activity is low, there is no pure market or contractual form to effectively protect and carry out the activity. Respecting the rights of others (avoiding unwanted exchange) or giving additional rights to others can be governed by the goodwill or charity of individual agents and NGOs. For example, diverse voluntary eco-initiatives develop, driven by farmers' eco-production preferences, competition or in response to public pressure for good eco-management. Voluntary initiatives, however, rarely satisfy total social demand, especially when they require significant costs. Some private forms can also be used provided there is a high frequency and interdependence of assets such as: oral agreements, interlinked organization, bilateral or collective agreements, cooperatives with closed membership, codes of professional conduct, associations, or internal integration.

However, the emergence of special (private) multimember organizations to solve the problem of low appropriability (and satisfy all public demand) is very slow and expensive, and they are unsustainable in the long run. The intervention of public as a third party is needed to make such activity possible or more effective - public organization, public contract, mandatory fees, introduction of new property rights, etc. For example, the provision of ecosystem services by farmers cannot be governed through private contracts with individual users due to low appropriability, high uncertainty and the infrequent character of transactions (high costs of negotiation, contract writing, securing payment by potential users, disputing, etc.). The supply of eco-services is very expensive (production and organizational costs) and can hardly be carried out on the basis of voluntary activity. Financially compensating farmers from willing consumers through a purely market-based form of buying and selling (fee, premium) is also inefficient due to high information asymmetry and huge enforcement costs. A trilateral form with direct public participation makes these transactions efficient - on behalf of the users, a state agency negotiates with farmers a public contract for ecosystem services, coordinates the activities of the various agents, provides public payment for the service and monitors the fulfillment of the contracted obligations.

5. Contractual Order and Improvement of Contractual Relations in Agriculture

An important element of the economic analysis is the identification of the dominant structure and factors of the contracts used in general, and in individual sub-sectors of agricultural production, in different regions of the country, types of farming, etc. It is the specific result of the contracting process between agrarian agents and agrarian governance as a whole, and shows the state and development of market relations, the spread and variety of contractual forms, and the degree of vertical and horizontal integration in the agrarian and related sectors.

This analysis gives a complete picture of how the agrarian sphere is governed and of the existing market, contractual, private, collective and public order in the sector. It also allows to assess the potential, effectiveness, and limitations for the development of market and contractual relations in agriculture; the specification of critical factors that facilitate or deter development and expansion of agrarian contracts; and the assessment of the state, dynamics and prospects of effective and sustainable development of the different types of farms, the collective forms ‘outside the farm gates’, and agriculture in general.

In addition, a comparative analysis with similar studies in the past, say in a country like Bulgaria (Bachev and Terziev, 2002a, b, c), gives an opportunity to assess how the contractual structure and agrarian governance develops in the conditions of European integration and EU CAP implementation.

The main types of contracts used by Bulgarian farms in the supply of the necessary resources, inputs and services and in the marketing of the produce and services, identified in the literature and with in-depth interviews with farm managers, are summarized in Table 2.

The identification, classification, analysis and evaluation of the diverse agrarian contracts used at the modern stage of development and their critical (personnel, institutional, technological, etc.) factors is to be the subject of a special (micro)economic study. It is to be based on available statistical and other reporting information from government, professional, etc. organizations, interviews and expertise of managers of farms and agrarian organizations, administrators, researchers, etc. In-depth interviews with experts and farm managers, case studies of typical and innovative farms, in-depth research of typical (agricultural land and land rent) and new forms (organic farming, digital marketing, etc.) of contractual relations have to also be done as well as researching particular forms and new publications in the area.

Table 2. Main types of contracts used by Bulgarian farms

Functional area of the farm management	Major contract forms			
	Market contract	**Special contract**	**Coalition contract**	**Public contract**
Supply of land and other natural resources	Purchase Short term rental	Long-term lease with fixed rent Long-term lease with sharecropping	Cooperation Partnership	Lease of state lands Rental of reservoirs and

Functional area of the farm management	Major contract forms			
	Market contract	Special contract	Coalition contract	Public contract
		Long-term lease with market rent		irrigation systems
Labor supply	Daily hire Seasonal hire	Permanent employment contract with fixed remuneration Permanent employment contract with output-based remuneration	Partnership Cooperation	
Supply of short-term tangible assets	Purchase by spotlight contract Standard contract	Long-term supply contract Supply contract in a package with credit, services, and/or purchase of farm produce	Cooperation	
Supply of long-term tangible assets	Purchase by spotlight contract Standard contract	Long-term rental agreement Purchase contract in a package with crediting (leasing) and/or services (maintenance)	Partnership Cooperation	Lease of state property Rental of irrigation systems
Supply of services	Purchase by spotlight contract Standard contract	Long-term supply contract A supply contract in a package with other services, products or credit	Partnership Cooperation	Information and advice in agriculture Training
Supply of innovations and know-how	Purchase by spotlight contract Standard contract Free consultations in the advisory system	Long-term supply contract Contract for supply in a package with material assets and/or credit	Cooperation	Scientific products and innovations
Financing	A bank loan Loan from a private person Loan from a private organization	Joint-investment Lending in a package with supply of tangible assets and services	Partnership Credit cooperative	State program CAP Area-based subsidies, etc.
Insurance	Buying an insurance policy Purchase of 'insurance service'	Insurance in a package with tangible assets Long-term insurance contract	Cooperation	Reserve fund
Marketing of farm produce and services	Retail sale Wholesale Standard contract Digital marketing	Long-term purchase agreement Interlinked marketing contract in a package with credit, supply of tangible assets and/or services Trade in organic, eco, etc. products with independent certification and audit	Partnership Cooperation	
Services with collective and public goods character	Retail sale	Long-term contract with a private organization Long-term contract with non-governmental or other organization	Partnership Cooperation Collective codes of conduct	Public eco-contracts Cross-compliance

Source: author.

A holistic analysis of contractual relations in agriculture makes it possible to identify not only how agriculture is governed, but to identify existing (market, private, collective and public) failures, and make recommendations for improving the institutional environment, contractual governance and forms of public intervention in the agricultural sector. The analysis of agrarian agents of different types, their characteristics and contractual needs, and the process and outcome of agrarian contracting and implementation of agrarian contracts, will allow to identify the potential, problems and costs (transactional and overall) of different types of contracts used in (*e.g.* Bulgarian) agriculture. On this basis, cases of market and contractual difficulties and 'failures' in the effective governance of the relationships of farm entrepreneurs with suppliers of resources, services, buyers of farm produce and services, government organizations and other interested parties, in the main functional areas of farm management, in individual sub-sectors or areas of agrarian governance. In addition, it will be possible to identify cases of 'public failure' - when there is a need for third-party intervention (the state, NGOs, etc.) in the market and private relations of agents (defined in Figure 3), but there is no effective (public, collective or private) form to facilitate contractual relations.

Based on this analysis, it will be possible to make recommendations for: (a) improving the institutional environment and regulations for increasing the efficiency and intensifying private contracts between agents - better definition of private rights, more effective protection, registration (reduction of fees, on-line registrations, etc.) and enforcement of existing rights and rules by the responsible organizations (court, state administration, etc.), better sanctioning and resolution of conflicts of private contracts of agents through court system, arbitration and etc., introduction of new private and collective rights (creation, privatization of public resources, activities and functions), rules and system for their enforcement and protection, etc.; (b) improvement of public forms of intervention in contractual relations and in the agrarian sphere – upgrade information and training of private agents in institutional rules and restrictions, and 'contractual' relations and management, public support for the development of collective forms (coalitions) for joint activity, improvement of forms, efficiency (introduction of market-like mechanisms, such as open tender, etc.), control (inclusion of interested parties and beneficiaries in control and management) and transparency of public contracts, expansion of public-private partnerships, and etc.

The choice of effective forms of public intervention in market and private relations is determined through Comparative Structural Analysis (Bachev, 2010a). After identifying the challenges (problems, conflicts, failures, risks, high private costs, etc.) in the contractual relations and the existing market, private and public order, the needs for new public intervention and for the involvement of the 'state' in the market and private relations of agents are to be specified. Alternative forms of new public intervention that can correct market, private and public failure are to be then identified; their comparative effectiveness evaluated and the most effective one(s) selected. Finally, the comparative effectiveness of the chosen public form must be evaluated in relation to another practically possible form of governance such as partnership with the private sector, fundamental institutional modernization, international cooperation, etc.

The comparative efficiency of public intervention must be determined in terms of potential for coordination, incentive, conflict resolution, and cost minimization. Public forms not only assist market and private transactions, but are also associated with significant (public and private) costs. It is important to compare practically (technically, economically, socially) possible and alternative forms of governance. Estimates are to include the total costs – direct (to taxpayers, the implementing agency); transaction costs of bureaucracy (for coordination, incentives, control of opportunism and mismanagement); costs of individuals' participation (for adaptation, information, paperwork, fees, bribes); for social control over and reorganization of public forms (modernization, liquidation); opportunity costs of public inaction, etc.

The scientific and economic analysis of contractual relations in the agrarian sphere enables a (more) adequate assessment of their state and improvement of their governance. In this way, interested parties and the public as a whole are informed about the real effectiveness and potential for improvement of the existing contractual structure in the agrarian sphere. This analysis also let make valuable recommendations for improvement of the system of agrarian, statistical, etc. data collection which have to provide important information about type, factors etc. of contracts used by agricultural agents to govern their relations with suppliers, buyers, public organizations, and other interested parties.

Conclusions

The article tried to prove that the neglected in Bulgaria and some other countries economic analysis of agrarian contracting and agrarian contracts is necessary and only possible through a holistic and interdisciplinary AMPO approach. The methodological framework for economic analysis, assessment and improvement of agrarian contracts in the country includes the following important elements: economic definition of agrarian contracts and characterization of their place in the system of agrarian governance as bilateral or multilateral agreements related to agricultural production and services; economic characteristics of the agents participating in contractual relations (interests, level of awareness, risk-taking tendency, capability, tendency to opportunism, etc.); economic characteristics of different types of agrarian contracts (for purchase and sale, hire of labor and resources, services, loan, insurance, marketing, coalition, etc.); economic characterization of the agrarian contracting process (technological, transactional, institutional, etc. factors for managerial choice); economic characterization of the outcome of the contractual process and the dominant social order in the agrarian sphere (rule of law, rule of force, contractual structure, etc.); characterization of the stages for the improvement of agrarian contracts and governance (identification of problems and failures of the market, private contracting, and public forms; needs and forms of new public intervention, etc.); and identifying new information needs for analysis and evaluation of agrarian contracts and governance.

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Declaration of Competing Interest

The author declares that he has no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Declaration of Use of Generative AI and AI-assisted Technologies

The author declares that he has not used generative AI and AI-assisted technologies during the preparation of this work.

References

[1] Alulu, J., *et al.* (2021). Comparison of technical efficiency and technology gaps between contracted and non-contracted vegetable farmers in Western Kenya, *Cogent Food and Agriculture,* 7: 1. DOI:https://doi.org/10.1080/23311932.2021.1910156

[2] Arrow, K. (1962). Economic Welfare and the Allocation of Resources for Invention, in *The Rate and Direction of Inventive Activity*, 609.

[3] Bachev, H. and Ivanov, B. (2024). Framework for Holistic Assessment of the Quality of Agri-food Governance in Bulgaria. *Sustainability,* Vol. 16, 5: 2177. DOI: https://doi.org/10.3390/su16052177

[4] Bachev, H. and Terziev, D. (2002a). Organization of labor supply in Bulgarian farms. *Economics and Management of Agriculture*, 1: 21-30 (in Bulgarian).

[5] Bachev, H. and Terziev, D. (2001). Organization of land supply in Bulgarian farms. *Economics and Management of Agriculture*, 6: 17-27 (in Bulgarian).

[6] Bachev, H. and Terziev, D. (2002c). Organization of service supply in Bulgarian farms. *Economics and Management of Agriculture*, 3: 20-28 (in Bulgarian).

[7] Bachev, H. and Terziev, D. (2002b). Organization of the supply of material assets in Bulgarian farms. *Economics and Management of Agriculture*, 2: 17-24 (in Bulgarian).

[8] Bachev, H. (2024). About Economics of Agrarian Contracts, in A. Tavidze (Editor) *Progress in Economics Research*, Nova Science Publisher, New York, Vol. 52: 157-218.

[9] Bachev, H. (2024). To the question of economic study of agrarian contracts, *Dialog,* 1: 19-45 (in Bulgarian). DOI: https://doi.org/10.58861/tae.di.2024.1.02

[10] Bachev, H. (2023). What is Agrarian Governance?, in A. Tavidze (Editor) *Progress in Economics Research*. Nova Science Publisher, New York, Vol. 51: 131-160.

[11] Bachev, H. and Labonne, M. (2000). *About Organization of Agrarian Innovations*, Montpellier: INRA,

[12] Bachev, H. (2010c). Framework for Analysis of Agrarian Contracts. *Management Research and Practice*, Vol. 2, 1: 39-66.

[13] Bachev, H. (2010a). *Governance of Agrarian Sustainability*, New York: Nova Science Publishers,

[14] Bachev, H. (2010). *Management of Farm Contracts and Competitiveness*, VDM Verlag Dr. Muller, Germany.

[15] Bachev, H. (2021). Modes of Governance for Ecosystem Services in Bulgarian Farms. *Economic Studies*, 30(8): 145-174.

[16] Bachev, H. (2013). Risk management in the agri-food sector, *Contemporary Economics*, Vol.7, 1: 45-62. DOI:https://doi.org/10.5709/ce.1897-9254.73

[17] Bellemare M. (2015). Contract Farming: What's In It for Smallholder Farmers in Developing Countries? *Choices: The Magazine of Food, Farm, and Resource Issues, Agricultural and Applied Economics Association*, vol. 30(3), pp. 1-4

[18] Bulte E., P. Richards, M. Voors (2018): *Institutions and Agrarian Development, A New Approach to West Africa*, Palgrave Macmillan, 2015.

[19] Coase, R. (1992). The Institutional Structure of Production, Nobel Prize Lecture, *American Economic Review*, 82(4): 713-719.

[20] Coase, R. (1998). The New Institutional Economics, *American Economic Review*, 88(2): 72-74.

[21] Coase, R. (1960). The Problem of Social Cost, *Journal of Law and Economics*, 3: 1-44.

[22] Deshpande, C. (2005). Contracting Farming as Means of Value-Added Agriculture, National Bank for Agriculture and Rural Development, Mumbai.

[23] Dinterman, C. (2022). What Farmers Need to Know About Carbon Contracts, *Successful Farming*. Available at: https://www.agriculture.com/crops/conservation/what-farmers-need-to-know-about-carbon-contracts

[24] Ducos, G. and Dupraz, P. (2006). *Private Provision of Environmental Services and Transaction Costs, Agri-environmental Contracts in France*, paper presented at the 3d World Congress of Environmental and Resource Economics, 3-7 July, Kyoto.

[25] Furuboth, E. and Richter, R. (2005). *Institutions and Economic Theory: The Contribution of the New Institutional Economics,* Ann Arbor: The University of Michigan Press.

[26] Georgiev M., Stoeva, T., Dirimanova, V. (2023). The governance structure of agricultural land contracts– discrete structural alternatives. *Bulgarian Journal of Agricultural Science*, 29 (Suppl. 1): 71-83.

[27] Georgiev, M. (2011). Institutional Analysis of Transactions in Agricultural Land Contracts in Bulgaria. *Agricultural University, Agrarian Sciences*, 3(5): 53-62.

[28] Goodhue R. (2022). From Handshakes to Blockchains: Economic Analysis of Contracts in Agriculture. In: de Gorter, H., McCluskey, J., Swinnen, J., Zilberman, D. (eds) *Modern Agricultural and Resource Economics and Policy. Natural Resource Management and Policy*, vol. 55. Springer, Cham.

[29] Hayami Y., Otsuka, K. (1993). *The Economics of Contract Choice: An Agrarian Perspective*, Oxford University Press.

[30] Ikeda, S.; Natawidjaja, R.S. (2022). The Sustainability of Contract Farming with Specialized Suppliers to Modern Retailers: Insights from Vegetable Marketing in Indonesia. *Agriculture*, 12: 380. DOI:https://doi.org/10.3390/agriculture12030380

[31] James, H., Klein, P., Sykuta, M. (2011). The Adoption, Diffusion, and Evolution of Organizational Form: Insights from the Agrifood Sector. *Managerial and Decision Economics*, 32(4): 243–59.

[32] Kocheva, D. (2018). *Application of economic instruments for household waste management in municipalities in Bulgaria*, dissertation work for awarding the educational and scientific degree 'doctor', UNSS (in Bulgarian).

[33] Kuzilwa J., Fold, N., Henningsen, A. and Larsen, M. (2019). *Contract Farming and the Development of Smallholder Agricultural Businesses: Improving markets and value chains in Tanzania*, Routledge.

[34] MacDonald J., (2015). Trends in Agricultural Contracts. *Choices*, 30(3): 1-6.

[35] Massey, R., Sykuta, M., Pierce, V. (2020). *Contracts in agriculture. Farm management*, University of Missouri.

[36] Michler J. and Wu, S. (2020). Relational Contracts in Agriculture: Theory and Evidence. *Annual Review of Resource Economics*, 12: 111-127.

[37] Mishra A., Kumar, A., Joshi, P. (Editors), (2022). *Transforming Agriculture in South Asia The Role of Value Chains and Contract Farming,* Routledge.

[38] Mugwagwa, I., Bijman, J., Trienekens, J. (2020). Typology of contract farming arrangements: a transaction cost perspective. *AGREKON*, 59 (2): 169-187. DOI: https://doi.org/10.1080/03031853.2020.1731561

[39] North, D. (1990). *Institutions, Institutional Change and Economic Performance*, Cambridge: Cambridge University Press.

[40] Ostrom, E. (1999). Revisiting the Commons: Local Lessons, Global Challenges. *Science*, 284: 278–282.

[41] Otsuka, K., Chuma, H., Hayami, Y. (1992). Land and Labor Contracts in Agrarian Economies: Theories and Facts. *Journal of Economic Literature*, 30: 1965-2018.

[42] Radeva, D. (2017). *Economics of the new alternative agriculture in Bulgaria - Permaculture*, dissertation work for awarding the educational and scientific degree 'doctor', UNSS, 2017 (in Bulgarian).

[43] Ronaghi, M., *et al.* (2020). The Effects of Good Governance on the Agricultural Sector. *International Journal of Agriculture and Environmental Research*, 6(1): 11-29.

[44] Santiago, M., and Sykuta, M. (2016). Regulation and Contract Choice in the Distribution of Wine. *Journal of Wine Economics,* 11(2): 216-232.

[45] Sarov, A. (2017). Management of agricultural cooperatives - challenges and prospects, dissertation work for awarding the educational and scientific degree 'doctor', IAE (in Bulgarian).

[46] Schiefferm J. and Vassalos, M. (2015). *Risk and the Use of Contracts by Vegetable Growers*, 30(3): 1-6.

[47] Stebekm, E. (2011). Between 'Land Grabs' and Agricultural Investment: Land Rent Contracts with Foreign Investors and Ethiopia's Normative Setting in Focus. *Mizan Law Review*, vol. 5, DOI:https://doi.org/10.4314/mlr.v5i2.1

[48] Sykuta, M. (2010). Concentration, Contracting and Competition: Problems In Using The Packers and Stockyards Act To Supplement Antitrust. *The CPI Antitrust Journal*, 4(2).

[49] Sykuta, M., and Parcell, J. (2002). Contract Structure and Design in Identity Preserved Grain Production, 2002. *Review of Agricultural Economics,* 25(2).

[50] Sykuta, M., and Cook, M. (2001). A New Institutional Economics Approach to Contracts and Cooperatives, *American Journal of Agricultural Economics,* 83(5): 1273-1279.

[51] Terziyska, R. (2016). *Management of network structures in agrarian business*, dissertation work for awarding the educational and scientific degree 'doctor', UNSS. (in Bulgarian).

[52] Veldwisch G. and Woodhouse, P. (2021). Formal and informal contract farming in Mozambique: Socially embedded relations of agricultural intensification. *Journal of Agrarian Change*, 22: 162–178, DOI:https://doi.org/10.1111/joac.12461

[53] Villaume, S. (2011). *Paid employment in agriculture: the rising proportion of seasonal contracts division Agriculture*, Insee.

[54] Voutos, Y., Drakopoulos, G. and Mylonas, P. (2019). *Smart Agriculture: An Open Field for Smart Contracts*, 2019 4th South-East Europe Design Automation, Computer Engineering, Computer Networks and Social Media Conference (SEEDA-CECNSM), 1-6.

[55] Williamson, O. (2005). The Economics of Governance, *American Economic Review*, 95: 1–18.

[56] Wu, S. and MacDonald, J. (2015). Economics of Agricultural Contract. *Grower Protection Legislation*, 30(3): 1-6. Available at: http://choicesmagazine.org/choices-magazine/theme-articles/current-issues-in-agricultural-contracts/economics-of-agricultural-contract-grower-protection-legislation

[57] Technical support, Advantages and Disadvantages of Contracting and Sub-Contracting in Marketing of Agricultural Produce, Friedrich Ebert Stiftung (2002).

[58] USDA, Agricultural Resource Management Survey: farms with contracts by farm typology, (2012). *From Farm Structure and Organization: Background on Farm Organization*, USDA Economic Research Service.

[59] World Bank. (2015) *Investment Contracts for Agriculture: Maximizing Gains and Minimizing Risks,* World Bank.

[60] ZAZ. (2018). LAW on the lease in agriculture, last amendment (in Bulgarian).

[61] ZZD. (2021). LAW on obligations and contracts, last amendment (in Bulgarian).

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Dynamics of Electronic Word-of-Mouth: Insights from Destination Management Organizations

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Abstract: This study investigates destination management organizations' (DMOs) perceptions and engagement with electronic word-of-mouth (eWOM) in tourism, aiming to understand its impact on destination management and tourist decision-making. This study adopts a mixed-methods approach, combining qualitative interviews with 46 Slovak and Czech DMOs and quantitative content analysis of eWOM about destinations on popular eWOM platforms - destination websites, Google Maps, and Facebook. The integration of in-depth thematic insights and extensive eWOM data analysis offers a comprehensive understanding of DMO strategies and their effectiveness in eWOM management. While DMO representatives acknowledge the importance of eWOM and claim to actively monitor and respond to it, the content analysis of eWOM reveals a low engagement in terms of the number of reviews and narrative feedback, particularly on destination websites and Google Maps. DMOs appear more active on Facebook, where they engage visitors through contests and respond to reviews and comments, aligning with the interview findings regarding their efforts to manage and respond to eWOM. The discrepancy between the perceived importance of eWOM by DMOs and the actual engagement levels on platforms like Google Maps and destination websites suggests a potential area for improvement in encouraging more narrative feedback and reviews to better manage destination image and visitor experiences. This research contributes to the understanding of eWOM from the supply side by focusing on DMOs' strategies and responses to online tourist feedback, an area previously underexplored in eWOM research within the context of tourism management.

Keywords: tourism economics; destination management organizations (DMO); electronic word-of-mouth (eWOM); reviews; social media; tourism destination.

JEL Classification: Z30; Z32; M31; L83.

Introduction

Currently, destination management organizations (DMOs), as key entities in destination management, are moving away from the simplistic growth paradigm focused on marketing communications to attract visitors at any cost. Instead, they are embracing more flexible measures that prioritize stewardship and sustainable tourism development (Reinhold *et al.* 2023). Previous studies (*e.g.*, Baggio and Scaglione 2018) have highlighted the challenges faced by third-generation DMOs. These challenges involve transforming traditional DMOs, often established along administrative boundaries, into dynamic tourism management organizations.

In their operational environments, DMOs are confronted with new challenges at their destinations, such as enhancing sustainability (*e.g.*, Farsari 2023; Reinhold *et al.* 2023), increasing resilience (*e.g.*, Jinyan *et al.* 2023; Reinhold *et al.* 2023), and advancing information and communication technologies (ICT) (*e.g.*, Zainal-Abidin *et al.*

2023; García-Carrión *et al.* 2024). The integration of these three pillars leads to sustainable, smart, and competitive management of tourism destinations (*e.g.*, Fyall and Garrod, 2020; Vogt *et al.* 2020).

DMOs are striving to adapt to the changing technological landscape (Zainal-Abidin *et al.* 2023), recognizing the importance of continuous data analysis in destination management, where DMOs act as active data coordinators (Gajdošík and Gajdošíková 2021). According to Fakharyan *et al.* (2012), managers should utilize new technologies in tourism destination management. In the context of ICT development, DMOs focus on areas such as public transportation, measuring visitor flows, augmented reality, etc. (Fyall and Garrod 2020; Gajdošík and Gajdošíková 2021; Gao *et al.* 2023).

Bigné and Decrop (2019), van der Zee *et al.* (2020), and Gao *et al.* (2023) assert that contemporary destination managers concentrate on understanding the fluctuating preferences of tourists and designing targeted development strategies through extensive analyses of heterogeneous user-generated online content. Similarly, Giglio *et al.* (2019) and Reinhold *et al.* (2023) emphasize the significance of digital data in tourism, as it enables destination managers to understand what visitors do, why they engage in specific activities, and the relevance of these activities. Digital data also provide insights into the overall dynamics of tourism in a destination. Van der Zee *et al.* (2020) highlight electronic word-of-mouth (eWOM) as a vital information source for destination managers, as data derived from eWOM content offer new opportunities for destination management.

In the literature, numerous authors (*e.g.*, Abubakar *et al.* 2017; Chang and Wang 2019; Niavis and Tsiotas 2019; Tapanainen *et al.* 2021; Hoang *et al.* 2022) have focused significantly on eWOM in the context of tourism destinations from a demand perspective, mainly investigating eWOM's impact on visitor behavior.

From a supply perspective, researchers have explored eWOM's influence on the image and awareness of tourism destinations (*e.g.*, Susilowati and Sugandini 2018; Gosal *et al.* 2020; Wiwekananda and Aruan 2020). Niavis and Tsiotas (2019) focused on destination awareness, proposing an indicator to measure the ratio of total reviews to the total number of lodging facility beds at the destination. In the context of DMOs, studies (*e.g.*, Önder *et al.* 2019; Molina *et al.* 2020) have concentrated on their corporate Facebook accounts, hypothesizing demand for the destination through reactions like 'likes' on posts and evaluating the marketing effectiveness of DMO posts through content analysis, including follower count, post frequency, eWOM in the form of likes, and post characteristics.

None of the preceding studies have delved deeply into examining the attitudes of DMOs, as destination management entities, towards eWOM, or the practices they implement in this regard. Therefore, this study aims to fill this research gap by elucidating how DMOs perceive eWOM and the extent of their engagement with it.

1. Research Background

In the current digital age, it is crucial for DMOs to understand visitor consumer behavior, particularly how visitors process and assimilate information received through social media and websites, whether published by the DMOs themselves or by other visitors (García-Carrión *et al.* 2024). Beyond the advantages offered by advancements in ICT in tourism destination management, technology also plays a pivotal role for visitors during their stay at a destination by facilitating smoother and more comprehensive information exchange. This is largely due to the availability of new devices on the market (Dexeus 2019), which have shifted the advisory role traditionally held by travel agencies to online reviews and recommendations by current and former visitors. This shift has significantly empowered visitors due to the accessibility of such information and the growing importance of eWOM (Bigné and Decrop 2019), making information provided through eWOM increasingly referential (Auliya and Pertiwi 2019). Tourists utilize eWOM to gather information about destinations they intend to visit, influencing their decision-making process (Fakharyan *et al.* 2012). Concurrently, DMOs are showing an increasing interest in eWOM content (Bigné and Decrop 2019) and are engaging more with visitors through digital media (Almeida-Santana and Moreno-Gil, 2017) to enhance their competitive market positioning (Hoang *et al.* 2022).

In the tourism sector, visitors' attitudes towards a destination are a strong indicator of their planned choice, irrespective of previous experiences with the destination (Jalilvand and Samiei 2012). Visitors contributing eWOM provide real-time information about their experiences at the destination (Albarq 2014). The shared experiences online serve as a basis for individuals seeking information to better understand a chosen destination, motivating them to visit a specific location, business, or attraction (Albarq 2014; Prayogo and Kusumawardhani 2016).

Visitors search for destination information on social networks, official destination websites, and travel blogs (*e.g.*, Almeida-Santana and Moreno-Gil, 2017; Gosal *et al.* 2020; Nechoud *et al.* 2021). Social networks feature user opinions and experiences, with less emphasis on destination information. In contrast, official destination websites provide comprehensive details about the destination and logistical aspects such as transportation and schedules. Many of these sites allow users to post comments and share their experiences, enriching the website content and offering a one-stop source of information, thus reducing the need to search elsewhere (Hernández-Méndez *et al.* 2015). Travel blogs not only provide destination-specific information but also offer travel tips useful for a diverse readership. Blogs allow users to engage with feedback and comments from other travelers, presenting a rich content experience (Hernández-Méndez *et al.* 2015).

Research indicates that official destination websites are the most utilized eWOM mediums (Hernández-Méndez *et al.* 2015), while others suggest social networks, particularly Facebook, play a dominant role in destination eWOM (Munar and Jacobsen, 2014; Lončarić *et al.* 2016; Almeida-Santana and Moreno-Gil, 2017; Önder *et al.* 2019; Nechoud *et al.* 2021). Facebook has become a key channel for eWOM, with positive eWOM serving as a strong promotional tool. Potential visitors rely on information shared by others, especially close friends. Travel photographs, being the most shared travel content, can significantly influence individuals' desire to visit a destination (Božić and Jovanović, 2017). Recipients of eWOM tend to trust posts where the author's identity is known (Lončarić *et al.* 2016; Zainal *et al.* 2017; Nechoud *et al.* 2021). Besides Facebook, platforms like YouTube and Flickr are also used, particularly by men who prefer video or photographic content (Almeida-Santana and Moreno-Gil, 2017). Božić and Jovanović (2017) found that Facebook is the most common platform for sharing eWOM about tourism destinations. Yan *et al.* (2018) noted differences in eWOM sharing, with positive eWOM typically shared on social networks and negative eWOM on integrated tourism websites.

Ismail *et al.* (2023) argue that destination managers should leverage positive eWOM from previous visitors in their marketing campaigns. Similarly, Setiawan *et al.* (2014) suggest that promoting tourism offerings through eWOM can quickly reach the global tourism market, supporting the views of Albarq (2014) and Phillips *et al.* (2015) that eWOM is becoming an increasingly popular means of gaining a competitive edge. DMOs can benefit from eWOM through reduced marketing costs (Jalilvand and Samiei, 2012; Mutaqin and Trinanda, 2019) and its high impact on visitors, especially in highly competitive markets (Mutaqin and Trinanda, 2019). Setiawan *et al.* (2014) and Prayogo and Kusumawardhani (2016) confirm that eWOM is an effective and low-cost promotional method for DMOs and destinations. eWOM content can aid DMOs not only in promotion but also in policymaking and planning based on real visitor insights and experiences (van der Zee *et al.* 2020).

Wang *et al.* (2017) and Labanauskaitė *et al.* (2020) emphasize the importance of managing visitor experiences post-visit, suggesting that DMO managers should encourage individuals to share positive eWOM to improve the destination's reputation (Hoang *et al.* 2022), facilitate access to review sites, increase the number of reviews not just for the destination but also for businesses and attractions within it (Melián-González *et al.* 2013), and encourage visitors to engage in virtual community discussions (Doosti *et al.* 2016).

Responding to eWOM offers DMOs the opportunity to communicate with potential visitors (Min *et al.* 2015). Management responses are often the only tool service providers have to address customer complaints online (Gu and Ye, 2014). Prompt communication, personalized suggestions, and recommendations can enhance the quality of the visitor experience. The findings from hotel management studies could also apply to destination management. Min *et al.* (2015) found that management responses to online reviews should include empathy and paraphrasing statements, signaling that managers are reading the reviews and not merely duplicating generic responses. Even a small gesture of active listening can impact potential visitors' satisfaction, even if it occurs online (Min *et al.* 2015). Liu *et al.* (2019) advise managers to respond timely to eWOM, as managerial responses influence future visitor engagement. Managers should also filter content, for example, through hashtags, contributing to the destination's visibility. Hashtags increase post visibility, and it's crucial for managers to choose keywords that are memorable and descriptive of the destination. This allows potential tourists to find all relevant information and content created by both tourism organizations and visitors themselves. Managers should also invest in search engine optimization (SEO) services, as tourists frequently use search engines like Google to find destination information (Labanauskaitė *et al.* 2020). Önder *et al.* (2019) suggest that tourism management organizations can use Facebook reactions, such as likes, as a reliable indicator of demand, recommending their incorporation into the marketing efforts of tourism management organizations. Combining current and past like reactions with historical visitor numbers can enhance the accuracy of tourism demand models.

2. Materials and Methods

In the present investigation, a qualitative research methodology has been employed, recognized as an appropriate tool for probing into nascent areas of inquiry (DeJonckheere and Vaughn 2019; Hillman 2022). This study specifically embraces the interview technique as the principal and extensively utilized method in qualitative research (Monforte and Úbeda-Colomer 2021). This approach aligns notably with the post-positivist, interpretivist, and constructivist research paradigms (Picken 2018). Reflecting the exploratory and inductive essence of this research, comprehensive one-on-one interviews were conducted. During these sessions, the researcher presented a sequence of pre-established but open-ended inquiries to the participants (Given 2008; DeJonckheere and Vaughn 2019).

In pursuit of the study's objective, contact was initiated in 2023 with representatives of all DMOs operating at the local and regional levels in two Central European countries with a shared history and a similar tourism offering - Slovakia and the Czech Republic. The choice of these countries was influenced by the authors' knowledge of the local conditions and proficiency in the respective national languages. Following three rounds of outreach, consent was secured to conduct in-depth interviews with representatives from 25 DMOs in Slovakia (encompassing 21 destinations at the local level and 4 at the regional level) and 21 DMOs in the Czech Republic (encompassing 16 destinations at the local level and 5 at the regional level). The research sample represents 53.2% of existing DMOs located in Slovakia, and 27.3% located in the Czech Republic. The interviews were conducted using various methods, including in-person meetings, telephone, and online applications. The data collection took place in the period from April to August 2023.

The interviews were conducted employing a malleable interview protocol to ensure adherence to the predetermined line of inquiry while methodically and comprehensively examining how DMOs perceive eWOM and the practices they implement in this context. The in-depth interviews were recorded and subsequently transcribed manually into text.

For the subsequent content analysis of the data, Atlas.ti, a software specifically designed for qualitative data analysis, was utilized. Within Atlas.ti, categorization was conducted, facilitating the identification of core themes, and capturing the breadth of perspectives offered by the interviewees. Beyond the use of software for analysis, the transcripts underwent meticulous multiple readings by the first author, ensuring a thorough textual analysis. This was imperative for accurately delineating the phenomenon being investigated.

Information obtained from in-depth interviews is compared with the content of eWOM for the 46 tourism destinations under study, focusing on the eWOM platforms most frequently utilized by potential visitors (Medeková, Pompurová, 2023), *i.e.* destination websites, Google Maps and Facebook. Data were collected and processed during the months of November 2023 to January 2024. In the case of Google Maps, focus was placed on all reviews provided for the examined 46 DMOs, which were published up to November 30, 2023, totaling 354 reviews. Content from all 46 corporate accounts of the examined DMOs on Facebook, published up to November 30, 2023, was also scrutinized. A total of 727 reviews and 27 mentions were examined. Comments under posts were monitored over the last 12 months due to the labor-intensive nature of their collection and classification, during which 13,704 posts were reviewed, yielding 42,134 relevant comments. Data are processed in Microsoft Excel and SPSS statistic software.

3. Research Results

In this section, the findings from comprehensive interviews conducted with representatives of 46 DMOs are elucidated, alongside the interpretation of eWOM media content pertaining to 46 tourism destinations.

3.1. The Relationship of DMOs to eWOM

In today's digitally dense environment, DMOs strive to present themselves positively. In this context, eWOM from visitors has become a key element in tourists' decision-making about how they spend their leisure time. About half of the interviewees in this study recognized eWOM as a crucial factor in choosing a tourism destination. Even among those DMO representatives who did not prioritize eWOM initially, it is still seen as an influential element in shaping the final decision of visitors to a particular destination. Typically, the initial attraction for potential visitors is the destination's offerings, information about which they acquire from various sources. This information is often validated through eWOM, reinforcing their preliminary choice. Furthermore, the impact of traditional word-of-mouth (WOM), especially from friends and acquaintances, along with the overall image of the tourism destination, significantly affects visitor perceptions, with the influence of both eWOM and WOM varying across different age groups of tourists.

Most DMO representatives believe that potential visitors mainly look for eWOM about specific businesses and attractions within a destination, as these are more tangible compared to the destination as a whole. Visitors usually plan their travel by identifying specific destinations and then seek eWOM about chosen attractions and businesses. This decision-making process is individualistic and influenced by several factors, including the season and type of visitor. If a visitor has already decided on or is at a destination, they look for eWOM about local businesses and attractions. Conversely, if they are undecided about a destination, their initial search focuses on eWOM about the destination in general. The relationship between visitors and eWOM, including its frequency, importance, and impact on consumer behavior, largely depends on how familiar they are with the destination. While local visitors may search for eWOM on specific activities, international visitors, generally less familiar with the destination, might focus more on eWOM about the destination itself. They may also initially look for activities aligning with their travel preferences and then select a destination where these activities are available.

In various DMOs, the management of eWOM is assigned to different job roles. In some DMOs, all employees participate in eWOM activities as time allows, while in others, specific positions like directors, marketing staff, product managers, project managers, or external personnel handle eWOM.

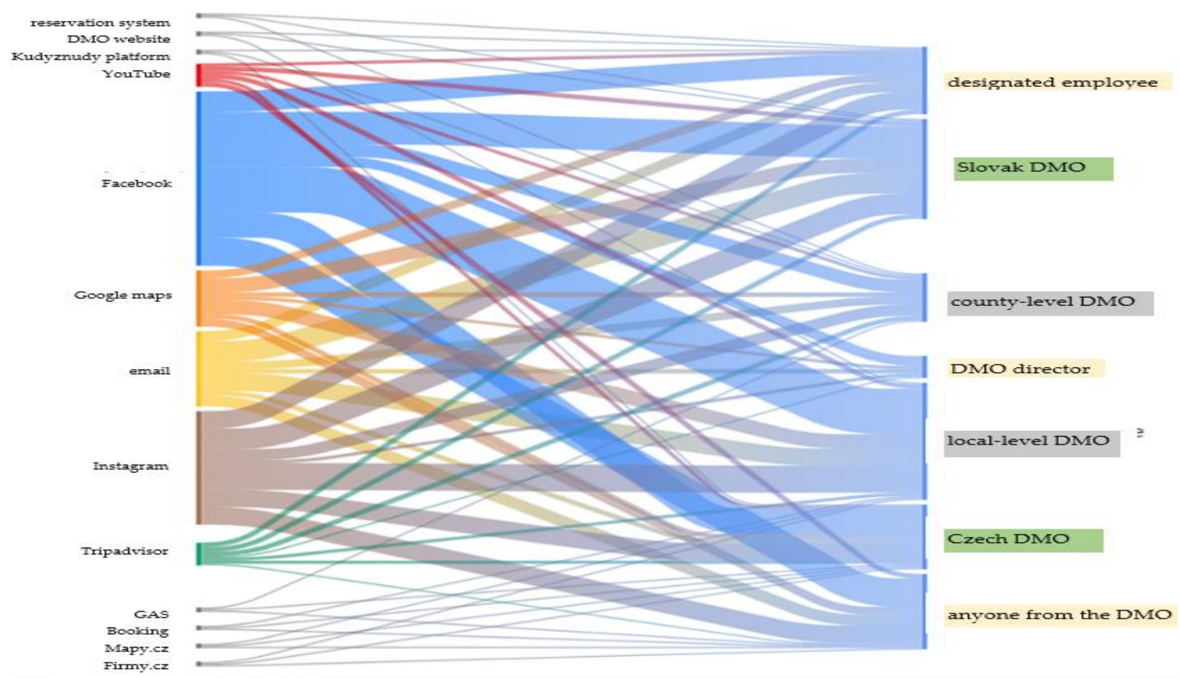
DMO representatives commonly view eWOM as an essential evaluation of their efforts, solutions, and daily operations from the perspective of visitors. Positive eWOM not only validates the significance of their work but also acts as beneficial public relations for both the destination and the organization. Conversely, negative eWOM enables DMOs to quickly identify and rectify any issues within the destination.

eWOM helps DMOs in understanding and identifying visitor needs, enhancing marketing communication, and enabling attractions and businesses within the destination to market themselves more effectively. This, in turn, attracts more visitors to the destination. It also aids in improving communication with tourism entrepreneurs within the destination, enhancing service quality, and in planning, creating, developing, and implementing new products. Moreover, eWOM contributes to the refinement, innovation, and quality enhancement of existing products, planning for future seasons, development of infrastructure, updates on websites or social networks, changes within the destination, strategy development for future years, and the overall enhancement of the organization's activities.

About 80% of the surveyed DMOs actively monitor eWOM regarding their destination, while 70% also track eWOM related to businesses and tourist attractions within the destination. This monitoring occurs at varying intervals, with most DMOs conducting it daily or regularly. Regional DMOs, particularly those in the Czech Republic, allocate more time to this activity. DMOs generally monitor eWOM about specific entities within the destination less frequently, occasionally, or in connection with particular initiatives like media campaigns, the development of new products, or media familiarization tours. Those DMOs not engaged in regular eWOM monitoring recognize its importance but often point to limitations in personnel and time as barriers.

DMOs usually pay more attention to the negative aspects of eWOM than its positive features, especially concerning tourism entities within the destination. When reviewing eWOM, they note specific details about the business or attraction being discussed, focusing on identifying the primary concerns. Their analysis of eWOM centers on objective aspects that can be addressed or improved through their intervention. They also evaluate the accuracy and precision of the information in the reviews, considering their own knowledge of the entity involved. Further, they collect additional information directly from the entity mentioned by visitors.

Figure 1. eWOM media through which DMOs search for eWOM about the destination



Source: Atlas.ti output.

The insights gained from these reviews are then integrated into action plans aimed at positive change, such as finding solutions or methods for improvement. DMOs also pay attention to responses to negative eWOM, as these shape the overall perception of the entity and can influence other visitors' decisions to visit. It is crucial for DMOs to respond to eWOM in a composed, courteous, and humble manner. They particularly monitor eWOM about businesses when hosting specific individuals, like journalists or bloggers, who are on familiarization trips to the tourist location, and use eWOM to verify information about attractions during trip planning.

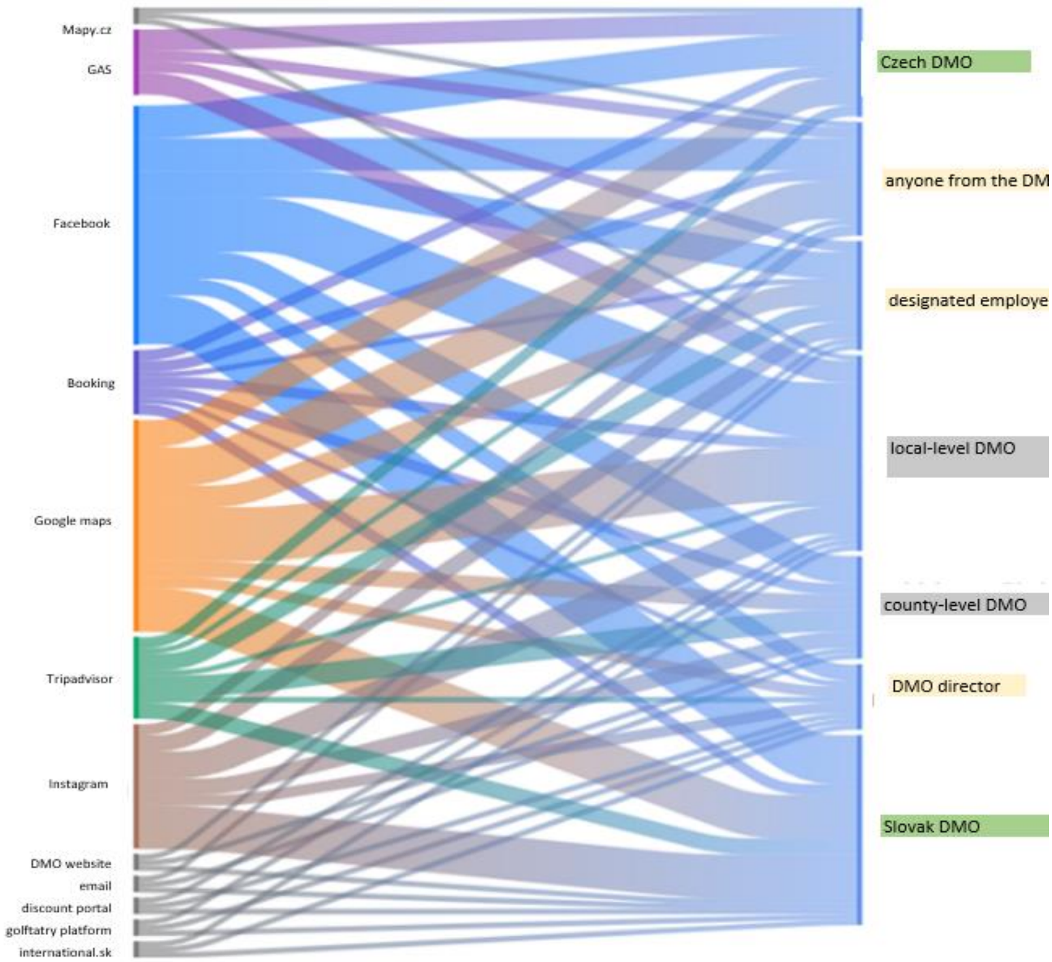
Regarding the tools used for eWOM collection, just over 10% of the DMOs surveyed employ specialized software, which includes systems like the Good Analytical System, SupportBox, and Bolder.

DMOs from both countries consistently monitor eWOM about tourism destinations on social media platforms such as Facebook, Instagram, YouTube, GoogleMaps, and TripAdvisor, as well as through email. In Slovakia, DMOs also seek eWOM on their own websites and through reservation systems, while in the Czech Republic, the range of eWOM sources from the perspective of DMOs is more diverse (Booking, Kudyznudy, GAS, mapy.cz, firmy.cz).

Certain differences also exist in terms of the level at DMO operates (local/county level) and the specialization of its employees in the context of eWOM (Figure 1).

Czech DMOs primarily monitor eWOM about entities operating within a destination mainly on internet platforms like Facebook and Google maps. Slovak DMOs most frequently choose Facebook, Instagram, and Google maps. While county-level DMOs predominantly use Facebook and Tripadvisor, local organizations tend to track eWOM about the destination they represent primarily on Facebook, Instagram, and Google maps. Employee specialization does not play a significant role in this context (Figure 2).

Figure 2. eWOM media through which DMOs search for eWOM about businesses and attractions within destination



Source: Atlas.ti output.

DMOs in both Slovakia and the Czech Republic use social networks, including Facebook and Instagram, to encourage destination visitors to generate eWOM. They engage visitors by organizing contests or posing questions in their social media posts. Furthermore, Slovak DMOs also leverage their own websites and direct personal interactions with visitors as additional methods to stimulate eWOM. They employ tactics such as making specific requests, issuing calls to action, and conducting surveys to motivate visitor participation in eWOM activities.

Nine out of ten DMOs surveyed report that they actively respond to eWOM provided by visitors. A quarter of these DMOs prioritize responding to negative eWOM over positive eWOM, considering it more critical. However, the majority do not distinguish between positive and negative eWOM, indicating a commitment to address all feedback, whether it be positive remarks, complaints, or suggestions for improvement. There is one DMO that limits its eWOM responses to direct inquiries and explicitly formulated requests.

For positive eWOM, DMOs typically respond in a standard fashion, often expressing gratitude or at least acknowledging the feedback on social networks. In contrast, negative eWOM undergoes an initial evaluation and detailed analysis, with an effort to verify the issues raised. This leads to a more extensive response, where DMOs aim to provide detailed explanations, focusing on factual and emotion-free communication, and sometimes include apologies. They may also offer direct contact options, such as phone or email, to the individual providing the eWOM. Additionally, some DMOs address negative eWOM with compensatory actions, like offering discounts or free admission to an attraction they manage. The most common platforms for eWOM responses are social networks like Facebook and Instagram, but email, Google Maps, and YouTube are also frequently used.

3.2. eWOM Content Pertaining to the Examined Destinations

The content of eWOM regarding tourism destinations managed by the examined 46 DMOs is investigated on destination websites, Google Maps, and Facebook, as these platforms were identified as the most preferred eWOM media from the perspective of potential visitors in the context of Slovakia and the Czech Republic (Medeková and Pompurová, 2023).

a) Destinations Websites

On the websites of the destinations, former, potential, and current visitors have the capability to provide eWOM feedback via email, contact forms, or chat tools (Table 1). However, only three of the 46 DMOs offer the option to rate the attractions of the tourism destination on their websites. The DMOs for the Trenčín Region and the Slovácko Region provide a rating option solely in the form of stars. On the website for the DMO Czech Switzerland, visitors must register before they can post comments on tourist attractions, and accommodations can be rated on a numerical scale from 10 (highest rating) to 0 (lowest rating), but verbal expression is not permitted. In relation to accommodations, visitors can rate aspects such as staff, services, cleanliness, comfort, and the value for money ratio. The DMO Banská Bystrica Region Tourism offers visitors the opportunity to provide eWOM through the booking system.

Table 1. The Potential of eWOM Provision through Websites of DMOs Presented in Absolute Figures

eWOM possibilities	Slovak DMOs	Czech DMOs	Total
contact form	12	3	15
email	25	21	45
chat tool	1	0	1
rating	1	2	2
booking system	1	0	1

Source: own.

A noted constraint is that the websites of analyzed DMOs do not provide visitors with the capability to publicly express their experiences at the tourism destinations, including attractions and tourism-related businesses, in a narrative form. Specifically, for the DMO of Czech Switzerland, it is feasible to submit a review for lodging facilities that becomes publicly visible, yet the provision of narrative feedback is precluded. Pertaining to the feedback on tourist attractions, submission of comments is contingent upon user registration on the platform; nevertheless, such comments are not disclosed to the general public. Moreover, should a visitor register via the e-commerce feature available on the website, they are able to participate in discussions, which, regrettably, remain inaccessible to the wider audience.

b) Google Maps

On Google Maps, visitors have the capability to furnish reviews. Out of the examined 46 DMOs, 63% maintain a corporate account on this social media platform. Furthermore, among those with a corporate account, 62.1% also possess reviews. The average number of contributed evaluations is low (20), with 74.3% of all ratings being the most positive (5*), 17% rated 4*, 5% 3*, 1.1% 2*, and 2.6% only 1*. On average, each DMO has a rating of 4.6 on a scale of 1-5.

Only 48.3% of the surveyed DMOs have online reviews with verbal ratings, with an average of only 7 reviews with verbal ratings per DMO. This suggests that DMOs are underutilizing this tool and are not sufficiently motivating visitors to leave reviews on Google Maps. Of the verbal ratings, 84.7% are positive, 9% are neutral, and 7.3% are negative. Positive reviews typically emphasize visitors' impressions of the tourism destination, sightseeing opportunities, tourist attractions, tour guides, organized events, exhibitions, town squares, natural attractions, tourist information centers, and the activities of the DMO, or provide brief assessments of their visit. Visitors also offer recommendations on how DMOs could enhance their websites. Neutral reviews may include descriptions of where electric bicycles can be rented at the tourism destination or insights into the creation of the tourism destination. Negative reviews express dissatisfaction with the performance of the DMOs and the overall experience of visiting the tourism destination.

c) Facebook

The social media platform Facebook facilitates visitors to tourist destinations in delivering eWOM via various means such as reviews, direct messages, mentions, and comments on posts. Each of the DMOs under study maintains an official corporate presence on Facebook. Among the surveyed DMOs, as many as 84.8% provide the functionality to submit reviews on their corporate Facebook accounts; however, only 69.2% of them exhibit pertinent reviews. On average, each DMO receives only 28 reviews, of which 24 are positive, 3.4 are neutral, and only 0.6 are negative. Only 36.5% of all visitor reviews include verbal ratings, which are essential in negative reviews.

Another tool for providing eWOM through social media is mentions, where visitors can share their experiences on their private user profiles through posts that must be public. However, visitors utilize this option to a lesser extent, as it is primarily used by DMOs or tourism businesses for marketing communication. Only 30.4% of DMOs have mentioned, with a total of 27 mentions, of which only positive (37%) and neutral (63%) in nature.

Visitors to destinations can provide eWOM on Facebook through comments on posts as well. As many as 97.8% of the examined DMOs have comments on their posts. Over the course of 12 consecutive months analyzed, we observed an average of 301 posts per DMO on the social network (almost one per day), with 21.1% of these posts being commented on by users of the social network. On average, each DMO received up to 936 reactions in the form of comments per year, indicating that one post, if commented on, received 10 comments.

The majority of DMO posts have only a small volume of comments (1-5). Posts with a comment volume exceeding 50 are primarily focused on contests, calls for photo submissions, such as from visitors' favorite spots in the tourism destination, calls for photos for the DMO's calendar, posts about festivals organized in destinations, etc.

In Slovak DMOs, Facebook posts gradually increased during the observed period, reaching their peak in June, whereas Czech DMOs consistently added posts throughout the months. Regarding the number of commented posts, no significant increase or decrease was observed. However, a significant difference is noted in the comments from visitors on these posts, with the highest number of comments for Slovak DMOs occurring in January and March, and for Czech DMOs in May and January. The increase in the number of comments is mainly associated with the topic of the posts; for instance, in Czech DMOs, the high number of comments in May is related to a post about an actor's birthday, where all visitors offer congratulations, indicating that while DMOs may receive numerous comments, they are not relevant in terms of eWOM about the destination. In January, Czech DMOs formulated posts as contests or questions, similarly to Slovak DMOs, where the most commented posts in January and March were formulated as contests, questions, and challenges.

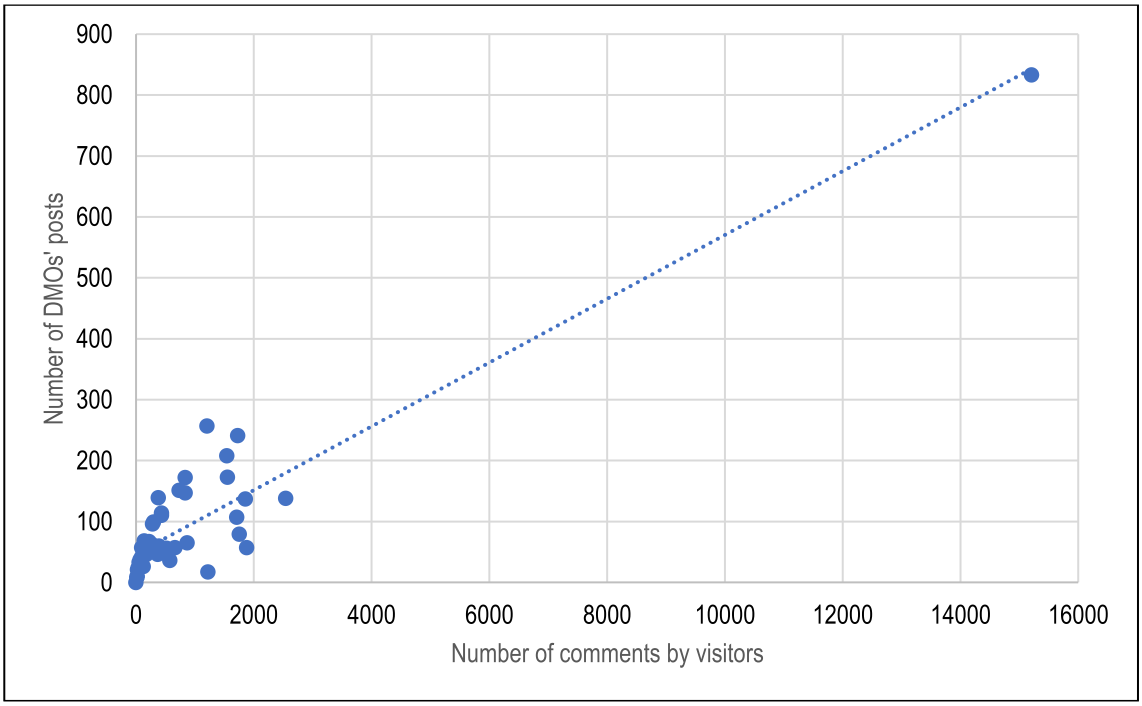
Table 2. Comments on individual posts published on the corporate accounts of selected DMOs

Focus of posts	Slovak DMOs		Czech DMOs	
	Abs.	%	Abs.	%
tourist destinations	793	5.5	3232	11.6
transport facilities	200	1.4	309	1.1
geological features	7	0.0	6	0.0
cultural heritage exploration games	7	0.0	4	0.0
natural heritage exploration games	6	0.0	17	0.0
cultural-historical sites	709	4.9	5211	18.8

Focus of posts	Slovak DMOs		Czech DMOs	
	Abs.	%	Abs.	%
cultural-enlightenment facilities	194	1.6	992	3.6
spa and wellness facilities	48	0.3	61	0.2
summer sports and recreational facilities	1083	7.5	3057	11.0
local producers	40	0.3	192	0.7
shopping centers	1	0.0	54	0.2
hospitality facilities	228	1.6	255	0.9
industrial sites	0	0.0	37	0.1
thematic parks	16	0.1	63	0.2
thematic trails	161	1.1	184	0.7
tourist information center	5	0.0	19	0.0
accommodation facilities	39	0.3	108	0.4
winter sports and recreational facilities	228	1.6	215	0.8
organized events	904	6.3	2967	10.7
special events	64	0.5	87	0.3
destination presentation	193	1.3	1314	4.7
visitor contributions	2	0.0	44	0.2
other	359	2.5	3487	12.6
questions	238	1.7	3082	11.1
contests	7280	50.7	2594	9.3
challenges	1557	10.8	181	0.7
Total	14,362	100.0	27,772	100.0

Source: own.

Figure 3. The correlation between the posting activities DMOs and the addition of comments by visitors



Source: SPSS output.

The focus of posts that visitors or social media users commented on was divided into several categories (Table 2), with contests receiving the most reactions for Slovak DMOs, and posts focusing on cultural and historical sites for Czech DMOs.

Based on the Pearson correlation coefficient (0.0556; p-value = 0.001), a significant positive correlation between the posting activities of DMOs and the addition of comments by visitors is concluded (Figure 3).

4. Discussions

Recommendations for DMOs managers, derived from demand analysis studies by several authors (*e.g.*, Albarq, 2014; Almeida-Santana and Moreno-Gil, 2017; Armutcu *et al.* 2023; Ismail *et al.* 2023), have been provided, yet only a few have examined this issue from the perspective of DMOs. Authors such as Hays *et al.* (2012), Mariani *et al.* (2016), Önder *et al.* (2019), Molina *et al.* (2020), and Confetto *et al.* (2023) tend to focus on analyzing corporate accounts of DMOs on social media platforms like Facebook and Twitter. Their analyses mainly concentrate on the predefined 'like' emoticon, aiming to predict tourism destination visitation rates, understand user reactions based on the form and content of posts, process and evaluate the content of fictitious posts and comments by regular users using eye-tracking methods, or focus on the use of social media by DMOs, including partial observation of user activity. Kushcheva (2022) is unique in directly examining DMOs' attitudes towards eWOM, focusing on monitoring and managing their online reputation. However, her research sample consists of only three DMOs, rendering it insignificant.

Numerous authors (*e.g.*, Doosti *et al.* 2016; Wang *et al.* 2017; Labanauskaitė *et al.* 2020; Confetto *et al.* 2023) agree that DMOs should encourage visitors to provide eWOM. According to Confetto *et al.* (2023), DMOs do not proactively work to motivate visitors, instead relying on users' spontaneous activity for content creation on social media, resulting in posts aimed solely at marketing communication of destinations, which could theoretically engage social media users. However, findings from in-depth interviews in Slovakia and the Czech Republic indicate that the examined DMOs do encourage visitors to provide eWOM, especially through Facebook, using contests, challenges, questions, requests, and discounts. Yet, an analysis of corporate accounts on Facebook reveals that 92.7% of posts focus on promoting the destination and its entities, with only 7.3% of posts being interactive, aligning with Hays *et al.* (2012), who found that 88.2% of posts by selected national DMOs on Facebook and Twitter were not interactive. Confetto *et al.* (2023) suggest that DMOs should create more engaging content, such as quizzes and contests, to encourage eWOM, as contests have the highest comment rate (23.4%). This is supported by Hays *et al.* (2012), Munar and Jacobsen (2014), and Mariani *et al.* (2016), who found that interactive posts receive more responses from social media users than purely promotional posts. Mariani *et al.* (2016) suggest that social media offers a space for communication between visitors themselves or between the organization and visitors, recommending that DMOs post fewer social media posts due to time constraints. Users can absorb only a certain amount of content per day or week and tend to consider only the latest content, which might lead to missing out on content if there are too many posts. This finding is contradicted by our results, which show a strong direct correlation between the number of posts by DMOs and user comments, suggesting that more posts by DMOs result in greater feedback from visitors.

Italian DMOs tend to post most frequently in May, July, and September, with the lowest activity in April and August. On the demand side, engagement is highest in January, then significantly drops in February and gradually decreases until May, begins to rise again from May, reaching a relative peak in July, and then falls again in the autumn, presumably due to seasonality (Mariani *et al.* 2016). For Slovak DMOs, the posting frequency increases or decreases according to the season, with the highest number of posts in June. Czech DMOs do not show significant differences in posting frequency on Facebook, striving to post evenly throughout the year, with only a slight decrease observed in January. Regarding demand, no significant difference in the number of commented posts was observed, similar to Mariani *et al.* (2016), but a difference in the number of comments was noted, with Slovak DMOs receiving the most comments in January and March, followed by a significant drop and a gradual increase until October. For Czech DMOs, the highest engagement was observed in January and May, and the lowest in December. The number of comments in these cases might be influenced by interactive posts.

Three selected Finnish DMOs were found to gather eWOM about the tourism destination from social media platforms like Google, TripAdvisor, Booking, Facebook, Instagram, through email, or a virtual community focused on domestic tourism (Kushcheva, 2022). Slovak and Czech DMOs mainly monitor eWOM on social media platforms such as Facebook, Instagram, Google, and through email, partially aligning with the reality of Finnish DMOs.

Only Czech DMOs in our research sample were found to use software related to eWOM, specifically the Good Analytical System and a combination of SupportBox and Bolder. Kushcheva (2022) claims that selected Finnish DMOs use affordable and reliable systems for online reputation monitoring, tracking sentiment, the so-called ‘net promoter score’ determining visitor loyalty, and monitoring visitation based on mentions, etc. However, she does not provide specific examples of systems, so we cannot compare these results with ours or obtain best practice examples.

Nechoud *et al.* (2021) emphasize that not only analyzing eWOM from visitors is critical but also DMO managers' responses to eWOM, a point also made by Gu, Ye (2014), Xie *et al.* (2014), Min *et al.* (2015), and Phillips *et al.* (2015), who, although not focused on tourism destinations, found their findings applicable to tourism destination management. By responding to eWOM, managers strengthen the relationship between themselves and visitors, affirming their importance and highlighting their value (Nechoud *et al.* 2021). Responses should not duplicate generic answers but should be empathetic, personalized, and timely (Gu, Ye, 2014; Min *et al.* 2015), and include paraphrasing statements of eWOM, as even a small gesture of active listening by managers can affect the satisfaction of potential visitors (Min *et al.* 2015). According to Kushcheva (2022), representatives of Finnish DMos strive to respond or react positively to all relevant messages and comments, as well as any feedback they may receive. However, she does not specify on which social media platforms managers respond to eWOM. Most Slovak and Czech DMOs, like Finnish ones, do not differentiate the nature of eWOM but have more detailed procedures for negative eWOM than for positive. Responses to eWOM are mainly through Facebook, Instagram, and email.

Phillips *et al.* (2015) argue that tourism entities should be present on as many social media platforms as possible, as eWOM will continue to be at the forefront of visitors' decision-making in tourism. Slovak DMOs primarily use Facebook, Instagram, GoogleMaps, and to a lesser extent YouTube, but visitors can also contact them through email, contact forms, and chat tools, which are not visible to other visitors. Czech DMOs use Facebook, Instagram, the websites Kudyznudy and Firmy.cz, and email.

Selected Finnish DMOs have an employee responsible for managing eWOM, although this is not their only job role (Kushcheva, 2022), similar to Slovak and Czech DMOs, which have designated employees for managing eWOM. However, this varies individually, and sometimes the entire DMO, the director, or external workers are responsible for eWOM management.

To date, no authors have investigated DMOs' attitudes towards eWOM except for Kushcheva (2022), who had a negligible participant sample (3). The majority (79.3%) of Slovak and Czech DMOs monitor eWOM focused on the destination. DMOs that do not monitor eWOM due to personnel and time reasons consider it important, as it represents a routine evaluation of the efforts, solutions, and daily work of tourism management organizations by visitors. This implies the importance of addressing eWOM not only at the level of businesses and attractions in tourism but also at the level of tourism destinations.

This study has several limitations, primarily its geographical focus on two Central European countries, chosen due to the authors' knowledge of the market and language. Another limitation is the lack of exploration of false eWOM, as the authors did not investigate it for fear that DMO representatives would not be willing to answer honestly, which could negatively affect the atmosphere of in-depth interviews and responses to other questions.

From the results of the study, several implications emerge. DMOs should undoubtedly make greater use of their own websites as an effective and easily manageable eWOM channel, including in relation to service providers in the area. DMOs should motivate visitors to the destination to concentrate their eWOM in a few places, making the effect of positive eWOM more significant. DMOs should have clearly defined in their organizational structure which employees are responsible for monitoring and managing eWOM, and the rules for managing eWOM should be clearly specified.

Conclusions and Further Research

Destination management organizations are facing new challenges, including increasing interest in eWOM among visitors to tourism destinations. Although existing studies partially investigate this eWOM phenomenon within the management of tourism destinations, it can be concluded that this area reins largely unexplored. This lack of scientific interest can be attributed mainly to the fact that the academic sphere began to pay attention to the issue only recently. At the same time, no previous study appears to have looked at eWOM from the management perspective of tourism organizations, indicating gap in current research. This study has illuminated the pivotal role of eWOM in shaping tourists' decision-making processes, underscoring its significance for DMOs.

In the realm of DMOs, a substantial proportion, approximately 80%, actively engage in the monitoring of eWOM to meticulously manage the image of their destinations, with a particular focus on addressing negative feedback to enhance service quality and visitor experiences. This engagement is manifested through the assignment of eWOM management tasks to various organizational roles, from comprehensive involvement by all employees as time permits to specific responsibilities held by directors and marketing personnel. Furthermore, the data reveals a proactive stance by DMOs towards eWOM, with a notable majority, nine out of ten, actively responding to visitor feedback. This includes a strategic emphasis on addressing negative eWOM, highlighting the prioritization of maintaining a positive destination image.

On the contrary, the analysis of eWOM content on destination websites, Google Maps, and Facebook presents a nuanced view. It was observed that a mere fraction of DMOs provide visitors with the capability to rate attractions on their official websites, with an even smaller number allowing for narrative feedback on visitor experiences, thus constraining the public expression of visitor sentiments. In the context of Google Maps, although a significant number of DMOs maintain corporate accounts with an average commendable rating of 4.6 out of 5, the engagement in terms of verbal reviews remains minimal, indicating a potential underutilization of this platform for eWOM management. Conversely, Facebook emerges as a more vibrant platform for DMO engagement, with all surveyed DMOs maintaining an official presence and the majority facilitating review submissions. The average number of reviews per DMO on this platform stands at 28, predominantly positive, with user comments mainly centered around contests and photo submission calls.

This juxtaposition of findings from interviews and eWOM content analysis underscores a divergence between the acknowledged significance of eWOM by DMOs and the actual levels of engagement on platforms such as Google Maps and destination websites. While DMOs demonstrate a proactive approach to managing and responding to eWOM, particularly on social media platforms like Facebook, the limited narrative feedback and review engagement on other platforms suggest a potential avenue for enhancing the management of destination image and visitor experiences through more robust eWOM engagement strategies.

Future research should delve deeper into the longitudinal impacts of eWOM on destination branding and visitor loyalty, exploring the evolving dynamics of digital communication channels. Comparative studies across different geographic regions and cultural contexts could shed light on the universal and unique aspects of eWOM in tourism management. Additionally, investigating the role of emerging technologies, such as artificial intelligence and machine learning, in automating eWOM analysis and response strategies could offer valuable insights into the future of destination management practices.

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Credit Authorship Contribution Statement

Kristína Medeková: conceptualized the project, conducted investigations, developed methodologies, administered the project, performed formal analyses, drafted the original manuscript, validated the findings, participated in review and editing, and visualized the results.

Kristína Pompurová: played a significant role in methodology, the creation of the original draft, and contributed to the subsequent stages of writing, review, editing, and visualization.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Declaration of Use of Generative AI and AI-assisted Technologies

The authors declare that they have not used generative AI and AI-assisted technologies during the preparation of this work.

References

[1] Abubakar, A. Mohammed, Mustafa Ilkan, Raad Meshall Al-Tal, and Kayode Kolawole Eluwole (2017). eWOM, revisit intention, destination trust and gender. *Journal of Hospitality and Tourism Management*, 31: 220-27, DOI: https://doi.org/10.1016/j.jhtm.2016.12.005

[2] Albarq, Abbas N. (2014). Measuring the Impacts of Online Word-of-Mouth on Tourists' Attitude and Intentions to Visit Jordan: An Empirical Study. *International Business Research*, 7(1): 14-22. DOI:https://doi.org/10.5539/ibr.v7n1p14

[3] Almeida-Santana, Arminda, and Sergio Moreno-Gil (2017). New trends in information search and their influence on destination loyalty: Digital destinations and relationship marketing. *Journal of Destination Marketing and Management,* 6(2): 150-161. DOI: http://dx.doi.org/10.1016/j.jdmm.2017.02.003

[4] Armutcu, Bariş, Ahmet Tan, Mary Amponsah, Subhadarsini Parida, and Haywantee Ramkissoon (2023). Tourist behavior: The role of digital marketing and social media. *Acta Psychologica*, 240: 1-15. DOI:https://doi.org/10.1016/j.actpsy.2023.104025

[5] Auliya, Zakky Fahma, and Imanda Firmantyas Purti Pertiwi (2019). The Influence of Electronic Word of Mouth (E-WOM) And Travel Motivation toward the Interest in Visiting Lombok, Gender as a Mediator. *Inferensi,* 13(2): 201-18. DOI: https://doi.org/10.18326/infsl3.v13i2.201-218

[6] Baggio, Rodolfo, and Miriam Scaglione (2018). Strategic Visitor Flows and destination management. *Information Technology and Tourism*, 18: 29-42. DOI: https://doi.org/10.1007/s40558-017-0096-1

[7] Bigné, Enrique, and Alain Decrop (2019). Paradoxes of Postmodern Tourists and Innovation in Tourism Marketing. In Fayos-Solà, Eduardo, and Chris Cooper (eds.), 2019. The Future of Tourism: Innovation and Sustainability. Springer. DOI: https://doi.org/10.1007/978-3-319-89941-1_7

[8] Božić, Sanja, and Tamara Jovanović (2017). Gender, Age, and Education Effects on Travel-Related Behavior: Reports on Facebook. In Decrop, Alain, and Arch G. Woodside (eds.). Consumer Behavior in Tourism and Hospitality Research. Emerald Group Publishing. DOI: 10.1108/S1871-317320170000013004

[9] Chang, Jung-Hua, and Shan-Huei Wang (2019). Different levels of destination expectation: The effects of online advertising and electronic word-of-mouth. *Telematics and Informatics,* 36: 27-38. DOI:https://doi.org/10.1016/j.tele.2018.11.004

[10] Confetto, Maria Giovanna, Francesca Conte, Maria Palazzo, and Alfonso Siano (2023). Digital destination branding: A framework to define and assess European DMOs practices. *Journal of Destination Marketing and Management,* 30: 1-15. DOI: https://doi.org/10.1016/j.jdmm.2023.100804

[11] DeJonckheere, Melissa, and Lisa M Vaughn (2019). Semistructured interviewing in primary care research: a balance of relationship and rigour. *Family Medicine and Community Health,* 7(2): 1-8, DOI:http://dx.doi.org/10.1136/fmch-2018-000057

[12] Dexeus, Carlos Romero (2019). The Deeping Effects of the Digital Revolution. In Fayos-Solà, Eduardo, and Chris Cooper (eds.), 2019. The Future of Tourism: Innovation and Sustainability. Springer. DOI:https://doi.org/10.1007/978-3-319-89941-1_3

[13] Doosti, Shabnam, Mohammad Reza Jalilvand, Ali Asadi, Javad Khazaei Pool, and Parisa Mehrani Adl (2016). Analyzing the influence of electronic word of mouth on visit intention: the mediating role of tourists' attitude and city image. *International Journal of Tourism Cities*, 2(2). DOI:http://dx.doi.org/10.1108/IJTC-12-2015-0031

[14] Fakharyan, Meysam, Mohammad Reza Jalilvand, Mehdi Elyasi, and Mehdi Mohammadi (2012). The influence of online word of mouth communications on tourists' attitudes toward Islamic destinations and travel intention: Evidence from Iran. *African Journal of Business Management,* 6(38): 10381-8. DOI:10.5897/AJBM12.628

[15] Farsari, Ioanna (2023). Exploring the nexus between sustainable tourism governance, resilience and complexity research. *Tourism Recreation Research*, 48(3): 353-67. DOI: 10.1080/02508281.2021.1922828

[16] Fyall, Alan, and Brian Garrod (2005). Tourism marketing. A collaborative approach. Channel View Publications.

[17] Gajdošík, Tomáš, and Zuzana Gajdošíková (2021). DMOs as Data Mining Organizations? Reflection over the Role of DMOs in Smart Tourism Destinations. In Silhavy, Radek (ed.), 2021. Informatics and Cybernetics in Intelligent Systems. Springer. DOI: https://doi.org/10.1007/978-3-030-77448-6_28

[18] Gao, Jialiang *et al.* (2023). Mining tourist preferences and decision support via tourism-oriented knowledge graph. *Information Processing and Management*, 61: 1-24. DOI: https://doi.org/10.1016/j.ipm.2023.103523

[19] García-Carrión, Beatriz, Francisco Muñoz-Leiva, Salvador Del Barrio-García, and Lucia Porcu (2024). The effect of online message congruence, destination-positioning, and emojis on user's cognitive effort and affective evaluation. *Journal of Destination Marketing and Management*, 31: 1-13. DOI:https://doi.org/10.1016/j.jdmm.2023.100842

[20] Giglio, Simona, Francesca Bertacchini, Eleonora Bilotta, and Pietro Pantano (2019). Using social media to identify tourism attractiveness in six Italian cities. *Tourism Management*, 72: 306-12, DOI:https://doi.org/10.1016/j.tourman.2018.12.007

[21] Given, Lisa M. (2008). The SAGE Encyclopedia of Qualitative Research Methods. SAGE Publications.

[22] Gosal, Jaskaran, Erna Andajani, and Setianing Rahayu (2020). The effect of e-WOM on Travel Intention, Travel Decision, City Image, and Attitude to Visit a Tourism City. Paper presented at the 17th International Symposium on Management, February 19-21, in Vung Tau City, Vietnam. DOI: 10.2991/aebmr.k.200127.053

[23] Gu, Bin, and Ye Qiang (2014). First Step in Social Media: Measuring the Influence of Online Management Responses on Customer Satisfaction. *Production and Operation Management*, 23(4): 570-82, DOI:https://doi.org/10.1111/poms.12043

[24] Hays, Stephanie, Stephen John Page, and Dimitrios Buhalis (2012). Social media as a destination marketing tool: its use by national tourism organization. *Current Issues in Tourism*: 1-29. DOI:http://dx.doi.org/10.1080/13683500.2012.662215

[25] Hernández-Méndez, Janet, Francisco Muñoz-Leiva, and Juan Sánchez-Fernández (2013). The influence of e-word-of-mouth on travel decision-making: consumer profiles. *Current Issues in Tourism,* 18(11): 1001-21, DOI:http://dx.doi.org/10.1080/13683500.2013.802764

[26] Hillman, Wendy (2022). Interviews in Tourism Research. In Buhalis, Dimitrios (ed.), 2022. Encyclopedia of Tourism Management and Marketing. Edward Elgar Publishing.

[27] Hoang, Sinh Duc, Sandeep Kumar Dey, Vy Thi Tuong Nguyen, and Zuzana Tučková (2022). A Study on the Positive Impact of eWOM in Eco-Tourism Destinations of Vietnam. Paper presented at the ITCR 2022 - Proceedings of the 5th International Conference on Tourism Research, May 19-20, Porto, Portugal. DOI:https://doi.org/10.34190/ictr.15.1.134

[28] Ismail, An Nur Nabila, Nik Moohamad Shamim Nik Mohd Zainordin, and Yuhanis Abdul Aziz (2023). The Impact of Destination Personality and Electronic Word-of-Mouth on Tourists Destination Choice. *International Journal of Economics and Management*, 17(2): 197-209. DOI: http://doi.org/10.47836/ijeam.17.2.04

[29] Jalilvand, Mohammad Reza, and Neda Samiei (2012). The impact of electronic word of mouth on a tourism destination choice: Testing the theory of planned behavior (TPB). *Internet Research,* 22(5): 591-612. DOI:https://doi.org/10.1108/10662241211271563

[30] Jinyan, Yu, Zhang Yingnan, Zhang Yahui, and Jiang Yixuan (2023). Spatial and Temporal Changes and Influencing Factors of Tourism Resilience in China's Provinces under the Impact of COVID-19. *Journal of Resources and Ecology*, 14(2): 217-229. DOI: https://doi.org/10.5814/j.issn.1674-764x.2023.02.001

[31] Kushcheva, Natalia (2022). Monitoring Online Reputation of Tourists Destinations in Finland. Paper presented at the 16th International Technology, Education, and Development Conference, March 7-9, in Valencia, Spain. DOI: https://doi.org/10.21125/inted.2022.2451

[32] Labanauskaité, Daiva, Mariantonietta Fiore, and Rimantas Stašys (2020). Use of E-marketing tools as communication management in the tourism industry. Tourism Management Perspectives 34: 1-8, DOI:https://doi.org/10.1016/j.tmp.2020.100652

[33] Liu, Hongfei, Chanaka Jayawardhena, Sally Dibb, and Chatura Ranaweera (2019). Examining the trade-off between compensation and promptness in eWOM-triggered service recovery: A restorative justice perspective. *Tourism Management,* 75: 381-92. DOI: https://doi.org/10.1016/j.tourman.2019.05.008

[34] Lončarić, Dina, Ivana Ribarić, and Vlatka Farkaš (2016). The Role of Electronic Word-of-Mouth in Tourism Market. Paper presented at the 23rd Biennial International Congress: Tourism and Hospitality Industry 2016 Trends and Challenges, April 28-29, in Opatija, Croatia.

[35] Mariani, Marcello M., Marco Di Felice, Matteo Mura (2016). Facebook as a destination marketing tool: Evidence from Italian regional Destination Management Organizations. *Tourism Management*, 54: 321-43, DOI:http://dx.doi.org/10.1016/j.tourman.2015.12.008

[36] Melián-González, Santiago, Jacques Bulchand-Gidumal, and Beatriz González López-Valcárcel (2013). Online Customer Reviews on Hotels: As Participation Increases, Better Evaluation Is Obtained. *Cornell Hospitality Quarterly*, 54(3): 1-10. DOI: https://doi.org/10.1177/1938965513481498

[37] Medeková, Kristína, and Kristína Pompurová (2023). Searching for electronic word of mouth about tourism destinations by residents of the Slovak Republic. Paper presented at the 11th International scientific conference proceedings: Current trends in spa, hotel and tourism: tourism in times of dynamic changes in the environment, October 12, in Jelenia Góra, Poland.

[38] Min, Hyounae, Yumi Lim, and Vincent P. Magnini (2015). Factors Affecting Customer Satisfaction in Responses to Negative Online Hotel Reviews: The Impact of Empathy, Paraphrasing, and Speed. *Cornell Hospitality Quarterly*, 56(2): 223-31. DOI: http://dx.doi.org/10.1177/1938965514560014

[39] Molina, Arturo, Mar Gómez, Andrew Lyon, Evangelina Aranda, and Wilhelm Loibl (2020). That content to post? Evaluating the effectiveness of Facebook communications in destinations. *Journal of Destination Marketing and Management*, 18(1): 1-43. DOI: https://doi.org/10.1016/j.jdmm.2020.100498

[40] Monforte, Javier, and Joan Úbeda-Colomer (2021). Tinkering with the two-to-one interview: Reflections on the two interviewers in qualitative constructionist inquiry. *Methods in Psychology*, 5: 1-8. DOI:https://doi.org/10.1016/j.metip.2021.100082

[41] Munar, Ana María, and Jens Kr. Steen Jacobsen (2014). Motivations for sharing tourism experiences through social media. *Tourism Management,* 43: 46-54. DOI: http://dx.doi.org/10.1016/j.tourman.2014.01.012

[42] Mutaqin, Putra Deta, and Okki Trinanda (2019). The Influence of Electronic Word of Mouth Toward Destination Trust and Travel Intention on Sirandah Island in Padang City. *EcoGen* 2(2): 118-28. DOI:http://dx.doi.org/10.32877/eb.v1i3.60

[43] Nechoud, Lamia, Faouzi Ghidouche, and Hugues Seraphin (2021). The influence of eWOM credibility on visit intention: An integrative moderated mediation model. *Journal of Tourism, Heritage and Services Marketing,* 7(1): 54-63. DOI: http://dx.doi.org/10.5281/zenodo.4521314

[44] Niavis, Spyros, and Dimitrios Tsiotas (2019). Assessing the tourism performance of the Mediterranean coastal destinations: A combined efficiency and effectiveness approach. *Journal of Destination Marketing and Management*, 14: 1-14. DOI: https://doi.org/10.1016/j.jdmm.2019.100379

[45] Önder, Irem, Ulrich Gunter, and Stefan Gindl (2019). Utilizing Facebook Statistics in Tourism Demand Modeling and Destination Marketing. *Journal of Travel Research*, 59(2): 1-14. DOI:https://doi.org/10.1177/0047287519835969

[46] Phillips, Paul, Krystin Zigan, Maria Manuela Santos Silva, and Roland Schegg (2015). The interactive effects of online reviews on the determinants of Swiss hotel performance: A neural network analysis. Tourism Management, 50: 130-41. DOI: http://dx.doi.org/10.1016/j.tourman.2015.01.028

[47] Picken, Felicity (2018). The Interview in Tourism Research. In Hillman, Wendy, and Kylie Radel (eds.), 2018. Qualitative Methods in Tourism Research. Channel View. DOI: https://doi.org/10.21832/9781845416416-014

[48] Prayogo, Rangga Restu, and Arinta Kusumawardhani (2016). Examining Relationships of Destination Image, Service Quality, e-WOM, and Revisit Intention to Sabang Island, Indonesia. Asia-Pacific Management and Business Application, 5(2): 89-102. DOI: https://doi.org/10.21776/ub.apmba.2016.005.02.3

[49] Reinhold, Stephan, Pietro Beritelli, and Christian Laesser (2023). The 2022 consensus on advances in destination management. *Journal of Destination Marketing and Management*, 29: 1-8.DOI:https://doi.org/10.1016/j.jdmm.2023.100797

[50] Setiawan, Putu Y., Eka Afnan Troena, Armanu, and Noermijati (2014). The Effect of e-WOM on Destination Image, Satisfaction and Loyalty. *International Journal of Business and Management Invention,* 3(1): 22-9, https://repositori.unud.ac.id/protected/storage/upload/repositori/25118de419946eeb34240843f4dd6810.pdf

[51] Susilowati, Christin, and Dyah Sugandini (2018). Perceived Value, eWord-of-Mouth, Traditional Word-of-Mouth, and Perceived Quality to Destination Image of Vacation Tourists. *Review of Integrative Business and Economics Research*, 7(1): 312-21. Available at: http://buscompress.com/uploads/3/4/9/8/34980536/riber_7-s1_sp_s17-175_312-321.pdf

[52] Tapanainen, Tommi, Trung Kien Dao, and Thi Thanh Hai Nguyen (2021). Impacts of online word-of-mouth and personalities on intention to choose a destination. *Computers in Human Behavior,* 116: 1-14. DOI:https://doi.org/10.1016/j.chb.2020.106656

[53] van der Zee, Egbert, Dario Bertocchi, and Dominique Vanneste (2020). Distribution of tourists within urban heritage destinations: a hot spot/cold spot analysis of TripAdvisor data as support for destination management. *Current Issues in Tourism*, 30(1): 123-27. DOI:https://doi.org/10.1080/13683500.2018.1491955

[54] Vogt, Christine A., Kathleen L. Andereck, and Kim Pham (2020). Designing for quality of life and sustainability. *Annals of Tourism Research*, 83: 1-11. DOI: https://doi.org/10.1016/j.annals.2020.102963

[55] Wang, Saerom, Ksenia Kirillova, and Xinran Lehto (2017). Reconciling unsatisfying tourism experiences: Message type effectiveness and the role of counterfactual thinking. *Tourism Management,* 60: 233-43. DOI:https://psycnet.apa.org/doi/10.1016/j.tourman.2016.12.008

[56] Wiwekananda, I. Gusti Ngurah Ary, and Daniel Tumpal H. Aruan (2020). The Influence of Electronic Word-of-Mouth, Destination Image, Destination Familiarity and Attitude toward Destination on Travel Intention to Lombok. Paper presented at the 2nd International Conference of Business, Accounting and Economics, August 5-6, in Purwokerto, Indonesia. DOI: http://dx.doi.org/10.4108/eai.5-8-2020.2301094

[57] Xie, Karen L., Zili Zhang, and Ziqiong Zhang (2014). The business value of online consumer reviews and management response to hotel performance. *International Journal of Hospitality Management,* 43: 1-12. DOI:https://doi.org/10.1016/j.ijhm.2014.07.007

[58] Yan, Qiang, Simin Zhou, and Sipeng Wu (2018). The influences of tourists' emotions on the selection of electronic word of mouth platforms. *Tourism Management*, 66: 348-63. DOI:https://doi.org/10.1016/j.tourman.2017.12.015

[59] Zainal, Nur Thara Atikah, Amran Harun, and Jaratin Lily (2017). Examining the mediating effect of attitude toward electronic word-of-mouth (eWOM) on the relation between the trust in eWOM source and intention to follow eWOM among Malaysian travelers. *Asia Pacific Management Review,* 22(1): 35-44. DOI:http://dx.doi.org/10.1016/j.apmrv.2016.10.004

[60] Zainal-Abidin, Husna, Caroline Scarles, and Christine Lundberg (2023). The antecedents of digital collaboration through an enhanced digital platform for destination management: A micro-DMO perspective. *Tourism Management* 96. DOI: https://doi.org/10.1016/j.tourman.2022.104691

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Brand Marketing Strategies of Trade Enterprises on Social Media Platforms

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Abstract: Social media platforms are an important marketing tool for business promotion, in particular for increasing user engagement, coverage, awareness, and satisfaction. Marketing efficiency in social networks is significantly dependent on the choice and implementation of the brand strategy, which makes the studied theme relevant. The paper aims to study key factors of influence on the selection and implementation of SMM strategies. The study used statistical analysis methods, forecasting method, and comparative and descriptive methods. The results of the conducted study showed that the SMM market is rapidly developing, and this tendency is going to be preserved in the coming years. In particular, it is expected that the number of social network users will reach 5.85 billion people in 2027, while global advertising costs in social networks will amount to approximately 247.32 billion USD in the same year. The work has found exceeding advertising costs in social networks over the revenues from sales in the USA. This may be explained by the fact that marketing in social networks is, above all, oriented toward social objectives rather than an increase in sales volume or profit growth. Considering the conducted analysis, the approach to the formation of the stages of brand strategy on social media platforms with consideration of metrics systems was offered. The received results can be used by trade enterprises in the process of development of promotional campaigns in social networks.

Keywords: marketing strategy; social media platforms; social media marketing; advertising costs; promotion; engagement; coverage.

JEL Classification: M31; M38; D91.

Introduction

The development of Internet technologies has stipulated inevitable changes in companies' marketing activity. Social networks launched a new era of openness and communication (Mohamed *et al.* 2023), and later they became an important instrument of brand promotion, increasing their recognition, and public attraction (Lysa and Kulik 2022). Companies use different promotion strategies in social networks to attract the largest possible number of users to their community. Such strategies aim to achieve both financial objectives as sales and profit growth (Kumpu *et al.* 2021; Jiménez-Zarco *et al.* 2021), and non-financial objectives as subscribers engagement, useful content provision with the purpose of increasing knowledge about the brand, establishing communication with customers, which enables receiving feedback (Wawrowski and Otola 2020; Nurfarida and Sudarmiatin 2021; Xu *et al.* 2022).

Enterprises use different strategies on social media platforms (Chunikhina 2022; Shandrivska and Sokolov 2022; Cherniavska and Vyhivska 2023). Herewith, some marketing campaigns achieve their objectives, bringing benefits to their companies in the form of increasing the number of community subscribers, positive feedback, content sharing, profit increase, etc., while others fail (Wu *et al.* 2020). Brand uniqueness provides for the use of different strategies, often not resembling one another, but some main aspects should be considered in their development (Polanco-Diges and Debasa 2020; Chen *et al.* 2021). In particular, the transience of modern trends in marketing, technological development, and changes in the behaviour and preferences of consumers require constant market monitoring (Al-Ghamdi 2021; Rather 2021). Furthermore, the achievement of objectives of social media marketing (SMM) strategies is affected by some common factors related to the approach of strategy formulation, as well as factors, which do not depend on the company (Orji *et al.* 2020; Seo *et al.* 2020). Finally, strategy formulation requires the development of a clear methodological approach, which determines the key stages of the formulation and implementation of any SMM strategy. The especially important state is strategy evaluation with the use of the metrics system, which in turn requires proper substantiation and determination of indicators.

The paper aims to study key factors of influence on the selection and implementation of SMM strategies.

The tasks of the study are:

- to study the main statistics and objectives of marketing strategies on social media platforms;
- to characterize factors of influence on achieving the objectives of marketing strategies;
- to reveal the stages of SMM strategy development;
- to review main metrics and instruments.

An important asset of the research is the determination of factors influencing the achievement of the goals of marketing strategies. What is new in the study is the proposed generalized approach to strategy development and definition of key metrics, which can contribute to more consistent strategy formation and its evaluation.

1. Literature Review

Many studies are dedicated to the study of the efficiency, stages of formation and evaluation of SMM strategies. Many of them focus on the attempt to classify such strategies or define the most effective of them. Li *et al.* (2021) classify SMM strategies into four types according to their level of strategic maturity. Such strategies are social commerce strategy, social content strategy, social monitoring strategy, and social customer relationship management (social CRM) strategy.

Drummond *et al.* (2020) define eight key digital engagement strategies in SMM and fifteen tactics for the B2B segment. The researchers divide these strategies and tactical solutions into four level-defined marketing capabilities: connection - ability to orient and receive messages outside local networks, engagement - lies in quick messages exchange between active and future partners, coordination - provides synchronization of the activity and resource exchange between the partners, and collaboration, which considers joint resources creation and development of new activity types. Eid *et al.* (2020) also dedicate their work to the study of the SMM influence in the B2B segment (for small- and medium-sized enterprises). The authors' work reveals preconditions and results of SMM for small- and medium-sized enterprises, which conduct their international activity in the B2B sphere, and pay special attention to the influence of export indicators.

Jayasinghe (2021) pays special attention to the widely used SMM tool — the marketing strategy of influencer engagement. This strategy involves the engagement of an influential individual (celebrities, bloggers, vloggers, etc.) for product promotion, increasing recognition, and sales promotion. The researcher has characterized the main results brands can receive from influencer engagement in terms of key strategic areas.

Even though company representation on social media platforms has an undeniable positive effect on customer attraction and interaction with them, many studies underline the difficulty of objective evaluation of such an effect. Dolega *et al.* (2021) studied the influence of SMM on traffic on retail websites, orders, and sale volumes. The researchers indicate that SMM is an important method of production promotion and profit maximization. At the same time, the author notes that the actual influence of SMM as a marketing instrument is understudied. The researchers strive to fill the gap through the analysis of the data of online stores, which was conducted over one year and daily conducted different actions in social networks.

Lal *et al.* (2020) focus on the issue of calculation of such indicators as return on investments (ROI) in SMM. The researchers reveal the notion of 'return on investments' for a company that strives to determine the benefits of SMM, focusing mainly on non-material results. Silva *et al.* (2020) also dedicate their study to the issue of ROI calculation, defining this indicator as a measure of profitability. The researchers note that ROI is calculated as a correlation between profits from social media marketing and its costs. This work is mainly oriented on the evaluation of financial results of SMM implementation.

Yang *et al.* (2022) dedicate their work to the use of business analytics for SMM evaluation and optimisation of business decision-making processes. The researchers define this approach as social network analytics and note that this process goes beyond base monitoring and analysis of retweets. Analytics of social networks is above all oriented on the profound understanding of users. Zhang *et al.* (2022) note that analytics of social networks can be used to understand the preferences of users and contribute to service improvement. In turn, this provides possibilities for the improvement of product development and investments in marketing through proper solutions evaluation and method selection.

Studying the influence of an increasing SMM market for small- and medium-sized businesses, Malesev and Cherry (2021) confirmed an increase in the significance of this process in the studied segment. At the same time, the scientists determined deficiencies, due to which SMM does not have maximum efficiency. Such deficiencies involve imperfect analysis of the external environment, as well as a lack of investments and training, due to which planning and monitoring in SMM fail to achieve their objectives.

The conducted literature review found that the opinions of the researchers are divided concerning the determination of optimal methods of SMM strategies evaluation. Above all, the difference lies in the attention which in some works is focused on financial results, while in others – on non-material results. In turn, the objectives of SMM strategies evaluation are tightly related to strategic objectives in general. Therefore, it is necessary to determine priority strategic objectives within the context of SMM, factors affecting objectives' achievement, and finally indicators of strategy evaluation in the process of its implementation.

2. Methodology

2.1. Study Procedure

Three main stages may be defined in the presented study. In the first stage, the main statistical indicators and objectives of marketing strategies on social media platforms were studied. The conducted analysis enabled the detection of key market tendencies, which should be considered in the formulation of SMM strategies by modern trade enterprises.

In the second stage, factors of influence on achieving the objectives of SMM strategies were characterized. Such factors were detected also due to the comparison of indicators of advertising costs and Retail Social Commerce Sales (for the USA in 2022). Herewith, tendencies of indicators Share of Social Action in the USA by product segment and Top Social Media Marketing Challenges were considered in further determination of the factors of influence on the achievement of SMM strategies objectives.

The third stage reveals the main stages of SMM strategy formulation and contains a review of the main metrics and instruments. In this state, the approach to the determination of the stages of SMM strategy development with consideration of the system of its evaluation was offered. The evaluation system contained key metrics, which can be used in the analysis of SMM strategy efficiency. Special attention is given to the characteristics of the strategy of influencer engagement.

2.2. Sampling

Sampling for the study based on the data, available in open access on Statista resource (2024), as well as in analytical studies and reports (Shewale 2023; Marketing in a Post-Covid Era (The CMO Survay) 2022; Chang 2024). The data were selected based on their relevance to the theme of the study, and special attention was given to indicators, which potentially have the highest influence on the selection and implementation of marketing strategies of the brand of trade enterprises on social media platforms. The conducted analysis of the sample enabled confirmation of the presence of such influence and its explanation due to scientific methods used in the work.

The following indicators were analysed in the work:

- The number of social media users (billion) from 2017 to 2027;
- The number of users in 2023, by social media (million);
- Marketing Strategies (Share of Respondents);
- Social media advertising spending worldwide from 2019 to 2028, by device (in billion USD);
- Costs of advertising in social networks by state in 2022 (in billion USD);
- Percent of marketing budget companies spending on social media in 2020-2022 and future plans in the USA;
- Retail Social Commerce Sales in the USA in 2022 (billion USD);
- Share of Social Action in the USA by product segment;
- Top Social Media Marketing Challenges;
- The global market size of influencer marketing (billion USD).

2.3. Methods

The main method of the study is the statistical analysis method combined with the forecasting method. These methods enabled characterizing the main studied indicators and determining their structure, dynamics, and tendencies. The comparative method along with the descriptive method enabled detecting main factors of influence on achieving the objectives of SMM strategies. Using the comparative method, tendencies of the indicators of advertising costs in social networks by the state in 2022 (in billion USD) and Retail Social Commerce Sales in the USA in 2022 were compared. The descriptive method enabled characterizing detected factors of influence and offered stages of SMM strategy formulation, as well as main metrics.

2.4. Limitations

It is worth noting that study limitations involve possible inaccuracies in statistical data, which can be related to differences in approaches to the calculation of general costs of SMM and revenues from sales, data limitations, etc. However, this does not influence the general result of the study and conclusions made.

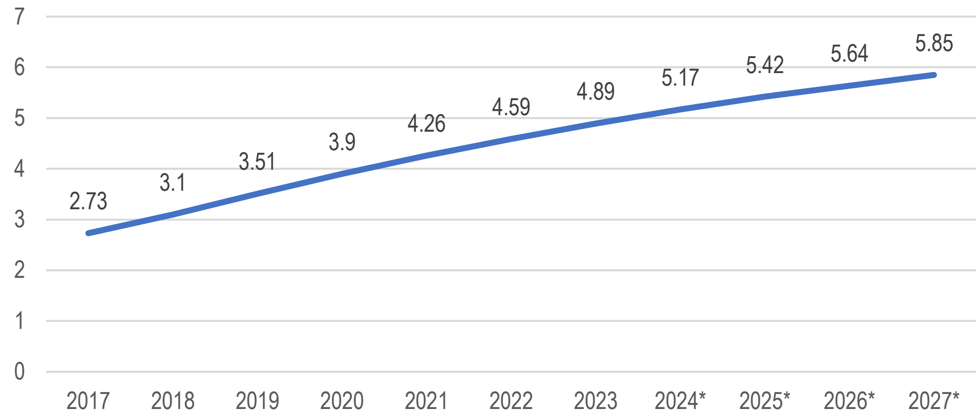
3. Results

3.1. Main Statistics and Objectives of Marketing Strategies on Social Media Platforms

Decisions on the implementation of a particular SMM strategy and the steps necessary during this process should be based on the detailed analysis of market tendencies and forecast data. Above all, the company should clearly understand the objectives it plans to achieve through the implementation of a particular SMM strategy. Most often, the realization of an SMM strategy involves the achievement of the following objectives: establishing contact with users and increasing brand recognition, traffic increase, audience growth, brand content promotion, improvement of community engagement, improving customer service and support, sales increase, expenses reduction, as well as tracking the actions of competitors and establishing partnerships.

The increasing role of the SMM in achieving the mentioned objectives is confirmed through the analysis of the statistical data and forecast indicators. One of the main indicators is the number of social network users, which reached 4.89 billion people as of 2023 (Figure 1). The forecast indicates further significant growth in the number of social network users, which means traffic increase for the companies along with an increase in content review and finally increase in potential customers' engagement.

Figure 1. The Number of Social Media Users (Billion)

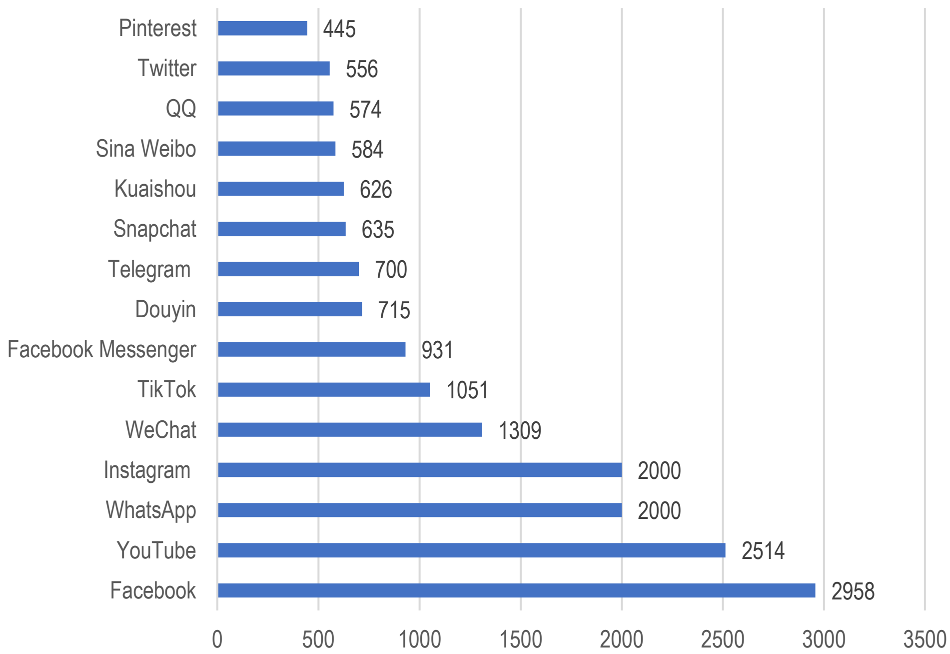


* *forecast indicators*

Source: developed by the author according to Shewale (2023)

SMM strategies are often classified according to a social network used for the achievement of marketing objectives by companies. Therefore, the choice of social networks, where the most benefits can be achieved, is important for companies. The number of registered users demonstrates the potential of the social network (Figure 2). Facebook is most frequently characterized as a social network having the highest potential in relation to its use as the instrument for the achievement of SMM objectives. Hence, the use of only one social network can lead to failure to achieve some advantages of SMM, due to which it is most frequently recommended to promote products in several of the most popular social networks to increase coverage.

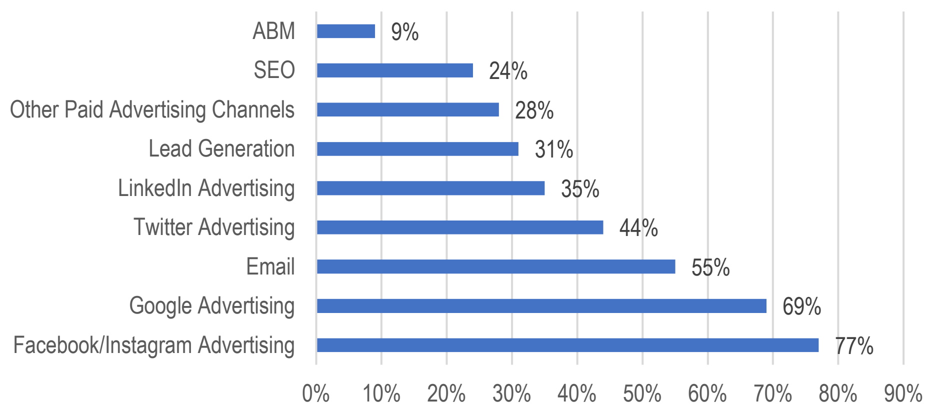
Figure 2. The Number of Users in 2023, by Social Media (Million)



Source: developed by the author according to Shewale (2023)

Evaluating the attraction of certain social networks from the perspective of the number of companies, choosing them as a promotion instrument, the leaders in the advertisement are Facebook and Instagram (Figure 3). Advertisements on Google and promotions via email are also in demand.

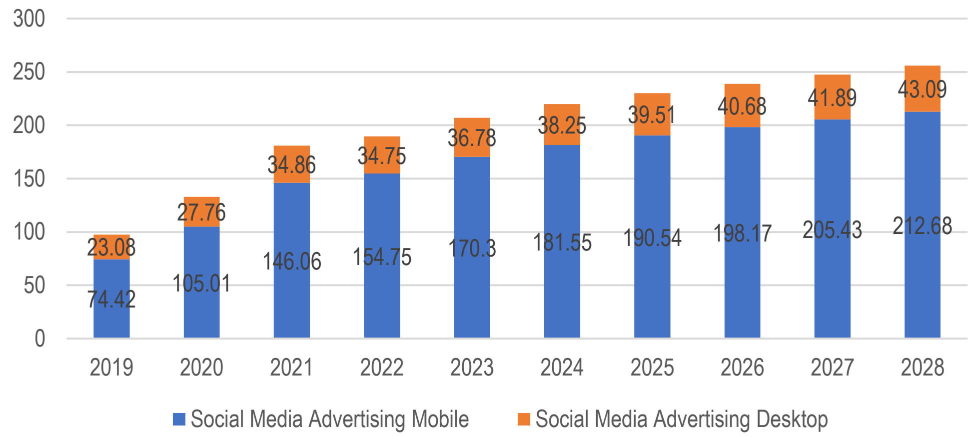
Figure 3. Marketing Strategies (Share of Respondents)



Source: developed by the author according to Shewale (2023)

Advertising costs in social networks are the demonstrative indicator of the increasing role of the SMM (Figure 4). Hence, it is important to note that a large part of such costs is spent on advertisements in mobile applications. In 2023, 82.24% of all costs of advertisement in social networks in the world were spent on advertising in mobile applications. However, some change in the correlation toward desktop advertisement is expected in 2028, in that year advertising costs in mobile applications are estimated to amount to 80.32% of world advertising costs in social networks.

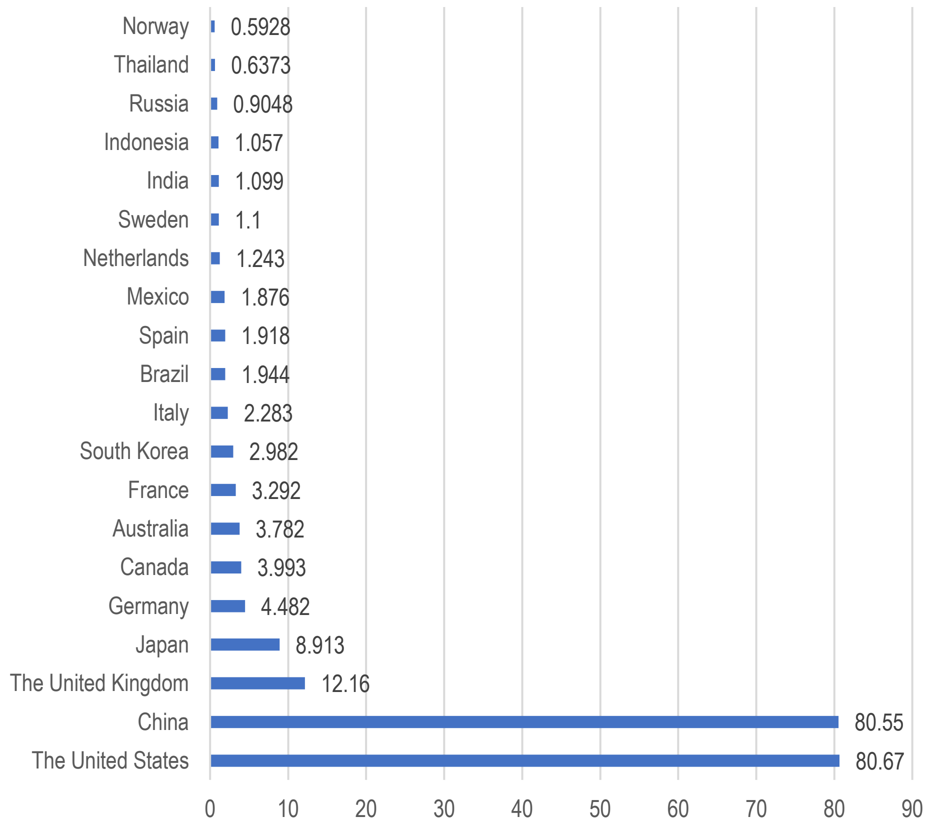
Figure 4. Social Media Advertising Spending Worldwide from 2019 To 2028, By Device (in billion USD)



Source: developed by the author according to Statista (2024)

Other sources demonstrate other amounts of advertising costs in social networks by state. For example, if according to Figure 4, world advertising cost in 2022 amounted to 189 billion USD for advertising in mobile applications, the sum of such expenses amounts to more than 215 billion USD only for the twenty leading states on the market. Probably, such difference is stipulated by different approaches to cost calculation and sampling formulation as well as unequal access to information, etc. Despite the deviation in general indicators, an undeniable fact is that the USA and China are undisputed leaders in the industry.

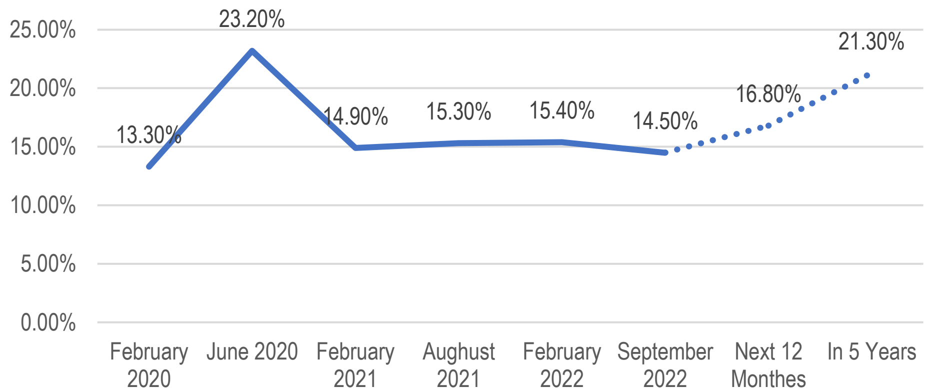
Figure 5. Costs of Advertising in Social Networks by The State in 2022 (in Billion USD)



Source: developed by the author according to Shewale (2023)

In the case of large amounts of advertising costs in social networks, a part of such costs in the general marketing budget of companies remains fairly small. Herewith, some increase is expected in the following five years (on the example of the USA as the market leader) (Figure 6).

Figure 6. Percent of Marketing Budget Companies Spending on Social Media in 2020-2022 and Future Plans in The USA



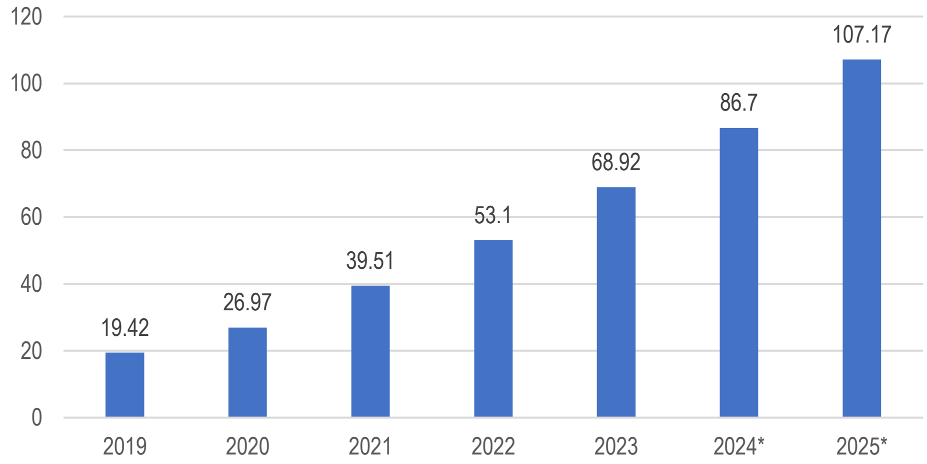
Source: developed by the author according to Marketing in a Post-Covid Era (The CMO Survay) (2022)

A small part of advertising costs in social networks in general marketing budget does not necessarily indicate insufficient attention of business to advertising campaigns in social networks. This can indicate the need to make significantly lower financial investments in SMM (compared to traditional marketing).

3.2. Factors of Influence on Achieving the Objectives of Marketing Strategies

Having information on advertising costs in social networks, it is necessary to compare this indicator with actual material benefits from online sales. Figure 7 presents information on the volume of retail sales conducted via social networks in the USA.

Figure 7. Retail Social Commerce Sales in the USA in 2022 (billion USD)



* forecast indicators

Source: developed by the author according to Shewale (2023)

Data in Figure 7 are given for the year 2022 for the USA, thus, for comparison, data from Figure 5 for the USA for the relevant period was selected. It is possible to detect that advertising costs in social networks in the USA in 2022 amounted to 80.67 billion USD, and retail sales in social networks are significantly lower – 53.1 billion USD. It is possible to assume that a significant increase in advertising costs compared to the sale volumes may be related to several factors:

- advertisement campaigns in social networks should not aim at sales volumes increasing at all, they should rather be aimed at increasing customer's awareness of the brand and its production.
- increasing customers' awareness of the brand could motivate them to make purchases, but they could make them in physical stores, thus, the purchase is not reflected in the indicator of retail sales via social networks;
- the length of the process of customer engagement - marketing campaigns could be successful, but the customer does not make a decision on an immediate purchase because of personal reasons and continues to study production.

We presented above only some causes of exceeding advertising costs in social networks over the sale volumes in social networks, but only in cases, when the marketing campaign was successful in general, and its cost can be substantiated in another way or later. The forecasted tendency of the indicator of retail sales via social networks confirms this theory: the sales volume in 2024 is expected to exceed advertising costs in social networks for the year 2022. At the same time, as of 2024 advertising costs in social networks will probably rise, therefore, it is too early to make unequivocal conclusions.

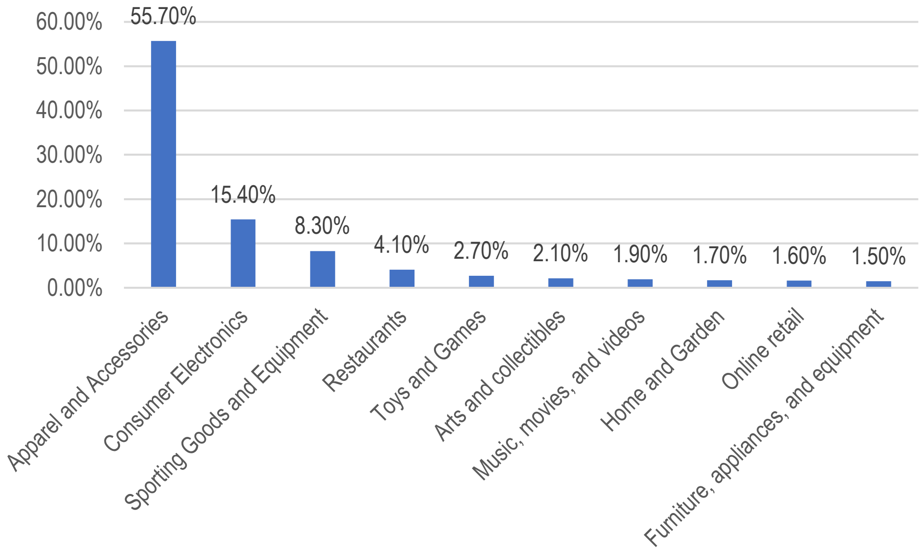
Within the context of the above-mentioned, it is important to study the possible causes of exceeding advertisement cost in social networks over sales in social networks in the case when such correlation underwent the influence of insufficient efficiency of marketing campaign:

- non-effective marketing strategy in social networks in general - this factor may be related to several causes (for example, insufficient personalisation, etc), which can be detected only in the course of the analysis of a certain marketing strategy in social networks;
- more effective and attractive SMM solutions of competitors;
- orientation to the irrelevant audience - probably marketing campaign attracts the attention of non-target audience segment;
- low conversion - conversion is an important indicator evaluating the efficiency of advertising in social networks.

Conversion is defined as a correlation of the number of visitors who made a targeted action (in this situation – product purchase) to the total number of visitors. It is necessary to note that the targeted action can be not product purchase - conversion is also calculated by the number of registered users, subscribers, likes, comments, clicks on the link, etc.

Besides the above-mentioned, it is important to consider the influence of the product itself on the reaction of users, and their desire to view or purchase it. Product complexity and price may be the determinative factors. In particular, most users in the USA, interacting with companies in social networks in a certain way, mostly pay attention to clothes and accessories (Figure 8).

Figure 8. Share of Social Action in the USA by product segment



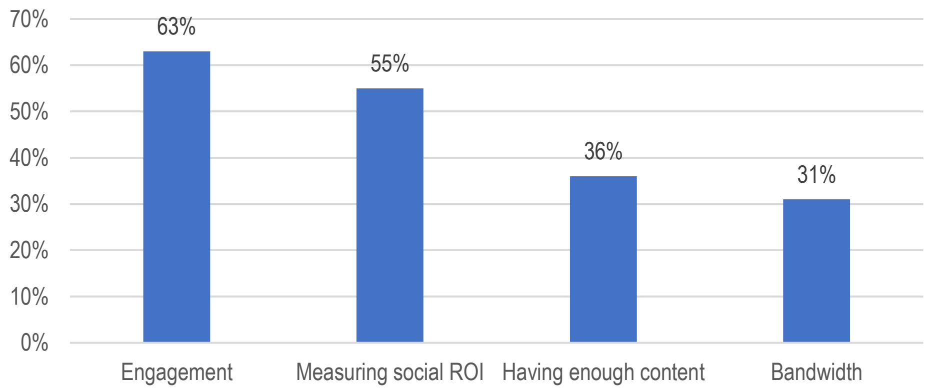
Source: developed by the author according to Shewale (2023)

While considering SMM from the perspective of purchase conduction, it will have the same barriers as online marketing in general - users' mistrust of online shopping, the impossibility of physical reviews, etc. This explains the fact that clothes and accessories are the most purchased products on social networks. These goods are usually cheaper compared to such products as furniture, electronics, etc. Herewith, they are easy to choose without physical review.

At the same time, the author believes that the main task of SMM is not the sales increase - it rather prepares and directs potential customers to make a purchase. Herewith, its main tasks are more social, in particular, audience engagement, interest arousal, provision of interesting content, receiving feedback and proposals, etc. The author believes that this is its main difference from electronic marketing (e-marketing).

Summing up the above-mentioned, it is necessary to note the main challenges arising in the course of SMM strategy realization. Such challenges are presented in Figure 9.

Figure 9. Top Social Media Marketing Challenges



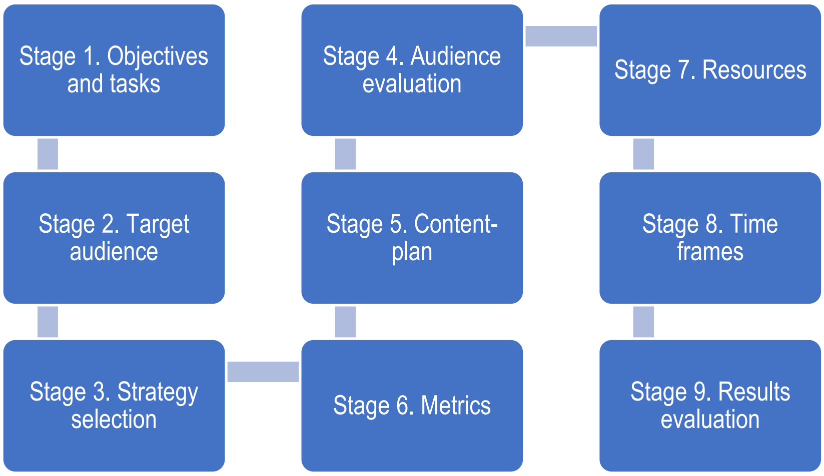
Source: developed by the author according to Chang (2024)

The presented statistical data correspond to the conclusions on the priority of non-financial objectives of SMM. Thus, the main challenge of SMM is audience engagement, followed by measuring social ROI. Social ROI does not have market value but lies in measuring the value for the audience. The other challenge is the provision of sufficient and appropriate content and ensuring high bandwidth.

3.3. Stages of SMM Strategy Development, Metrics, and Instruments

Evaluation of the modern tendencies of SMM and factors of influence on achieving marketing strategy objectives in social networks enables the formation of a general approach to SMM strategy development. The general view of the road map of such strategy development is presented in Figure 10.

Figure 10. The Road Map of SMM Strategy Development



Source: generalized by the author

The first stage of SMM strategy development, as well as any other strategy, involves setting objectives and tasks, the range of which was described in the first section of this paper. Depending on a certain marketing campaign, a business can select all or only some possible objectives. In the second stage, the target audience should be determined, which foresees provision of the characteristics of users, for whom the product was developed, based on which the strategy shall be developed. This may lie in the determination of the age of the target audience, income level, sex, education, etc. The determined characteristics will contribute to the development of optimal solutions for the target segment. The third stage involves the selection of one or most often several promotion strategies. Such strategies are presented in Figure 3, in particular, the most popular are Facebook/Instagram Advertising, Google Advertising, and E-mail. The fourth stage provides a more profound evaluation of the selected audience segment - preferences, behaviour peculiarities, lifestyle, etc. Based on the evaluation, the content for the determined users is developed (stage 5). The sixth stage is dedicated to determining metrics, thus, indicators of evaluation, which will be used in the process of strategy realization. The main metrics are as follows:

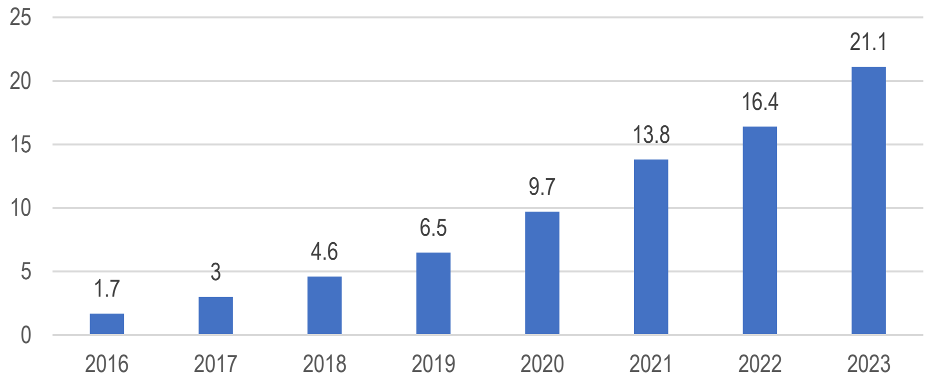
- number of subscribers;
- unsubscription;
- the pace of audience growth - new subscriptions with deduction of unsubscriptions divided into the number of subscribers;
- reviews;
- coverage - the number of unique users who have interacted with publications at least once; there are natural (reviews by the community subscribers), viral (reviews by unregistered users) and advertising (reviews due to advertising) coverage;
- attractiveness level - number of likes in correlation to the number of subscribers;
- communication level - number of comments in correlation to the number of subscribers;
- sharing coefficient - number of reposts in correlation to the total number of the posts of the community;
- engagement coefficient - number of subscribers who committed a certain act on the website (likes the product, left a comment, reposted) at least once in correlation to the total number of subscribers;
- conversion coefficient (characterized in the previous section);
- value for one click;
- value of customer engagement;
- ROI or ROMI (Return on Marketing Investments).

The last indicator (ROI/ROMI) is financial, and the author believes that within the context of the evaluation of SMM strategy, it is an auxiliary indicator and shall be used when the company aims to increase sales with the use of SMM. Still, the author believes that SMM is not the most effective instrument for sales increase at all, as it mostly serves as the instrument for communication improvement.

Metrics use enables evaluation of the efficiency of the marketing strategy and is performed with the use of different instruments, in particular Web Analytic Tools, Social Media Platforms Specific Analytics, Social Intelligence Tools, as well as different surveys. The seventh and eighth stages of marketing strategy development determine the necessary resources and time frames for each stage conduction. The ninth stage involves evaluation of the developed and implemented strategy, in particular with the use of metrics, and analysis of reviews and offers. By the evaluation results, methodological recommendations are drafted and, in case of necessity, the strategy is corrected.

Nowadays, there are many SMM strategies, but the author believes that the strategy of influencer engagement is worth special attention. The popularity of such strategies is certified with statistical data (Figure 11).

Figure 11. The Global Market Size of Influencer Marketing (Billion USD)



* forecast indicators

Source: developed by the author according to Shewale (2023)

Compared to other SMM strategies, the influencer engagement strategy helps not only represent the brand but also develop relations with customers based on personal relations. The selection of the influencer should be substantiated, and his life position should correspond to the target audience and values of the brand itself. Through the participation of the influencer in content creation, the latter becomes more authentic and causes feelings of solidarity, and desire to join among the consumers. The correctly selected influencer underlines the status of the brand and enables the company to attract new subscribers from their own followers.

4. Discussion

Tendencies to further increase the SMM market were found as the result of the conducted study. SMM were found to, above all, orient toward non-material social objectives, and factors of influence of achieving SMM objectives were found. The approach to SMM strategy formulation and metrics system were offered. The developed approach can be used for any SMM strategy, in particular, the strategy of influencer engagement, covered in the article.

Li *et al.* (2021) have found four types of SMM strategies depending on the level of strategic maturity. The social commerce strategy aims at establishing primary contact with the purpose of product promotion and sales increase above all. The social content strategy provides for the creation and sharing of information valuable for consumers, not following promotion objectives. Unlike the previous type, the social monitoring strategy is directed not only at content provision but also at the processing of customers' feedback (Danylyshyn *et al.* 2023). The highest level of social maturity is characteristic of customer relationship management strategy, directed at clients' engagement in mutually beneficial dialogue. The achievement of the work is that the offered strategies involve both material and non-material objectives, depending on their level of strategic maturity. Such an approach can be effective for companies, being at the development stage.

Most often, SMM is considered in the works of the researchers from the perspective of its implementation in the B2C (business-to-customer) segment. Drummond *et al.* (2020) strive to reveal the main advantages of SMM use for the B2B (business-to-business) segment, in particular, the possibility to join, share information and communicate, mobilize resources, contribute to the sales process, and improve relations with partners. Furthermore, additional advantages are the increase in the efficiency of marketing campaigns, quick reactions, a comfortable place for communication actually without limitations for entry, raising awareness, experience exchange and improving brand image. Eid *et al.* (2020) found that SMM affects export indicators of small and medium-sized businesses, acting in the B2B segment. Such an influence lies in the improvement of the quality of international business contacts, in particular, through understanding the preferences of customers, raising awareness of the brand, as well as awareness concerning competition in different markets. Such works demonstrate possibilities of SMM use in the B2B segment, which was not revealed in the author's work. At the same time, the approach to SMM strategy development, offered in the author's work, should be adapted with the system of metrics inclusively in case of its use for the B2B segment.

Many works reveal peculiarities and challenges, which arise in the process of SMM strategy evaluation. Lal *et al.* (2020) emphasizes that awareness concerning the calculation of the ROI of SMM, contains valuable information, providing other companies with knowledge from the optimisation of marketing promotion strategies in social networks. In their works, researchers place a special emphasis on non-material results, in particular, brand recognition, improvement of customer engagement, and relations development. Analysing the sample of companies, which work with SMM, Silva *et al.* (2020) note that such companies focus on objectives like raising awareness and improving engagement and coverage. At the same time, they pay less attention to the evaluation of financial profit. The scientists assume that such priorities division is related to the difficulties in determining direct revenues from conducted social media campaigns. Finally, the work concluded that SMM is above all the communicative instrument, but not the best method for sales increase. Such an assumption is confirmed in the work of Dolega *et al.* (2021), who on the basis of empirical data conclude that SMM increases web traffic but does not stipulate a significant increase in orders of revenues. At the same time, researchers assume that large marketing campaigns (compared to the ones studied in the work) can lead to an increase in sales and revenues. Furthermore, researchers have found that the most efficient SMM channel is Facebook. Herewith, SMM efficiency is significantly affected by the product complexity and price, as well as the brand's status.

Within the context of the discussion of the issue of SMM influence on nonmaterial and/or material (sales revenues) results of the company activity, the conclusions of Malesev and Cherry (2021) are of high value. The researchers have found that companies which aim to enhance brand recognition and demonstrate its qualities (non-material results), achieve better effects from SMM than businesses striving to mainly stimulate sales (material results). Chances for success are significantly higher for companies, which have implemented more than three online marketing strategies. Herewith, proper integration of traditional marketing strategies and SMM is an important aspect. The conclusions of the researchers in the mentioned works are consistent with the results of the author's study, in which the priority of non-material objectives of SMM is proved during statistical data analysis. The other achievement of the author's work is the determination of the factors of influence on SMM objectives achievement as those, depending on the developed strategy and those not related to it.

In the work, the author mentions instruments, which are useful in the process of SMM strategy evaluation, but this theme was not profoundly studied. Yang *et al.* (2022) reveal the value of analytics of social networks, considering that its primary aim is receiving valuable knowledge from the content, created by the consumers. This is related to their reviews and offers, a complete understanding of which is prevented by content richness. The approach, offered in the work, enables a deeper understanding of the main principles, problems and functionality, realized through receiving knowledge from social data via the means of business analytics. Focusing attention on social network analytics, Zhang *et al.* (2022) underline the importance of the use of big data technology in this process. The analysis with the use of big data aims at the evaluation of competitors, relevant price correction, entering into more beneficial agreements and evaluation of potential possibilities in competition in general. The proper use of analytics on social networks can result in increasing customer loyalty and enhancing brand recognition and customer experience. Therefore, it is necessary to conclude that this paper also considers the influence of SMM from the perspective of non-material results. The works reviewed create space for further scientific research - in particular, further studies shall be dedicated to the use of analytic tools for the evaluation of SMM strategies.

The author's work focused attention on the advantages of influencer engagement strategy, and the value of this trend was revealed in other works. Studying the influencer engagement strategy as an important SMM instrument, Jayasinghe (2021) notes that the role of the influences shall be revealed in the following: creation of the content and target audience coverage, directed at contact establishing; interaction through receiving feedback, due to which users engagement takes place, personalisation and relevant contacts, which increase loyalty to the brand, equality effect, which influences audience ensuring positive perception.

Conclusion

In the current stage of the development of information and communication technologies, the influence of social networks on brand positioning should not be underestimated. SMM promotion strategies involve, above all, achieving social objectives, such as brand recognition, engagement, coverage, improvement communication with clients, receiving feedback and service improvement. Within the process of SMM strategy formulation, it is necessary to consider current tendencies in the market - both in the segment where the company promotes its product and in the information-communication sphere. Herewith, it is necessary to clearly understand the influence of many factors on the strategy objectives achievement, particularly those, directly related to the strategy and those not depending on it. A substantiated approach to strategy formulation, determination of its stages, and metrics system significantly increases the company's chances for success in the SMM sphere.

From the results of the conducted analysis, we found that the SMM market is undergoing significant development, and this tendency is not going to change soon. Exceeding advertising costs over the revenues from sales was determined not to be related to insufficient efficiency of the marketing campaign. This fact is explained with the idea that SMM may not aim at increasing sales volumes in general, but be oriented toward different social objectives such as raising awareness, increasing engagement, receiving feedback, etc. The offered stages of strategy development and main metrics can contribute to more consistent strategy development and its evaluation, which, finally, will have a positive influence on SMM efficiency. Further directions of scientific research should be oriented towards the analysis of various analytical instruments for the evaluation of the implemented SMM strategy.

Credit Authorship Contribution Statement

The authors equally contributed to the present research, at all stages from the formulation of the problem to the final findings and solution.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Declaration of Use of Generative AI and AI-assisted Technologies

The authors declare that they have not used generative AI and AI-assisted technologies during the preparation of this work.

References

[1] Al-Ghamdi, L. M. (2021). Towards adopting AI techniques for monitoring social media activities. *Sustainable Engineering and Innovation,* 3(1): 15-22. DOI: https://doi.org/10.37868/sei.v3i1.121

[2] Chang, J. (2024). 150 social selling statistics you must read: 2024 data analysis and market share. Available at: https://financesonline.com/social-selling-statistics/

[3] Chen, H., Ma, D., and Wang, R. (2021). Chinese entrepreneurs' experience of social media marketing: Perception, strategy and challenge. *Journal of Research in Marketing and Entrepreneurship,* 23(2): 365-386. DOI: https://doi.org/10.1108/JRME-06-2019-0055

[4] Cherniavska, O. V., and Vyhivska, O. V. (2023). Formation of a strategy for promoting goods and services in social networks. *Economics and Management of Enterprises,* 3(40): 86-90. DOI:https://doi.org/10.32782/easterneurope.40-14

[5] Chunikhina, T. (2022). Theoretical foundations of the formation of SMM-strategy of the enterprise. *Grail of Science,* 23: 58-68. DOI: https://doi.org/10.36074/grail-of-science.23.12.2022.07

[6] Danylyshyn, B., *et al.* (2023). Marketing Tools to Increase Regional Investment Attractiveness. *Review of Economics and Finance,* 21: 1101–1108. Available at: https://refpress.org/wp-content/uploads/2023/08/Radkevych_REF.pdf

[7] Dolega, L., Rowe, F., and Branagan, E. (2021). Going digital? The impact of social media marketing on retail website traffic, orders and sales. *Journal of Retailing and Consumer Services,* 60: 102501. DOI:https://doi.org/10.1016/j.jretconser.2021.102501

[8] Drummond, C., O'Toole, T., and McGrath, H. (2020). Digital engagement strategies and tactics in social media marketing. *European Journal of Marketing,* 54(6). DOI: https://doi.org/10.1108/EJM-02-2019-0183

[9] Eid, R., Abdelmoety, Z., and Agag, G. (2020). Antecedents and consequences of social media marketing use: An empirical study of the UK exporting B2B SMEs. *Journal of Business and Industrial Marketing,* 35(2): 284-305. DOI: https://doi.org/10.1108/JBIM-04-2018-0121

[10] Jayasinghe, D. (2021). Social media and influencer marketing strategies: A conceptual review on contemporary applications. *Global Scientific Journals,* 9(3): 403-424. Available at: http://www.globalscientificjournal.com/

[11] Jiménez-Zarco, A. I., Clemente-Almendros, J. A., González-González, I., and Aracil-Jordà, J. (2021). Female micro-entrepreneurs and social networks: Diagnostic analysis of the influence of social-media marketing strategies on brand financial performance. *Frontiers in Psychology*, 12: 630058. DOI:https://doi.org/10.3389/fpsyg.2021.630058

[12] Kumpu, J., Pesonen, J., and Heinonen, J. (2021). Measuring the value of social media marketing from a destination marketing organization perspective. Paper presented at *Information and Communication Technologies in Tourism 2021: Proceedings of the ENTER 2021 eTourism Conference, January 19–22, 2021* (pp. 365-377). Springer International Publishing. DOI: https://doi.org/10.1007/978-3-030-65785-7_35

[13] Lal, B., Ismagilova, E., Dwivedi, Y.K., and Kwayu, S. (2020). Return on investment in social media marketing: Literature review and suggestions for future research. In: Rana, N.P., *et al.* (eds.). Paper presented at *Digital and Social Media Marketing. Advances in Theory and Practice of Emerging Markets* (pp. 3-17). Springer, Cham. DOI: https://doi.org/10.1007/978-3-030-24374-6_1

[14] Li, F., Larimo, J., and Leonidou, L. C. (2021). Social media marketing strategy: Definition, conceptualization, taxonomy, validation, and future agenda. *Journal of the Academy of Marketing Science, 49*: 51-70. DOI:https://doi.org/10.1007/s11747-020-00733-3

[15] Lysa S. S., and Kulik A. V. (2022). The Efficiency of SMM as an Instrument of the Sales Policy of Enterprise. *Business-Inform 1*: 432-437. DOI: https://doi.org/10.32983/2222-4459-2022-1-432-437

[16] Malesev, S., and Cherry, M. (2021). Digital and social media marketing-growing market share for construction SMEs. *Construction Economics and Building 21*(1): 65-82. DOI: 10.5130/AJCEB.v21i1.7521

[17] Marketing in a post-Covid Era. The CMO Survay (2022). Available at: https://www.youtube.com/watch?v=Nwcosu6ssPo

[18] Mohamed, N., Sultan, N., Wai Yan, V. N., and Mat Husin, S. J. (2023). Cybercrime in Malaysia-prevention of honey trap on social media and online dating applications. *Pakistan Journal of Criminology, 15*(4).

[19] Nurfarida, I. N., and Sudarmiatin, S. (2021). Use of social media marketing in SMEs: Driving factors and impacts. *Management and Entrepreneurship: Trends of Development,* 2(16): 70-81. DOI:https://doi.org/10.26661/2522-1566/2021-1/16-06

[20] Orji, I. J., Kusi-Sarpong, S., and Gupta, H. (2020). The critical success factors of using social media for supply chain social sustainability in the freight logistics industry. *International Journal of Production Research, 58*(5): 1522-1539. DOI: https://doi.org/10.1080/00207543.2019.1660829

[21] Polanco-Diges, L., and Debasa, F. (2020). The use of digital marketing strategies in the sharing economy: A literature review. *Journal of Spatial and Organizational Dynamics, 8*(3): 217-229. Available at: https://www.jsod-cieo.net/journal/index.php/jsod/article/view/244

[22] Rather, R. A. (2021). Monitoring the impacts of tourism-based social media, risk perception and fear on tourist's attitude and revisiting behaviour in the wake of COVID-19 pandemic. *Current Issues in Tourism, 24*(23): 3275-3283. DOI: https://doi.org/10.1080/13683500.2021.1884666

[23] Seo, E. J., Park, J. W., and Choi, Y. J. (2020). The effect of social media usage characteristics on e-WOM, trust, and brand equity: Focusing on users of airline social media. *Sustainability, 12*(4): 1691. DOI:https://doi.org/10.3390/su12041691

[24] Shandrivska, O. Y., and Sokolov, Y. S. (2022). The process of forming an SMM promotion strategy: Features and stages of creation. *Management and Entrepreneurship in Ukraine: Stages of Formation and Problems of Development,* 2(8): 137-147. Available at: https://science.lpnu.ua/sites/default/files/journal-paper/2022/dec/29520/220972maket-141-151.pdf

[25] Shewale, R. (2023). 64+ Social media marketing statistics (2024 research). Available at: https://www.demandsage.com/social-media-marketing-statistics/

[26] Silva, S. C., Duarte, P. A. O., and Almeida, S. R. (2020). How companies evaluate the ROI of social media marketing programmes: Insights from B2B and B2C. *Journal of Business and Industrial Marketing, 35*(12): 2097–2110. DOI: https://doi.org/10.1108/JBIM-06-2019-0291

[27] Statista. (2024). Social media advertising spending worldwide from 2019 to 2028, by device. Available at: https://www.statista.com/statistics/456785/social-media-advertising-revenue-device-digital-market-outlook-worldwide/

[28] Wawrowski, B., and Otola, I. (2020). Social media marketing in creative industries: How to use social media marketing to promote computer games? *Information,* 11(5): 242. DOI: https://doi.org/10.3390/info11050242

[29] Wu, C. W., Guaita Martínez, J. M., and Martín Martín, J. M. (2020). An analysis of social media marketing strategy and performance in the context of fashion brands: The case of Taiwan. *Psychology and Marketing 37*(9): 1185-1193. DOI: https://doi.org/10.1002/mar.21350

[30] Xu, S., Wang, Z., and David, P. (2022). Social media multitasking (SMM) and well-being: Existing evidence and future directions. *Current Opinion in Psychology,* 47: 101345. DOI:https://doi.org/10.1016/j.copsyc.2022.101345

[31] Yang, J., Xiu, P., Sun, L., Ying, L., and Muthu, B. (2022). Social media data analytics for business decision making system to competitive analysis. *Information Processing and Management, 59*(1): 102751. DOI:https://doi.org/10.1016/j.ipm.2021.102751

[32] Zhang, H., Zang, Z., Zhu, H., Uddin, M. I., and Amin, M. A. (2022). Big data-assisted social media analytics for business model for business decision making system competitive analysis. *Information Processing and Management, 59*(1): 102762. DOI: https://doi.org/10.1016/j.ipm.2021.102762

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The Impact of Economic Recession on the Financial Support of State Functions during Crisis Situations

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Abstract: The state faces significant challenges in fulfilling its functions during a recession, and crises only exacerbate the problems that arise. However, it is precisely during crises that adequate social security, defense, and other state functions are critically important for ensuring national and individual public interests. The purpose of the study was to analyze the impact of economic recession on the level of financial support for state functions during a crisis. The study used methods of statistical analysis, comparative analysis, analogy, abstraction, and generalization. As a result of the study, the revenues of the state budget of Ukraine and its financing were analyzed as the main sources of financial support for state functions. It was found that the share of tax revenues decreased from 85.37% in 2021 to 45.04% in 2023, which poses a threat to the state's ability to perform its functions. Significant budget financing amounts (31094 million USD in 2022 and 42479.15 million USD in 2023) positively influenced the country's defense capability but led to an increase in the state debt. Insufficient gold and foreign exchange reserves and the state debt reaching the GDP volume are the most negative trends. By analyzing international experience, it was determined that Ukraine should pay high attention to optimizing internal revenue sources, especially tax revenues, through fiscal incentives and ensuring tax discipline. It is also necessary to develop long-term strategies for repaying the state debt and international cooperation. The research results can be useful for government officials in the process of developing budget and tax policies.

Keywords: economic recession; crisis; tax policy; budget policy; government debt; tax revenues; international support.

JEL Classification: H60; H71; H72.

Introduction

The war in Ukraine began during a global economic recession caused by COVID-19 (Gangopadhyaya and Garrett 2020; Jomo and Chowdhury 20204 Sułkowski 2020). Therefore, the Ukrainian experience is crucial in the context of the topic of the study, which involves investigating the issues of financial support for the functions of the state during crisis situations (war) under the influence of an economic recession (caused by COVID-19).

The functions of the state are the key areas and aspects of its activity that reveal the essence of the state's activity and its social purpose.

Functions can be internal and external. Internal functions include economic, social, legal, law enforcement functions, environmental protection, cultural, and informational functions, and sometimes fiscal function is also distinguished. External functions primarily consist of ensuring national security, as well as building international relations and integration (Doronin 2020; Tkachenko 2020).

The financial support for the functions of the state primarily occurs through the resources of the budget, so the sources of funding and the directions of budget expenditures are a central aspect of the study (Adolph *et al.* 2020; Fatmawati 2022). Budget revenues consist of tax and non-tax revenues (Clemens and Veuger 2020; Wang and Kim 2023). Another important source, especially in critical situations, is funds from international organizations or other countries. Thus, the amounts of funds received in the form of taxes, non-tax revenues, and international assistance determine the potential within which the state can perform its functions.

Under conditions of the war in Ukraine, another important source of funding for the functions of the state is budget financing through international loans, grants, and military bonds (Domestic Government Loan Bonds - OVDP). However, these sources lead to an increase in the state debt (Barreyre and Delalande 2020; Hilton 2021; Law *et al.* 2021), so optimizing internal revenue sources, especially tax revenues, becomes particularly important in times of crisis (Sarker 2020; Deb *et al.* 2021; Dougherty and de Biase 2021). International experience shows the effectiveness of tax incentives, but the stimulation measures must be adapted to national conditions (Hlushchenko and Melnyk 2021).

The aim of the research was to analyze the impact of economic recession on the level of financial support for state functions in crisis conditions. The research objectives were:

- To analyze the revenues of the state budget of Ukraine as the main source of financing for state functions.
- To analyze the expenditures of the state budget of Ukraine as the instrument through which the state fulfills its functions.
- To analyze the state debt of Ukraine and compare the debt levels with the levels of gold and foreign exchange reserves and gross domestic product (GDP).
- To evaluate international experience in applying fiscal measures in crisis conditions.

The novelty and the most important asset of the work is the determination of the specifics of the impact of the economic recession on the financing of the functions of the state in the conditions of war as one of the most destructive crisis phenomena. Very little research has been devoted to financing the functions of the state under martial law. At the same time, this is an important direction, because the level of ensuring national security and, ultimately, the outcome of the conflict depends on the state's performance of its functions in wartime conditions.

1. Literature Review

Most scientific works related to the research topic focus on fiscal policy, as tax revenues are the main source of budget funding and thus financing of state functions. Some studies also touch upon the optimization of budget policy as a whole.

Gordiienko (2023) examines fiscal policy in crisis situations, using Ukraine as a case study. The country faced significant financial difficulties due to the military invasion by the Russian Federation. The researcher notes that before the invasion, tax revenues accounted for about 85% of budget revenues, but after the invasion, this figure decreased to 60%, which may threaten the proper performance of state functions. Also, referring to Ukraine's experience, Holovan (2022) explores tax policy in conditions of martial law. The researcher notes that the economy should be stimulated by reducing tax rates. The reduction of the tax burden, as noted by the researcher, is possible through the abandonment of certain non-market functions of fiscal authorities, such as oversight and punitive functions. Kaneva and Halaburda (2022) study aspects of Ukraine's budget policy, on which the execution and proper financing of state functions largely depend. The priority goals of budget policy in conditions of martial law are ensuring the defense of the country and social security, which constitute the execution of the defensive and social functions of the state. The researchers note that in conditions of martial law, international support plays an important role in financing the budget as a source of financial support for state functions.

Research outside of Ukraine often reveal the peculiarities of budgetary and fiscal policies of countries in the context of the COVID-19 pandemic. The consequences of the pandemic and governments' responses to its challenges are often compared to those during the Great Recession or the 2008 Global Financial Crisis. Benmelech and Tzur-Ilan (2020) analyze the fiscal and monetary policy tools of countries around the world in the crisis caused by COVID-19. The study pays special attention to comparing the fiscal policies of developed countries and developing countries. Alberola *et al.* (2021) also touch upon the topic of fiscal policy possibilities of countries with different levels of development during the pandemic. The fiscal responses of developing countries were significantly more limited than those of developed countries. Researchers link this to the limited fiscal space of developing countries. Gallagher *et al.* (2020) characterize the role of the International Monetary Fund (IMF) in the context of the COVID-19 pandemic. Special attention in the study is given to the position of developing countries.

Rubin and Willoughby (2021) compare budget policy strategies in the US during the global financial crisis (Great Recession) and the COVID-19 pandemic. The differences in the government's response to the crisis are related, among other things, to the fact that during the Great Recession, the economic downturn occurred slowly, which gave a chance to carefully consider the response. In contrast, the onset of the pandemic was sudden, and the government was not prepared for it. Wilson (2020) also refers to the US experience regarding the measures taken by the state during the Great Recession and the COVID-19 pandemic. The researchers note that the stimulus programs in both cases were similar, except for the Paycheck Protection Program, which had no analogs in countering the consequences of the Great Recession.

Faria-e-Castro (2021) examines the fiscal policy of the United States in the context of COVID-19. The researcher notes that the shock caused by the pandemic has spread from the services sector to other sectors, causing a significant recession. The researcher identifies the most effective tax policy tools in crisis conditions, disregarding the fact that fiscal policy may be able to reduce the duration and the impact of the shock.

In the work of McNichol *et al.* (2020), that focuses on the United States, it is emphasized that to overcome a future deep economic recession due to COVID-19, states will need significant fiscal relief. Similar to the previously mentioned study, researchers note the insufficient support for states from federal policy.

During any crisis, financial and other support for the state's ability to fulfill its functions becomes a top priority as a guarantee of protecting national and public interests. At the same time, every crisis also presents hidden opportunities. The COVID-19 crisis, which caused a recession, unfolded suddenly - similar to the war in Ukraine - and in some ways prepared the government to act promptly and effectively, including in the field of fiscal and budgetary policy. Therefore, it is worth exploring whether the experience of applying fiscal and budgetary instruments in the context of COVID-19 can be used in the current crisis in Ukraine.

2. Methodology

2.1. Research Procedure

The first stage of the research involved analyzing the revenues of the state budget of Ukraine as the main source of funding for state functions. The structure and trend of revenue volumes to the state budget were analyzed, as well as the amounts of funding from foreign countries, international organizations, and through government bonds.

The second stage of the research involves analyzing the expenditures of the state budget of Ukraine as an instrument through which the state performs its functions. The main directions of expenditure before and after the full-scale invasion were characterized.

Within the third stage, an analysis of Ukraine's state debt was carried out. The trend in the change of internal and external state debt, particularly after the start of the war, was disclosed. A comparison of the debt volumes with the volumes of gold and foreign exchange reserves and GDP was conducted, and analytical conclusions were provided.

The fourth stage is aimed at evaluating the global experience of applying fiscal measures in times of crisis. At this stage, the research determined the ratio of used fiscal measures to additional expenditures, lost revenues, capital injections, loans and guarantees in developed countries, developing countries with market economies, and low-income developing countries. Based on the analysis conducted, recommendations for Ukraine were provided.

2.2. Sample

The sample for the study includes Ukraine, as Ukrainian experience is important in the context of researching state function financing issues during crises (war) influenced by economic recession (caused by COVID-19), as well as other countries worldwide with different levels of economic development. It is anticipated that studying the fiscal responses of countries with different levels of development to the COVID-19 pandemic will provide valuable experience for Ukraine.

The following indicators were used in the study:

- main items of revenues of the state budget of Ukraine (million UAH);
- financing of the general fund of the state budget of Ukraine from international partners (million USD);
- expenditures of the state budget of Ukraine (functional classification) (share in total volume, %);
- expenditures of the state budget of Ukraine (functional classification) (million UAH);
- external and internal state debt of Ukraine guaranteed by the state (million UAH);
- dynamics of Ukraine's external state debt and gold reserves from 2009 to 2023 (million USD);
- dynamics of Ukraine's total state debt and GDP from 2009 to 2023 (million UAH);
- fiscal measures of the country in response to the COVID-19 pandemic (developed economies, % of GDP);
- fiscal measures of the country in response to the COVID-19 pandemic (countries with market economies, developing, % of GDP);
- fiscal measures of the country in response to the COVID-19 pandemic (low-income developing countries, % of GDP);
- fiscal measures announced by several European countries (% of GDP).

The data for analysis are available in the public domain on such resources as the Ministry of Finance (2024), the Center for Economic Strategy (2024), the International Monetary Fund (2021), and others.

2.3. Methods

During the analysis of economic indicators, statistical analysis was used, which allowed to characterize trends and structure. Comparative analysis was employed to compare Ukrainian experiences with international practices, focusing on fiscal measures and incentives. Methods such as analogy, abstraction, and generalization were used to form recommendations for Ukraine based on the researched international experience.

3. Results

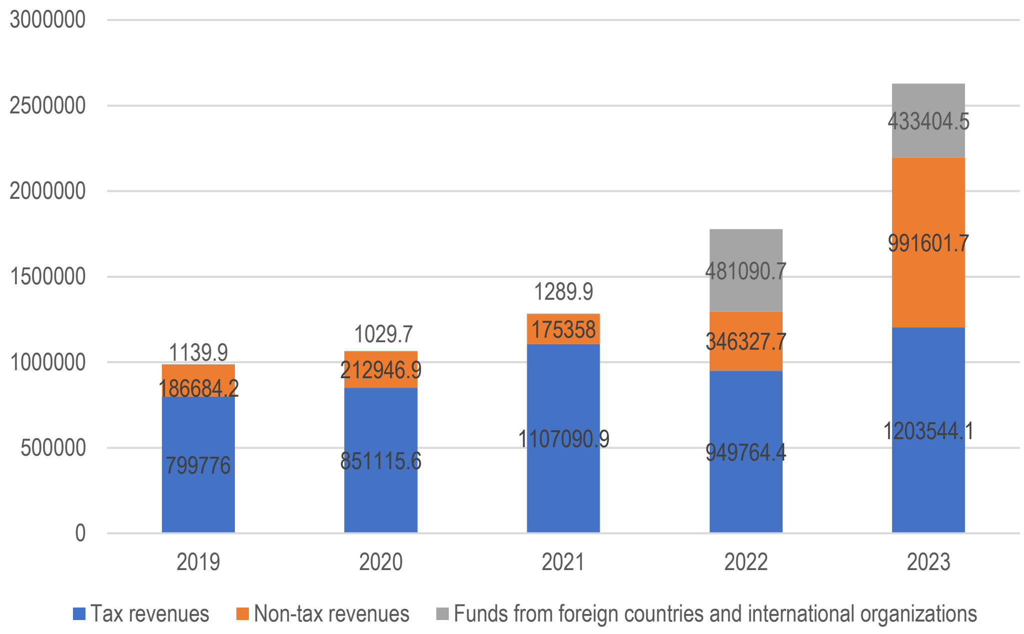
3.1. Analysis of Revenues of the State Budget of Ukraine as the Main Source of Financing State Functions

Considering international experience, the key source of funding for state functions is the state budget. Accordingly, the volume of budget revenues reveals the potential for the state to perform its functions. Using the example of revenues to the state budget of Ukraine, it can be noted that the main source of budget replenishment is tax revenues. They constitute the largest share of state budget revenues, however, after the full-scale invasion, this share changed significantly. If in 2019-2021 the share of tax revenues ranged from 79.1% (in 2020) to 85.37% (in 2021), then in the year of the invasion the share of tax revenues decreased to 53.14%, and in the following year, 2023, to 45.04%. The reduction in the share of tax revenues can be a threat to the state's performance of its functions, which underscores the relevance of improving fiscal policy and developing an effective tax reform.

The shortage of budget resources for the state to perform its functions leads to increased attention to non-tax revenues, the importance of which, as well as their share in the budget revenue structure, is steadily increasing. In 2019, 2021, and 2022, the share was slightly less than 20%, in 2021 – 13.52%. In 2023, the share of non-tax revenues significantly increased - to 37.11%. Among the main reserves for the growth of non-tax revenues in modern crisis conditions are budgetary institutions' revenues, which in 2023 accounted for about 82% of non-tax revenues, as well as revenues from property and entrepreneurial activities, which accounted for over 12% in the structure of non-tax revenues (Ministry of Finance 2024). Thus, it can be concluded that the role of non-tax revenues in budget balancing is significant and tends to increase.

Another important source for budget replenishment in critical conditions, particularly after a full-scale invasion, is international aid. The amount of funds from foreign countries and international organizations amounted to only 0.1% of the budget revenue until 2022. After the full-scale invasion, this indicator increased to 26.92% in 2022, and then decreased to 16.22% in 2023 (Ministry of Finance 2024). The structure and trend of changes in the volume of state budget revenues from 2019 to 2023 are presented in Figure 1.

Figure 1. Main Revenue Items of the State Budget of Ukraine (Million UAH)



Source: prepared by the author based on Ministry of Finance (2024)

Table 1. Financing of the General Fund of the State Budget of Ukraine from International Partners (Million US Dollars)

International Partner	2022	2023	2024
EU	7961	19530	4878
USA	11980	10950	
IMF	2693	4475	881
Japan	581	3626	2131
Canada	1889	1757	1471
World Bank	1385	660	
Great Britain	1040	998	515
Germany	1584	105	
European Investment Bank	720		
France	437		
Italy	330		
Netherlands	318		
Norway	21	190	295
Spain		96	3
Denmark	51		
Switzerland	49		
Finland		36	
Switzerland		30	
Lithuania	22		
Ireland		21	
Latvia	16		
Austria	11		
Belgium	5	3	
Island	0,5	2	
Albania	1		
Estonia		0,1	
Total	31094,5	42479,1	10174

Source: prepared by the author based on Ministry of Finance (2024)

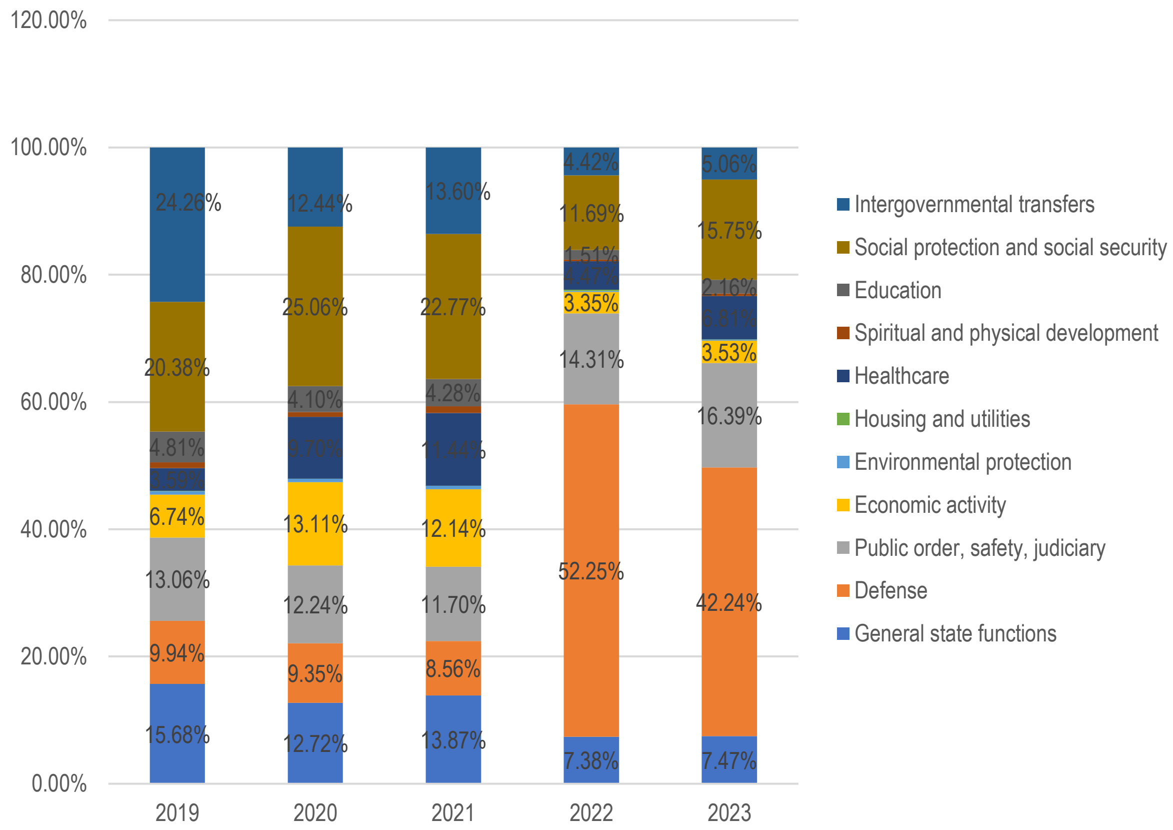
Sources of the state budget financing of Ukraine include military bonds, bilateral loans and grants, and loans from international financial organizations. Table 1 provides sources of financing the general fund of the state budget of Ukraine from international partners for the period after full-scale invasion.

In 2022, the main sources of financing for the state budget of Ukraine were also the National Bank of Ukraine (70,000 million UAH) and government domestic loan bonds (65,105 million UAH). In 2024, the amount of financing from government domestic loan bonds amounted to (as of February 7) 1,087 million US dollars (Ministry of Finance 2024).

3.2. Analysis of the State Budget Expenditures of Ukraine as an Instrument Through Which the State Performs Its Functions

If we consider state budget revenues as a source of financing for the functions of the state, then state budget expenditures can be defined as an instrument through which the state directly performs its functions. Figure 2 shows the structure of state budget expenditures of Ukraine for 2019-2023.

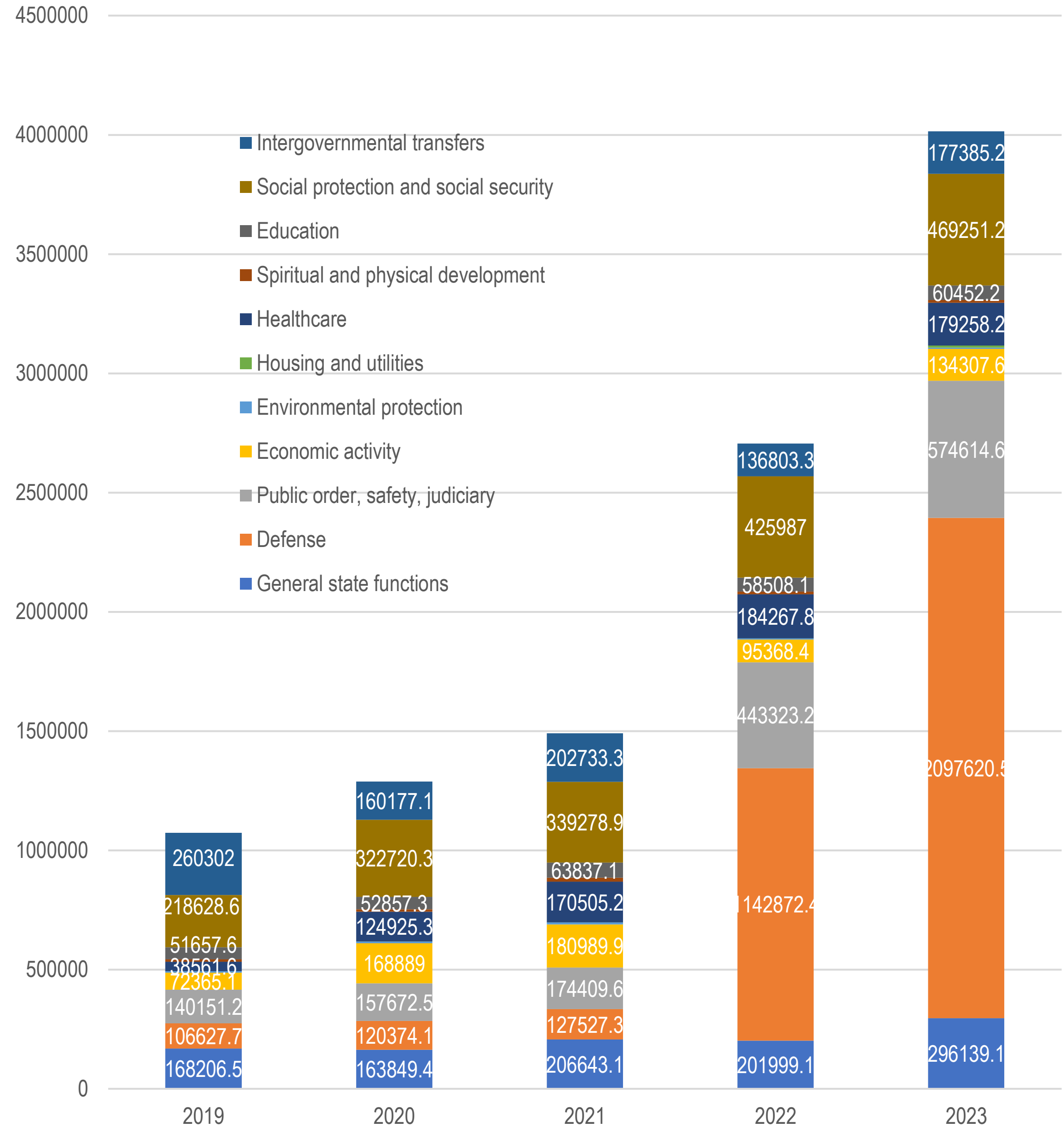
Figure 2. Expenditures of the State Budget of Ukraine (functional classification) (share in total colume, %)



Source: prepared by the author based on Ministry of Finance (2024)

As shown in Figure 2, prior to the full-scale invasion, the structure of state budget expenditures was dominated by social protection and welfare. After the invasion in 2022, more than half of the budget expenditures were directed towards the country's defense needs. It is worth noting that directing a large amount of expenditure towards defense requires proper control over its use and increased transparency. In 2023, this indicator decreased by approximately 10%. At the same time, there was a noticeable increase in the share of expenditures on public order, security, and judicial authority. Figure 3 shows the amounts of expenditures in monetary terms.

Figure 3. Expenditures of the State Budget of Ukraine (functional classification) (million UAH)



Source: prepared by the Author based on Ministry of Finance (2024)

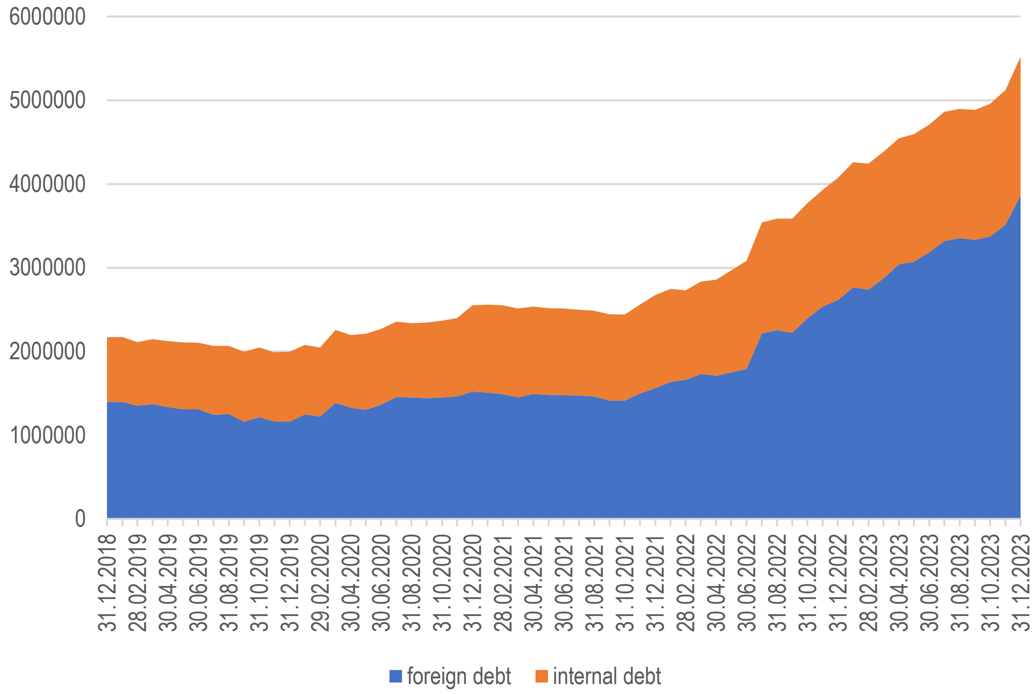
Figure 3 shows that despite a significant reduction in the share of the expenditure structure due to increased defense spending, important expenditures such as social protection and welfare, healthcare, and environmental protection have increased in volume.

Thus, the reduction in the share of expenditures in the overall structure of state budget expenditures did not occur due to a reduction in the volume of funds allocated but compared to the increase in the share of defense spending. This indicates that the state seeks to fulfill its functions to the maximum even in extraordinary circumstances, providing citizens with all the necessary support.

3.3. Analysis of Ukraine's State Debt and Comparison of Debt Levels with Gold and Foreign Exchange Reserves and GDP

In the context of the above, it is also important to examine the dynamics of Ukraine's state debt. This indicator was significant both before the full-scale invasion and after it, undergoing significant changes due to the need for additional financing of the state budget. The dynamics of Ukraine's state debt is shown in Figure 4.

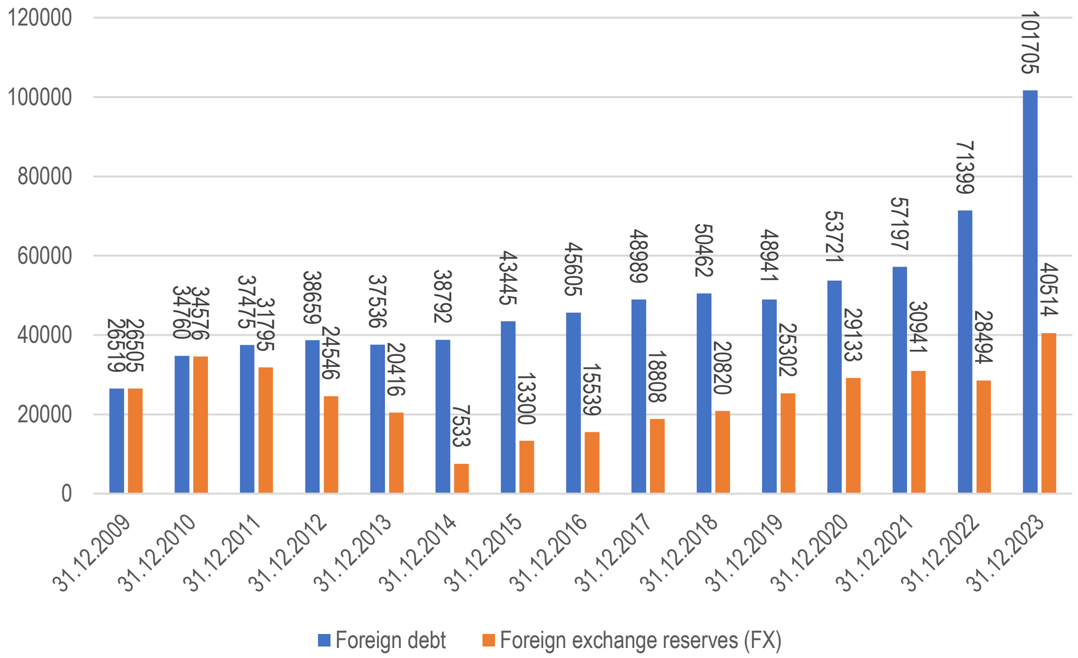
Figure 4. Ukraine's State and State-Guaranteed External and Internal Debt (Million UAH)



Source: prepared by the author based on Ministry of Finance (2024)

Figure 4 shows a steep increase in the volume of state debt, which began after February 2022 when the Russian-Ukrainian war started. This growth was mainly due to the increase in the volume of external debt, as Ukraine received significant amounts of loans from international financial organizations and bilateral loans and grants. When comparing the volumes of external state debt and foreign exchange reserves of Ukraine, rather concerning results emerge (Figure 5).

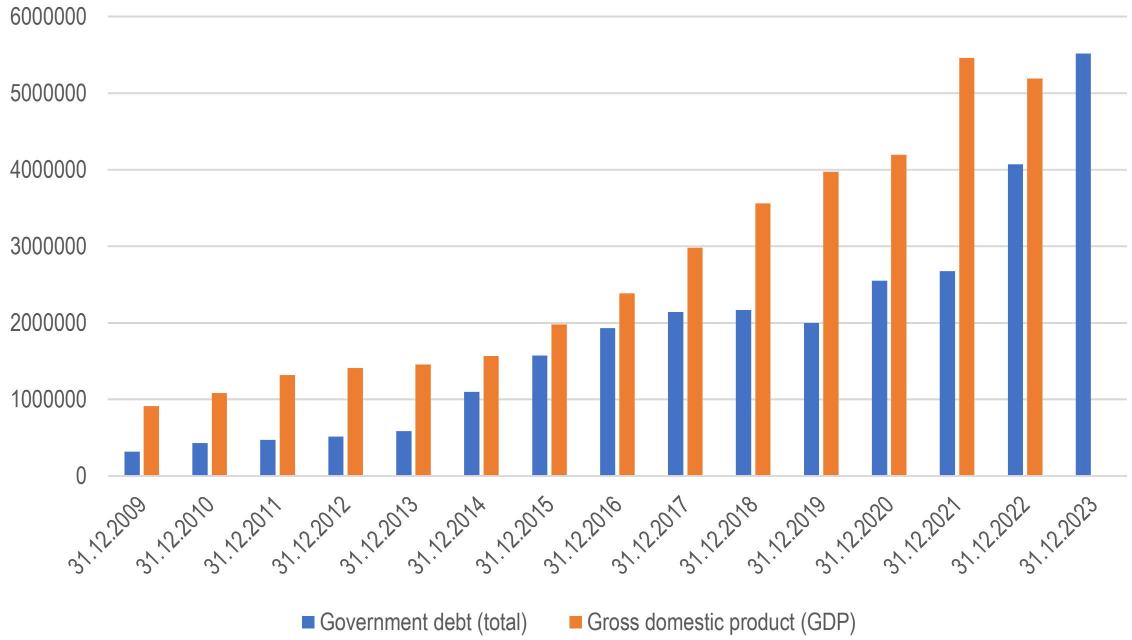
Figure 5. Dynamics of Ukraine's External State Debt and Foreign Exchange Reserves from 2009 to 2023 (million USD)



Source: prepared by the author based on Ministry of Finance (2024)

Foreign exchange reserves can serve as an additional source for repaying external debt, and a significant predominance of the volume of external debt over foreign exchange reserves indicates the risk of financial problems, instability, and even default. As Figure 5 shows, as of the end of 2023, Ukraine's external state debt exceeds the volume of foreign exchange reserves by more than 2.5 times. Comparing the volume of state debt to GDP of Ukraine also demonstrates disappointing results (Figure 6).

Figure 6. Dynamics of the total state debt and GDP of Ukraine from 2009 to 2023 (million UAH)



Source: prepared by the author based on Ministry of Finance (2024)

As of December 31, 2023, the state debt significantly exceeded the GDP figure at the end of the previous period. It is likely that the state debt almost equaled or exceeded the GDP in 2023, even if the Ministry of Economy's estimates of GDP growth by 5-5.5% are realized (Center for Economic Strategy 2024).

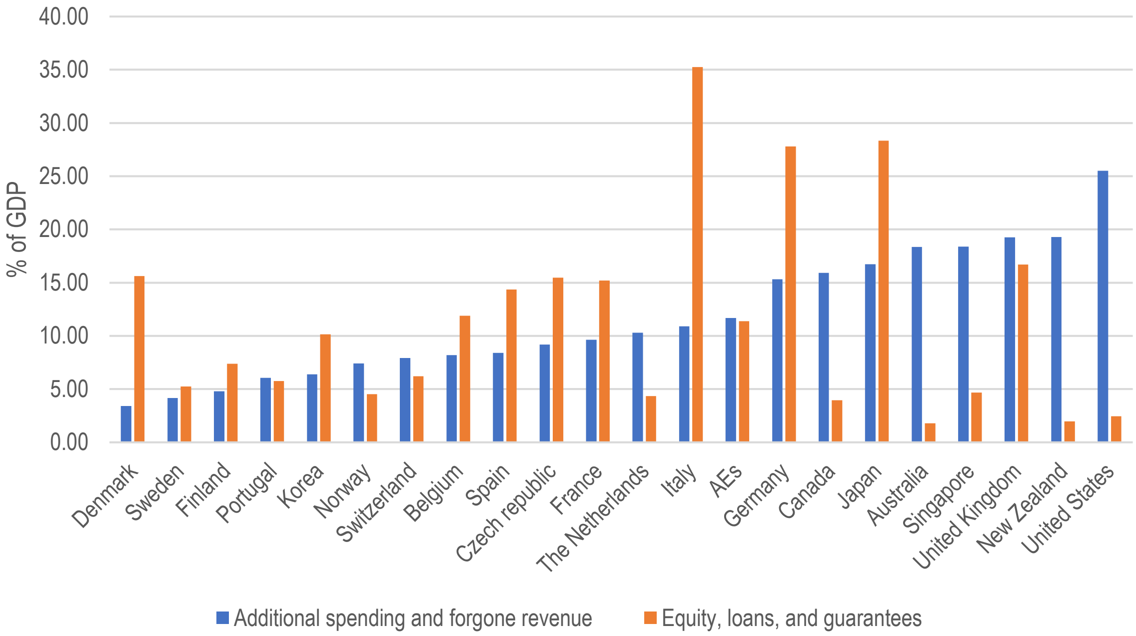
3.4. World Experience in Implementing Fiscal Measures in Times of Crisis

In the previous sections, it was established that the sources of financing Ukraine's state budget in the conditions of full-scale invasion were military bonds, bilateral credits, grants, and credits from international financial organizations. This, among other things, led to an increase in the state debt, which significantly exceeds the volume of foreign exchange reserves and practically equals the GDP volume. In addition, since the beginning of the war in Ukraine, the state has received significant amounts of international support, which is a positive factor. However, the amount of funds tends to decrease. In such conditions, an important task for improving the economic situation is to stimulate domestic revenue sources of the budget, which will ensure the state's performance of its functions and enhance financial stability.

Internal sources of budget revenue include tax and non-tax revenues. However, as the analysis shows, the share of tax revenues to the budget has significantly decreased. It is the author's opinion that in the situation that has developed for Ukraine, it is important to identify ways to increase tax revenues without resorting to measures that will increase the tax burden on businesses and the population. In this context, it is advisable to turn to international experience in the use of fiscal measures in times of crisis.

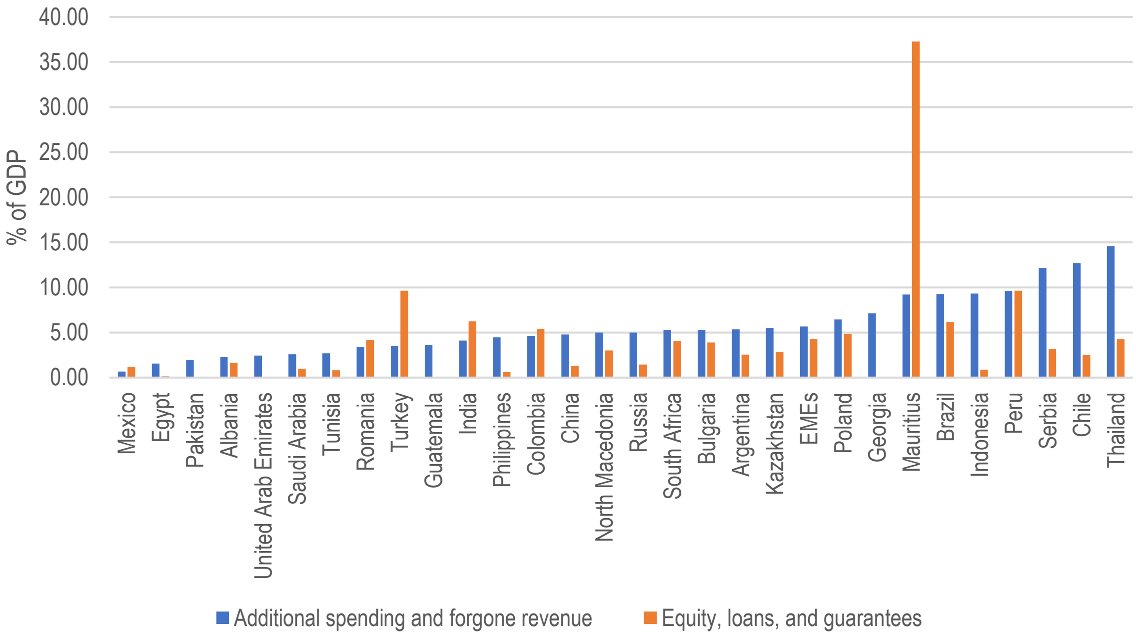
In general, the goals of fiscal policy in countries around the world during the pandemic were to preserve lives and health, provide support for the economy for the period necessary to achieve the desired level of vaccination, ensure long-term goals of socio-economic development through proper financing, and prevent excessive growth of public debt. Except for vaccination issues, all these goals are relevant for Ukraine in the conditions of martial law. This allows us to move on to consider specific directions and measures of fiscal policy of countries. Figures 7-9 contain the main fiscal measures of countries with a breakdown into: 1) additional expenses and unrealized revenues, and 2) capital injections, loans, and grants.

Figure 7. Fiscal Measures of Countries in Response to the COVID-19 Pandemic (advanced economies, % of GDP)



Source: prepared by the author based on the International Monetary Fund (2021)

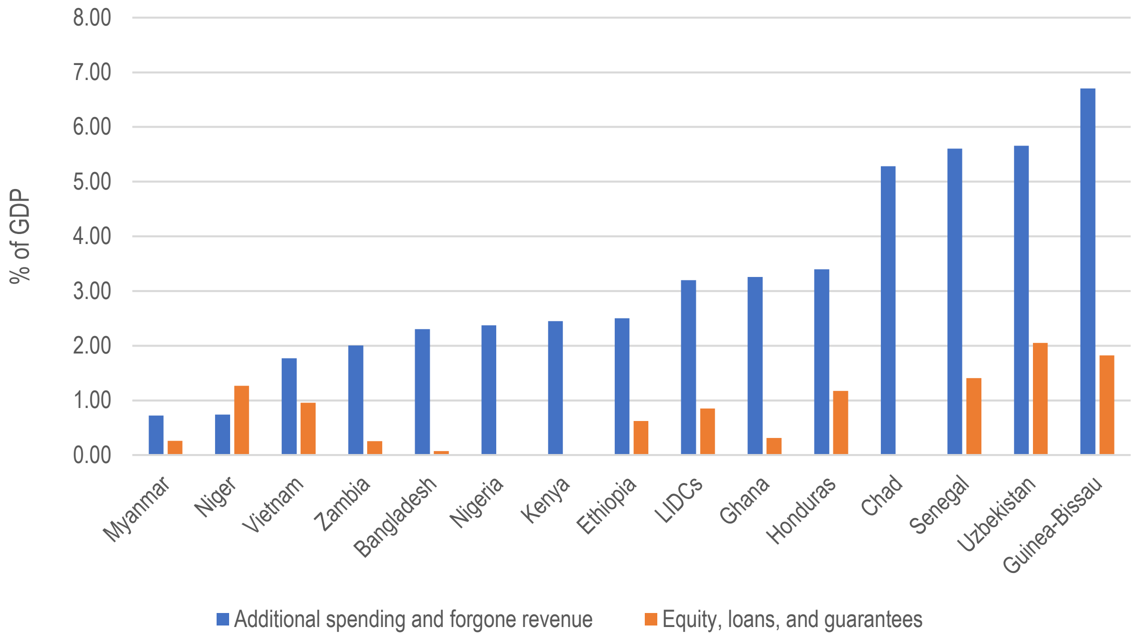
Figure 8. Fiscal Measures of Countries in Response to the COVID-19 Pandemic (developing market economies, % of GDP)



Source: prepared by the author based on the International Monetary Fund (2021)

Figures 7-9 show that the size and structure of measures taken by countries vary depending on the group of countries. Thus, the highest fiscal stimulus is observed among developed countries: the average value of additional expenditures and foregone revenues is 11.69%, and the average amount of capital inflows, loans, and guarantees reaches 11.38%. For countries with developing market economies, these indicators are 5.67% and 4.55%, respectively, and for low-income countries, they are 3.2% and 0.85% respectively. Regarding Ukraine, it is known that in 2020, 3.4% of GDP was spent on additional expenditures and foregone revenues. These data characterize the fiscal space of the countries under study and therefore their ability to apply fiscal stimuli.

Figure 9. Fiscal Measures of Countries in Response to the COVID-19 Pandemic (low-income developing countries, % of GDP)

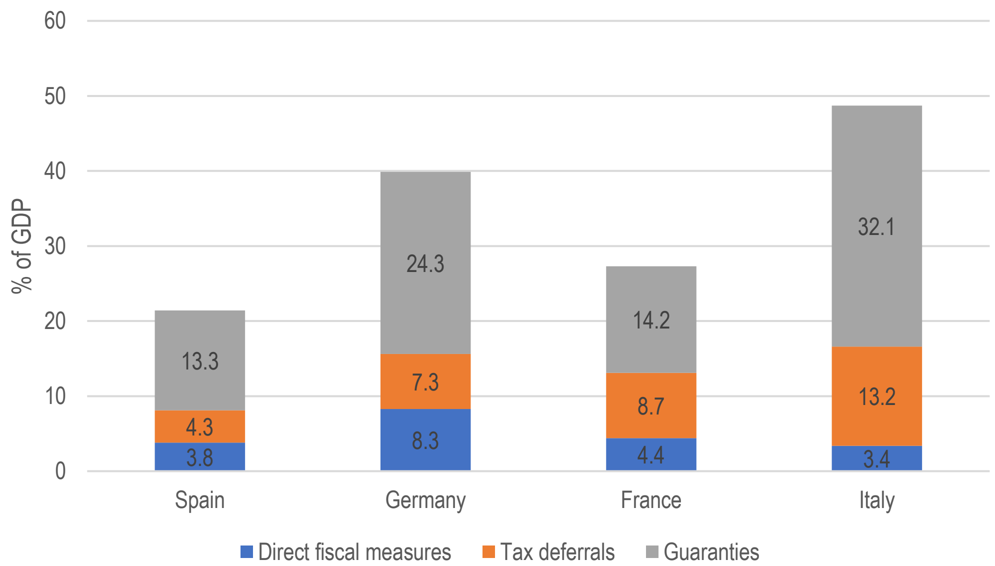


Source: prepared by the author based on the International Monetary Fund (2021)

* Data in Figures 7-9 are presented as of September 27, 2021, as a percentage of GDP (weighted by GDP in US dollars)

Among the specific fiscal measures, countries have applied deferrals and relaxations regarding tax payments, cash payments and subsidies, moratoriums on certain obligations, investment in company development, guarantees, loans, and partial unemployment. For example, in such developed economies as France, Spain, Germany, and Italy, fiscal measures in the directions presented in Figure 10 were announced.

Figure 10. Fiscal Measures Announced by Several European Countries (% of GDP)



Source: prepared by the author based on Leandro (2020)

Thus, the scale and strategies of fiscal measures vary significantly among developed countries, so adopting the experience of other countries in any case requires adaptation to national conditions. At the same time, all countries allocated the most resources to the 'Guarantees' direction, and the least (except for Germany) to direct impact measures, such as VAT reduction, temporary layoffs for workers, etc.

In Ukraine, even before the war, the implementation of a tax reform was planned. The reform focused on reducing tax rates along with implementing measures to combat tax evasion, including improving VAT administration, improving access to tax payment information, and introducing control systems, including on personal expenses. However, in the conditions of war, the direction of reform has changed. In such conditions, it is important to ensure funding for the main functions of the state not only through international assistance but also using internal capabilities. Among the measures introduced in wartime are the suspension of deadlines, temporary exemption from liability for violations of tax obligations for persons who have not fulfilled them due to the consequences of direct participation in hostilities, determining certain aspects of VAT, excise tax, single tax, corporate income tax.

For Ukraine, it is important to develop its own strategy of tax incentives. However, there are certain obstacles on this path that limit the possibilities of applying tax incentives. As a developing country, Ukraine faces a high level of tax burden on the economy, further exacerbated by the need for additional financing in wartime. Therefore, an important task for it is debt restructuring and reduction of state expenditures, which is extremely difficult in wartime, as the country has to resist invaders. Among the promising directions for improving the situation, it is worth noting the creation of new jobs, stimulation of investments in government bonds, introduction of NBU instruments for preferential targeted refinancing of bank loans for priority projects, adjustment of the NBU accounting rate according to the nominal GDP growth rates.

4. Discussion

The study identified that in a crisis situation, financing the budget through loans, grants, and other means is crucial for the state to fulfill its functions, although it leads to an increase in the national debt. International aid is also an important source of funds, but stimulating internal sources for their receipt is advisable. One of the most important internal sources of budget revenue is tax receipts.

In the research by Kaneva and Halaburda (2022), the main sources of filling the state budget of Ukraine were revealed, allowing the state to perform its functions under the conditions of martial law. Nakovtsi emphasize the importance of such a source of budget revenues as international support. While agreeing with this statement, it should be emphasized that the volumes of international support can be unstable, so the government should also focus on optimizing internal sources of budget revenue. A wider range of directions for improving the financial support of the state's functions in a crisis situation, taking into account internal capabilities, is outlined in Gordiienko's work (2023). The study identifies key areas for supporting the Ukrainian economy, including attracting international support from partners (including grants), implementing business support programs, setting the unified tax rate at 2%, relocating businesses while preserving thousands of jobs, and implementing various credit programs (e.g., for businesses and agricultural enterprises).

Holovan (2022) reveals the benefits of the tax reform that was planned in Ukraine before the war. The goal of such reform was to build a simple and economically fair tax system with minimal time and effort spent on tax calculation and payment, aimed at ensuring sustainable economic development, as well as a sufficient level of funding for the state and local budgets. This reform focused on budget funding through the service function of fiscal authorities, rather than through financial penalties and overpayments. Although the reform direction has changed during the war, the main idea of transitioning from a punitive to a service function remains relevant and can contribute to the optimization of tax policy.

Benmelech and Tzur-Ilan (2020) conclude that countries with high credit ratings and higher incomes announced more extensive fiscal policies during COVID-19. These countries were limited in their use of conventional monetary policy tools as they entered the crisis with very low interest rates, which did not allow them to further reduce rates to stimulate spending and investment. At the same time, these countries employed more unconventional instruments, such as guarantees provided by central banks, relaxation of macroprudential rules, asset purchases, restrictions on dividend payments and share buybacks by financial institutions. Researchers note that more concern is raised by countries with lower incomes and credit ratings, which are likely to be unable to effectively apply fiscal policy tools in crisis conditions. Specifically, in Ukraine, after the full-scale invasion, the National Bank raised its interest rate from 10 to 25 percent. This measure aimed to curb inflation and discourage the conversion of hryvnia to foreign currency. After inflation slowed and the hryvnia stabilized, the interest rate was gradually reduced to 15 percent.

In studies exploring the features of fiscal policy in the context of COVID-19, scholars often emphasize the effectiveness of fiscal measures such as tax breaks and other support measures for households and businesses. Alberola *et al.* (2021) note the significant impact of appropriate fiscal measures on the financial capacity of developed countries during the COVID-19 pandemic and, consequently, on their ability to fulfill their functions. Such fiscal measures were aimed at providing adequate support to companies and households, mitigating the slowdown in economic activity, positively impacting the labor market, and preventing individual companies from bankruptcy. McNichol *et al.* (2020) note that significant fiscal breaks are necessary during a crisis (using the example of the U.S. during COVID-19). This should allow states to avoid negative consequences, such as a sharp reduction in spending, which could deepen the recession. The uncertainty regarding the duration and depth of the crisis only underscores the need to extend fiscal breaks. Faria-e-Castro (2021) identifies unemployment assistance as a stabilization tool for borrowers' incomes, and liquidity support programs as a stabilization tool for employment in affected sectors, as the most effective instruments for economic stabilization. Wilson (2020) highlights five components describing the U.S. fiscal policy response to the COVID-19 pandemic: transfers to individuals, transfers to state and local governments, government consumption through direct federal purchases of goods and services, tax reserves, and grants and non-repayable loans to businesses (including the Paycheck Protection Program).

In the context of the war in Ukraine, support for citizens and businesses is also crucial. However, alongside this, there are important tasks such as developing long-term strategies for repaying the national debt, implementing effective tax reforms without excessive tax burdens on businesses and the population, increasing transparency in the use of funds (including in the turnover sector), and more.

Studying the budget policy strategies of the United States during the Great Recession and the COVID-19 pandemic, Rubin and Willoughby (2021) note that during the Great Recession, mostly conventional budget policy tools were used, including access to reserve funds, personnel and program transformations, spending cuts, as well as increased revenue through tax increases, fees, and payments. During the Great Recession, federal stimulus funds contributed to budget balancing. The key difference in budget policy in the context of the COVID-19 pandemic is that federal aid was mostly directed to companies and individuals, forcing states to independently address budget deficit issues. In Ukrainian conditions, measures in the field of social support and tax reduction are more appropriate, although it is important to ensure tax discipline.

Gallagher *et al.* (2020) notes that the COVID-19 pandemic has highlighted the instability of the global financial system and the Global Financial Safety Net, which includes various levels such as national currency reserves, central bank swap lines, and financial resources of global financial institutions (e.g., IMF). The researcher points out the insufficient resources of the IMF to support countries in crisis and the lack of coordination in measures among the international community. From this, it can be summarized that today the economies of the world are affected not only by the consequences of the post-COVID-19 downturn but also by global crisis trends in financial security. For Ukraine, which is experiencing its own crisis related to the invasion, this is particularly critical because IMF resources are an important source of funding for its budget. At the same time, these trends underscore the importance of optimizing internal revenue sources as the main source of funding for state functions.

Conclusion

Economic recession negatively affects the ability of the state to perform its functions. At the same time, the proper performance of these functions is the essence and a top priority for any state, especially in crisis conditions. The main sources of funding for state functions are the state budget and internal and external borrowing.

Based on the research results, it is worth emphasizing the need to optimize internal sources of funding for state functions. Primarily, this includes tax revenues, the share of which in Ukraine has significantly decreased since the beginning of the war. This requires the implementation of various fiscal measures, including tax incentives and support for businesses and households. At the same time, it is necessary to ensure proper tax discipline.

As the research has shown, defense expenditures dominate the structure of Ukraine's state budget expenditures. This requires increased attention to the proper use of funds, increased accountability, and transparency.

The reduction in international aid forces the government to seek new opportunities for international cooperation. International loans can lead to disruptions in the state's financial stability, contributing to the growth of the state debt, but they are a necessary measure in times of war.

The increase in the state debt, its significant predominance over gold and foreign exchange reserves, and its size as a percentage of GDP are the most alarming trends. Therefore, the state needs to pay attention to the development of long-term strategies for debt repayment and restructuring. Further research directions may include the development of proposals for the formation of such strategies.

Credit Authorship Contribution Statement

The authors equally contributed to the present research, at all stages from the formulation of the problem to the final findings and solution.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Declaration of Use of Generative AI and AI-assisted Technologies

The authors declare that they have not used generative AI and AI-assisted technologies during the preparation of this work.

References

[1] Adolph, C., Breunig, C., and Koski, C. (2020). The political economy of budget trade-offs. *Journal of Public Policy 40*(1): 25-50. DOI: https://doi.org/10.1017/S0143814X18000326

[2] Alberola, E., Arslan, Y., Cheng, G., and Moessner, R. (2021). Fiscal response to the COVID-19 crisis in advanced and emerging market economies. *Pacific Economic Review, 26*(4): 459-468. DOI:https://doi.org/10.1111/1468-0106.12370

[3] Barreyre, N., and Delalande, N. (2020). *A World of Public Debts: A Political History*. Palgrave Macmillan. DOI:https://doi.org/10.1007/978-3-030-48794-2

[4] Benmelech, E., and Tzur-Ilan, N. (2020). The determinants of fiscal and monetary policies during the COVID-19 crisis. *National Bureau of Economic Research*, w27461. DOI: https://doi.org/10.3386/w27461

[5] Clemens, J., and Veuger, S. (2020). Implications of the COVID-19 pandemic for state government tax revenues. *National Tax Journal, 73*(3): 619-644. DOI: https://doi.org/10.17310/ntj.2020.3.01

[6] Deb, P., Furceri, D., Ostry, J. D., Tawk, N., and Yang, N. (2021). The effects of fiscal measures during COVID-19. *CEPR Discussion Paper,* DP16726. Available at: https://ssrn.com/abstract=4026566

[7] Doronin, I. M. (2020). Security essence of state functions. *Information and Law, 1*(32): 66-79. DOI:https://doi.org/10.37750/2616-6798.2020.1(32).200310

[8] Dougherty, S., and de Biase, P. (2021). Who absorbs the shock? An analysis of the fiscal impact of the COVID-19 crisis on different levels of government. *International Economics and Economic Policy, 18*: 517-540. DOI: https://doi.org/10.1007/s10368-021-00518-1

[9] Faria-e-Castro, M. (2021). Fiscal policy during a pandemic. *Journal of Economic Dynamics and Control, 125*: 104088. DOI: https://doi.org/10.1016/j.jedc.2021.104088

[10] Fatmawati, K. (2022). Gross domestic product: Financing and investment activities and state expenditures. *KINERJA: Jurnal Manajemen Organisasi dan Industri, 1*(1): 11-18. DOI: https://doi.org/10.37481/jmoi.v1i1.3

[11] Gallagher, K., Ocampo, J. A., and Volz, U. (2020). Special drawing rights: International monetary support for developing countries in times of the COVID-19 crisis. *The Economists' Voice, 17*(1): 20200012. DOI:https://doi.org/10.1515/ev-2020-0012

[12] Gangopadhyaya, A., and Garrett, A. B. (2020). Unemployment, health insurance, and the COVID-19 recession. *Health Insurance, and the COVID-19 Recession*. DOI: https://dx.doi.org/10.2139/ssrn.3568489

[13] Gordiienko, M. I. (2023). Overview of changes in the tax legislation of Ukraine during the period of martial law. *Young Scientist 1*(113): 158-162. DOI: https://doi.org/10.32839/2304-5809/2023-1-113-31

[14] Hilton, S. K. (2021). Public debt and economic growth: contemporary evidence from a developing economy. *Asian Journal of Economics and Banking 5*(2): 173-193. DOI: https://doi.org/10.1108/AJEB-11-2020-0096

[15] Hlushchenko, S., and Melnyk, A. (2021). Fiscal stimuli of economic development in the world in the conditions of the COVID-19 pandemic. *Scientific Notes of NaUKMA. Economic Sciences 6*(1): 45-51. DOI:https://doi.org/10.18523/2519-4739.2021.6.1.45-51

[16] Holovan, T. H. (2022). Tax policy in conditions of martial law. In *Challenges of the Legal Profession in Conditions of Martial Law* (pp. 31–34). Kharkiv: National Pedagogical University named after G. S. Skovoroda, Kharkiv National Economic University named after S. Kuznets. Available at: https://dspace.hnpu.edu.ua/handle/123456789/8819

[17] Jomo, K. S., and Chowdhury, A. (2020). COVID-19 pandemic recession and recovery. *Development, 63*: 226-237. DOI: https://doi.org/10.1057/s41301-020-00262-0

[18] Kaneva, T., and Halaburda, A. (2022). Budget policy of the state in conditions of martial law. *Bulletin of Kyiv National Trade and Economic University, 144*(4): 98-109. DOI: https://doi.org/10.31617/1.2022(144)07

[19] Law, S. H., Ng, C. H., Kutan, A. M., and Law, Z. K. (2021). Public debt and economic growth in developing countries: Nonlinearity and threshold analysis. *Economic Modelling 98*: 26-40. DOI:https://doi.org/10.1016/j.econmod.2021.02.004

[20] Leandro, Á. (2020). The fiscal response to COVID-19 in Europe: will it be enough? *CaixaBank Research*. Available at: https://www.caixabankresearch.com/en/economics-markets/public-sector/fiscal-response-covid-19-europewill-it-be-enough

[21] McNichol, E., Leachman, M., and Marshall, J. (2020). States need significantly more fiscal relief to slow the emerging deep recession. *Center on Budget and Policy Priorities 14*. Available at: https://cosfp.org/wp-content/uploads/States-Need-Significantly-More-Fiscal-Relief.pdf

[22] Rubin, M. M., and Willoughby, K. (2021). State budget balancing strategies: COVID-19 and the Great Recession. *Public Budgeting and Finance, 41*(3): 22-41. DOI: https://doi.org/10.1111%2Fpbaf.12299

[23] Sarker, P. (2020). Covid crisis: Fiscal, monetary and macro-financial policy responses. *Theoretical and Applied Economics, 3*(2020): 624. DOI: https://dx.doi.org/10.2139/ssrn.3601524

[24] Sułkowski, Ł. (2020). COVID-19 pandemic: Recession, virtual revolution leading to de-globalization? *Journal of Intercultural Management, 12*(1): 1-11. DOI: http://dx.doi.org/10.2478/joim-2020-0029

[25] Tkachenko, I. (2020). Functions of the state: problems of determination. *Actual Problems of Jurisprudence, 3*: 102-107. DOI: https://doi.org/10.35774/app2020.03.102

[26] Wang, Z., and Kim, M. K. (2023). Tax revenues and state expenditures in the US with balanced-budget requirements using panel VAR. *Review of Regional Studies, 53*(2): 211-230. DOI:https://doi.org/10.52324/001c.87682

[27] Wilson, D. J. (2020). The COVID -19 fiscal multiplier: Lessons from the great recession. *FRBSF Economic Letter, 13*: 1-5. Available at: https://www.frbsf.org/economic-research/wp-content/uploads/sites/4/el2020-13.pdf

[28] Center for Economic Strategy (2024). GDP has grown compared to 2022, but still far from pre-war levels. Available at: https://ces.org.ua/ukrainian-economy-in-2023-tracker-overview/

[29] International Monetary Fund. (2021). Fiscal monitor database of country fiscal measures in response to the COVID-19 pandemic. Available at: https://www.imf.org/en/Topics/imf-and-covid19/Fiscal-Policies-Database-in-Response-to-COVID-19

[30] Ministry of Finance. (2024). Main page. Available at: https://minfin.com.ua/

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The Influence of the Digital State on Preventing and Detecting Corruption in Ukraine

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Abstract: The impact of state processes digitalization on preventing and detecting corruption in Ukraine is a key aspect for understanding the effectiveness of governance and the development of modern strategies in the fight against corruption. The utilization of digital technologies has the potential to substantially enhance transparency and diminish corruption hazards within governmental frameworks. The purpose of the article is to examine this effect in relation to contemporary challenges and opportunities. The article demonstrates that digital systems integration, such as e-declaration and e-procurement, assists in mitigating prospects for corrupt practices and increases citizens' trust in government. Correlation analysis shows the relationship between digitalization level and anti-corruption measures' effectiveness, emphasizing the importance of technological innovations in public administration. The obtained results of the correlation analysis show a connection at the level of 0.438, which indicates a moderate positive correlation between digitalization level of government processes and corruption decrease. The recommendations point to the need for an integrated approach where digital intervention is combined with other anti-corruption measures, including legal reforms and public engagement, to attain more substantial outcomes in the fight against corruption. The conclusions of the article highlight the significance of advancing digital infrastructure and legislative support for digital initiatives. The article draws attention to the imperative need to integrate digital strategies with the comprehensive anti-corruption policy in order to maximize their effectiveness and positive impact on society.

Keywords: digital state; fight against corruption; digitalization; corruption; innovations; cyber security.

JEL Classification: E69; D73; H89.

Introduction

The issue of corruption in Ukraine is deeply entrenched in its history. stretching from the Soviet past to the present. After the USSR collapse and the declaration of independence of Ukraine in 1991, the country faced numerous challenges, among which corruption persisted as a paramount concern. Systemic corruption schemes, which included abuse of power, bribery and inefficient management of public resources, became a major obstacle to the country's democratic and economic development. The extant issues have adversely affected Ukraine's global reputation, thereby hindering the progression of its European integration and calling into question the country's ability to carry out effective reforms.

The development of digital technologies and a new approach as a digital state emerged in Ukraine as a response to corruption-related challenges. Digitalization of government processes has opened opportunities for increasing transparency, reducing bureaucratic barriers and implementing effective control mechanisms. Initiatives such as the introduction of e-declaration, e-procurement and open data have become important steps towards government processes' modernization and democratization in Ukraine. Such measures contributed to increasing civil servants' responsibility and mitigating prospects for corrupt practices.

Europe's experience in the field of detecting and preventing corruption can serve as a valuable reference point for Ukraine (Tavolzhanskyi *et al.* 2023). Estonia, Finland and Denmark have demonstrated the effectiveness of using digital technologies in the fight against corruption. The aforementioned countries have implemented complex electronic governance systems, which ensured a high transparency level and citizen participation in public administration. Ukraine can assimilate this expertise by tailoring European methodologies to its unique circumstances and requirements.

In 2022, the war erupted in Ukraine; it ushered in novel obstacles to detecting and preventing corruption. In wartime, the importance of effective and transparent resource management becomes even more urgent (Miliienko, 2023). Overall, military conflicts often create a favorable environment for corrupt practices, which can undermine defense measures effectiveness and country's recovery. Ensuring transparency and control under martial law is critical to maintaining state's stability and security. The study of digital state's impact on preventing and detecting corruption in Ukraine opens new perspectives for understanding the role of technological innovations in modern governance. In light of the war hostilities, it is imperative to utilize all feasible methods in order to guarantee stability and transparency. These are crucial elements for ensuring citizens' trust and promoting sustainable development within the state.

The purpose of the study is to analyze the impact of state processes digitalization on preventing and detecting corruption in Ukraine. The main tasks are determined within the study framework: 1. Establish a connection between public services digitalization and the effectiveness of the fight against corruption, using the European countries' experience. 2. To assess the effectiveness of modern European approaches regarding the reduction of corruption risks, focusing on comparative analysis with best practices. 3. To elaborate recommendations for improving digital processes and strategies in the fight against corruption, considering proposals for technological innovation, regulatory and legal changes and public engagement.

1. Literature Review

The issues of the digital state for preventing and detecting corruption in Ukraine are discussed among researchers who focus on technological innovations and digital systems integration into government processes. Contemporary studies into digital state's impact on preventing and detecting corruption in Ukraine present a range of divergent approaches perspectives and methodologies within existing literature. Astakhov (2023) emphasizes the importance of government processes digitalization as a key factor in the fight against corruption. According to Miroshnyk *et al.* (2023), the implementation of electronic documentation systems and control over public procurement can significantly reduce the corruption risks. As noted by Bratić *et al.* (2023), the success of European countries in the field of state's digitalization ensures the transparency of public services and increases citizens' trust. Letki *et al.* (2023) emphasize the blockchain technologies' potential in the fight against corruption, as they ensure data integrity and transparency Further, Corrado *et al.* (2023) emphasize the importance of integrating digital technologies into government processes from a technical point of view and from the point of view of changing management culture and practices. Guo *et al.* (2023) argue that digitalization should be developed accordingly through reforms of government institutions and increased awareness among citizens. Existing ideas are supported by Kanojia *et al.* (2023), noting that digital technologies' effective use requires a clear strategy and political will. Cazacu *et al.* (2023) highlights the potential risks of digitalization, such as the possibility of using digital data for illegal surveillance or political pressure. As noted in Shevchenko (2023) research, Ukraine has substantial prospects for the integrating digital advancements in its public governance. Yet this requires a comprehensive approach, including staff training, public involvement, and improving legislation. Maslii *et al.* (2018) underscore the need to create strong institutional and legal foundations to support digital transformation. At the same time Pchelina (2022) examines examples of EU countries where digitalization contributed to increasing governance efficiency and reducing corruption. According to Karpacheva and Hock approach (2023), Ukraine can emulate the best practices of said nations, adapting them to its unique conditions and challenges. Balliu (2023) emphasizes the importance of integrating digital technologies into public administration, as such innovations can significantly increase the effectiveness of monitoring and analysis of state processes, reducing the possibility of corruption. Furthermore, Sokolenko (2023) confirms the practice that the introduction of electronic systems in public procurement has reduced corruption level in a numerous ministries and departments. Aldieri's *et al.* (2023) opinion focuses on the need for developing a regulatory framework that would support and regulate the digitalization process, as it ensures the legality and transparency of utilizing digital solutions. The significance of civil society in relation to digitalization and the fight against corruption is emphasized in the work by Kalienichenko and Slynko (2022), since the citizens' active involvement and digital literacy are key to the successful implementation of digital innovations. According to Motuzna and Reznik (2022), public involvement contributes to greater government actions' transparency and increases the level of trust and support for these initiatives. Tokarieva and Golub (2023) draw attention to the need to take into account local features and challenges when tailoring European digitalization experience to Ukraine. Shylo (2023) emphasizes that the effectiveness of digital initiatives depends on their relevance to local conditions and needs. Hrudovenko (2023) claims that in order to achieve significant results, Ukraine needs to implement comprehensive strategies that combine technological innovations, institutional reforms and active public involvement. Such an approach will enable not only detecting and preventing corrupt actions, but also contributing to the elaboration of a more transparent and effective governance. Tsymbalenko (2021) considers digitalization as part of a broader process of modernizing public administration. Anishchenko and Oharenko (2023) posit that the digital transformation in Ukraine has ushered in an era of increased governmental transparency, making it harder for corrupt practices to remain undetected. This sentiment is echoed by Cozma *et al.* (2023), where highlights the introduction of e-governance systems as instrumental in streamlining public services and reducing opportunities for corrupt interactions between citizens and state officials. Was provided an in-depth analysis of how e-procurement systems, by ensuring openness and competitive bidding, significantly lower the chances of corrupt deals (Kornienko and Tertyshnyk, 2021). Similarly, Vasylchyshyn (2021) discusses the role of electronic registries in promoting land transparency, thereby preventing fraudulent land transactions and misuse. Loishyna *et al.* (2019) emphasize the blockchain's capability to provide immutable records and secure transactions, which can be particularly effective in safeguarding state assets and preventing tampering with official documents. The researchers emphasize that the success of such initiatives depends on their integration with national development goals and strategies. Thus, the conducted analysis of the literary sources underscores the importance of a comprehensive approach that includes both technological and institutional changes, as well as the active participation of civil society to effectively address the problem of corruption and the development of a digital state in Ukraine.

2. Materials and Methods

To conduct this study, an analysis of data from open sources was used, which includes statistical data and information on corruption indices and the level of digitalization. To undertake this study, an examination of data from publicly available sources was utilized, encompassing statistical data and details regarding corruption indices as well as digitalization levels. The major sources of information were resources such as Transparency International (2023) and Statista (2023), which provide updated and verified data on various aspects of global corruption as well as the digital economy. Transparency International is a leading international organization in the fight against corruption, and Statista provides a wide range of statistics data from various areas. The utilization of said resources facilitated the attainment of research objectivity and reliability.

Research methods include quantitative and open-source data analysis. The use of quantitative analysis makes it possible to objectively assess trends and relationships between different variables, such as corruption level and digitalization across different countries. Accordingly, sources that provide comprehensive information, including reports and databases, were used to collect data, allowing for qualitative analysis and conclusions.

The sample for the study covers Ukraine and European countries with a high digitalization level. This choice was made on the basis of previous analysis, which showed a potential connection between the countries' digitalization level and their corruption ratings. European countries with a high digitalization level tend to show low levels of corruption, which makes them ideal to be analyzed and compared with Ukraine, where digitalization is still developing and where high corruption levels pose a serious problem.

Correlation analysis and the use of statistical data processing served as the principal research tools.

Correlation analysis enabled the determining the extent to which digitalization levels and corruption indices are interconnected across various countries. The use of statistical methods made it possible to process large amounts of data and identify significant trends and patterns that can be used to develop strategies and policies.

Research ethics and relevant criteria are a crucial research component. All data were collected and analyzed in compliance with the principles of transparency, objectivity and confidentiality. It was ensured that information derived from various sources did not violate copyright or any other legal statutes. The ethical dimension of disseminating the research findings was also considered to preclude erroneous inferences or bias.

3. Results

The significance of the digital state in relation to preventing and identifying corruption in Ukraine has become particularly pertinent amidst ongoing military operations unfolding since 2022. The war that broke out in Ukraine has significantly impacted every facet of the nation's existence, particularly its economic stability and operational procedures. During this critical period, the fight against corruption becomes even more urgent, as its schemes undermine citizens' trust in the state, and significantly harm the country's defense capability and recovery. Public services' digitalization plays a key role in countering this problem. The adoption of clear electronic management systems guarantees transparency and hinders any potential for corrupt practices. A crucial aspect of the digital state lies in its capacity to collect, analyze and visualize copious amounts of data, thereby enabling effective detection and analysis of potential corruption risks. The contemporary digital state advocates for the civic society engagement in overseeing the actions taken by governmental entities, providing tools for public control and reporting. Consequently, the government's level of trust and accountability towards its citizens is elevated, while simultaneously creating a barrier to corruption, ensuring a stable and effective system of governance in a country during a military conflict.

Analyzing the Table 1 of corruption indices in Ukraine in recent years, it is feasible to discern specific patterns and identify key features in the fight against corruption. Since 2015 with an index of 27, Ukraine has shown certain progress. However, this growth is not permanent, as the index rose again to 32 points in 2018, but then decreased again to 30 points in 2019. It was crucial to maintain stability in the index (33 points) during 2022, despite the ongoing military conflict and its resulting aftermath. This indicated that combating corruption remains a top priority amidst the challenging conditions of war and crisis.

Table 1. Historical Corruption Data (index points) by years in Ukraine

Data	Period	Date
33	2022	31.01.2023
32	2021	04.04.2022
33	2020	02.02.2021
30	2019	23.01.2020
32	2018	29.01.2019
30	2017	22.03.2018
29	2016	11.08.2017
27	2015	31.12.2015

Source: Compiled from Transparency International (2023)

The dynamics of corruption indices illustrate the multifarious nature of combating corruption in Ukraine, where substantial endeavors and reforms alternate with periods of reduced action or the influence of crisis scenarios. At the same time, the stability of the index in recent years may be a sign of the growing resistance to corruption challenges on part of state institutions and society, especially during the war period. The digitalization index of Ukraine in 2023 was 0.632 points, and in 2022 it was 0.651 points out of the maximum one. To detect and prevent corruption, it is necessary to focus on foreign countries with a high level of digital development, described in more detail in Table 2.

Notably, countries that have not traditionally been considered digital leaders are also showing significant growth. For example, Spain and Germany showed a steady increase in their indices from 40.52 and 33.44 in 2017 to 60.77 and 52.88 respectively in 2022.

Table 2. Digital economy and society index (DESI) scores for the European Union

Characteristic	2017	2018	2019	2020	2021	2022
Finland	47.85	50.37	54.14	58.43	63.16	69.6
Denmark	46.48	48.69	52.05	55.97	65.25	69.33
Netherlands	45.59	48.06	50.52	54.68	62.36	67.37
Sweden	45.71	48.74	51.96	55.75	60.49	65.22
Ireland	41.34	44.1	46.7	50.81	57.11	62.74
Malta	41.69	43.85	47.45	51.52	54.46	60.88
Spain	40.52	43.37	47.04	49.72	54.81	60.77
Luxembourg	43.83	45.82	47.73	51.2	55.04	58.85
Estonia	41.34	43.98	46.57	49.05	53.15	56.51
Germany	33.44	35.3	38.35	42.06	47.07	52.88

Source: Compiled based on Statista (2023)

Current trends indicate that digital transformation is becoming a priority not only for traditionally 'technological' countries, but also for other European states. The positive growth is due to various initiatives, including government programs to support digital education, the development of broadband infrastructure and the encouraging innovation within the private sector. The dynamics of the DESI indices reflect the tendency towards a gradual but consistent digitalization increase in the countries of the European Union. Efficient administration is paramount to foster economic growth and increase competitiveness, while improving the standard of living through enhanced access to digital services, education and prospects. Digital transformation in Europe is widespread and diverse, covering various aspects of the economy and social life. We will analyze the corruption indices in Europe for 2022 in Table 3.

Table 3. Corruption Index in Europe, 2022

Country	Last	Previous
Finland	87	88
Denmark	90	88
Netherlands	80	82
Sweden	83	85
Ireland	77	74
Malta	51	54
Spain	60	61
Luxembourg	77	81
Estonia	74	74
Germany	79	80

Source: Compiled from Transparency International (2023)

Information on corruption in Europe shows that countries with high levels have fewer cases of corruption in the state and economy. Considering the peculiarities of integrating digital technologies in the European market, its favorable influence is evident in the advancement of digital technologies and electronic governance, as well as in promoting transparency and accountability within governmental structures. The development of digital tools that provide easier access to information and increase data openness can play a key role in countering corrupt practices. Strengthening the digital infrastructure and integrating technological innovations into social and political life can become an essential component in strengthening transparency and fighting corruption in Europe. The use of correlation analysis will be key to identifying possible relationships between a country's digitalization and its corruption index, so its results are shown in Table 4.

The obtained result indicates the existence of a moderately positive relationship between digitalization and a low corruption level. However, the p-value of the significance level is about 0.21, which is above the usual threshold of 0.05 for statistical significance. There is a certain positive relationship between public sector's higher digitalization and a lower corruption level. Taking into account the possible dependence on digital state's effectiveness, it is necessary to implement measures for Ukraine based on digitalization in Europe, the main ones are presented in Table 5.

Table 4. Results of digitalization and corruption index correlation analysis

Country	Digitalization index of the public sector among European countries	Index of corruption among European countries	X·Y	X_2	Y_2
Finland	69.6	87	6055.2	4844.16	7569
Denmark	69.33	90	6239.7	4806.6489	8100
Netherlands	67.37	80	5389.6	4538.7169	6400
Sweden	65.22	83	5413.26	4253.6484	6889
Ireland	62.74	77	4830.98	3936.3076	5929
Malta	60.88	51	3104.88	3706.3744	2601
Spain	60.77	60	3646.2	3692.9929	3600
Luxembourg	58.85	77	4531.45	3463.3225	5929
Estonia	56.51	74	4181.74	3193.3801	5476
Germany	52.88	79	4177.52	2796.2944	6241
Amount	624.15	758	47570.53	39231.8461	58734

Source: calculated by the author

The correlation analysis between the Public Sector Digitization Index and the Corruption Index for the specified European countries shows a correlation coefficient of 0.44 (0.438).

Table 5. Measures to detect corruption in Ukraine based on European countries' experience

West	Description	European example
Implementation of the DESI index	The DESI index measures digitalization level of the economy and society. It was introduced in 2023, will be implemented in Ukraine from 2024, which will be a prerequisite in deterring corruption by monitoring digitalization effectiveness.	Estonia - the DESI index as a basis for assessing digitalization level and anti-corruption effectiveness.
Development of the electronic procurement system ProZorro	ProZorro makes the public procurement process more transparent and efficient.	Poland - the electronic procurement system 'e-Zamówienia' is similar to ProZorro
Using the e-declaration platform	A platform for submitting and monitoring officials' declarations regarding their income and property.	Sweden - 'Min Myndighetspost' platform for e-declaration
Implementation of the project 'Action. Digital education'	An educational resource for enhancing citizens' digital literacy.	Finland - 'Kansalaisten Digitalainen Sivistystyö' program for digital education
Launch of electronic justice	Simplifying and making the judicial process more transparent through digital technologies.	The Netherlands - the 'Rechtspraak' system for electronic justice
Automation of processes in public services	Automation of services to reduce the human factor and potential corruption risks.	Denmark - 'Borger.dk' service for automated government services
Implementation of electronic document management in government structures	Efficiency and transparency in documentation management.	Norway - the 'Altinn' system for electronic document management
Development and implementation of the mobile application 'Diya'	Allows citizens to receive government services and manage documents online.	Latvia - mobile application 'Latvija.lv' for access to public services
Creation of the Anti-Corruption Center in the field of public procurement	Monitoring and analysis of public procurement to identify corruption schemes.	Lithuania - 'CPO LT' system for monitoring public procurement
Implementation of the DESI index	The DESI index measures digitalization level of the economy and society. It was introduced in 2023, will be implemented in Ukraine from 2024, which will be a prerequisite in deterring corruption by monitoring digitalization effectiveness.	Estonia - the DESI index as a basis for assessing digitalization level and anti-corruption effectiveness.

Source: developed by the author

Currently, Ukraine faces a number of formidable obstacles, which include economic stability, political instability, military conflicts and corruption problems. One of the key obstacles on the way to socio-economic development and European integration is corruption. Basically, corruption undermines trust in government institutions, limits investment and the effectiveness of public administration. Modern challenges require innovative approaches and bold solutions to implement effective mechanisms to fight corruption and increase governance transparency.

European experience in the field of digitalization and e-government can become a significant source of inspiration for Ukraine. Accordingly, implementing digital technologies in the spheres of public administration, education, health care and social services can significantly increase the efficiency and transparency, reducing opportunities for corruption. Digital platforms for e-declaration, e-procurement and open data provide greater access to information, allowing the public to actively participate in monitoring and controlling government activities. Such initiatives, already successfully implemented in EU countries, can be adapted to Ukrainian realities, contributing to a more open and responsible management system. Improving the current situation in Ukraine depends on the country's ability to integrate positive European experience and adapt it to its own needs. It involves not only technological integration, but also the legal and regulatory framework, institutional capabilities strengthening and civil society development. A crucial factor lies in securing the backing of global allies and assimilating into Europe's economic and political framework, which will provide Ukraine with additional resources and opportunities to overcome internal challenges. Such a comprehensive approach can be a guarantee of achieving significant progress in the fight against corruption, increasing the government transparency and the overall nation's progression towards conforming to European norms and standards.

4. Discussions

Further investigation is needed to explore the impact of the digital landscape on anti-corruption measures in Ukraine and advance technological advancements. Unlike Aldieri *et al.* (2023), who focuses on the successes of using electronic systems in public procurement, the own study also notes the need for further development of the regulatory framework to support digital transformation. The obtained results also reflect Bratić *et al.* (2023) viewpoint concerning the pivotal function of civil society and digital proficiency, underscoring the significance of citizens' dynamic involvement in digital transformation procedures. At the same time, the conclusions regarding the necessity of amalgamating digital revolution with national development objectives and tactics (Bahoo *et al.* 2023) contrast with the viewpoint of Cazacu *et al.* (2023), who emphasizes the need for a broader approach that includes institutional reforms. Our research indicates that digitalization is not a cure-all solution for combating corruption in Ukraine, but rather an essential component of a comprehensive approach. This coincides with the conclusions (Shovkun 2023) about the adaptation of European experience to local conditions. According to Hrudovenko (2022), the importance of the cultural factor and mentality features that can influence the implementation of digital solutions is emphasized, which remains uncertain and requires further analysis. Letki *et al.* (2023) findings corroborate their own evaluations regarding the assimilation of a comprehensive perspective on the intricate and diverse character of the digitalization, its procedure in Ukraine drawing upon on the experience of European countries. The proposed hypothesis is reflected by Kubbe and Panov (2023) findings regarding the practical effectiveness of innovations in public administration. Unlike Kolomoiets and Makarenkov (2021), who focuses on Europe's successes in detecting corruption, the study demonstrates that Ukraine needs to take into account both European and Ukrainian experiences. This approach is supported by Kanojia *et al.* (2023) and Mmakwena *et al.* (2023) opinions about digital technologies' potential, as the study considers promising the utilization of cloud systems and innovative solutions. However, Shylo (2023) emphasizes the need for a clear strategy for the effective use of digital technologies. It was found that digitalization in Europe has a correlation with the economy digitalization level. Thus, the discourse expands the horizons of comprehending how digitalization can impact anti-corruption endeavors in Ukraine and highlights the necessity for additional investigation and formulation of explicit tactics to detect and overcome it.

Conclusions and Further Research

The research conducted indicates that the digitalization of state processes is crucial in combating corruption within Ukraine. The implementation of digital technologies, such as electronic declaration systems, e-procurement and access to open data, contributes to increasing transparency as well as government structures accountability. That said, the proposed initiatives can significantly reduce opportunities for corruption while also increase citizens' trust in state institutions. Digitization opens up new opportunities for involving citizens in control and decision-making processes at the government level, which can increase the level of citizen participation and responsibility. Further development will foster a culture of transparency and accountability in government, which is critical for detecting corruption. An essential aspect is the enhancement of global collaboration concerning the transfer of knowledge and best practices of digital transformation, which provides Ukraine with additional resources and knowledge for the effective implementation of these technologies. The process of digital transformation cannot be standardized and necessitates a thorough and all-encompassing strategy that includes institutional reforms, a change in management culture, and the active involvement of civil society.

However, digitalization is associated with certain problems and global challenges. For instance, there is a risk of abuses in data privacy and digital surveillance, which can undermine citizens' trust in digital initiatives. Technical aspects of digital transformation, including ensuring cybersecurity and systems' reliability, are critical to prevent new forms of corruption. Given the above, it is important to take into account the risks associated with the digital divide and unequal access to digital technologies among different regions and social groups. The circumstances require meticulous strategizing and implementation of inclusive policies to ensure that the benefits of digitalization are available to all citizens, regardless of their location or socio-economic status. It is imperative to prioritize the cultivation of digital literacy among both the general populace and public officials as they play a crucial role in the efficacious integration and utilization of digital innovations.

In the light of the conducted analysis, it is necessary to provide recommendations in accordance with key measures to improve the situation in Ukraine. It is crucial to devise and execute all-encompassing plans for digital transformation that take into account the specifics of the Ukrainian landscape, including institutional, legal and cultural aspects based on European experience. The emphasis ought to be placed on fortifying the cybersecurity and data safeguarding infrastructure in order to ensure digital systems' reliability and security. It is imperative to elevate the standard of digital proficiency and aptitude in utilizing technological resources among both the citizens and civil servants. The suggested measures, in conjunction with an open dialogue between the government, civil society and the private sector, will facilitate the development of a transparent and reliable digital governance system that will effectively fight corruption and increase citizens' trust in public institutions.

Credit Authorship Contribution Statement

The authors equally contributed in the present research, at all stages from the formulation of the problem to the final findings and solution.

Declaration of Competing

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Declaration of Use of Generative AI and AI-assisted Technologies

The authors declare that they have not used generative AI and AI-assisted technologies during the preparation of this work.

References

[1] Aldieri, Luigi, Cristian Barra, Nazzareno Ruggiero, and Concetto (2023). Corruption and firms' efficiency: International evidence using an instrumental variable approach. *Economia Politica,* 40(2): 731–759. DOI:https://doi.org/10.1007/s40888-022-00267-7

[2] Anishchenko, Mykhailo, and Viktor Oharenko (2023). Economic justification of corruption risks in the field of healthcare. *Baltic Journal of Economic Studies,* 9(2): 40–47. DOI: https://doi.org/10.30525/2256-0742/2023-9-2-40-47

[3] Astakhov, Vladislav (2023). Comparison of public administration policy and administration in the field of struggle with corruption in Ukraine and Singapore. *Public Administration and State Security Aspects,* 1: 88–98. DOI: https://doi.org/10.52363/passa-2023.1-10

[4] Bahoo, Salman, Ilan Alon, Josanco Floreani, and Marco Cucculelli (2023). Corruption, formal institutions, and foreign direct investment: The case of OECD countries in Africa. *Thunderbird International Business Review,* 65(5): 461–483. DOI: https://doi.org/10.1002/tie.22361

[5] Balliu, Alesia (2023). Fight corruption the EU membership requirement: The case of Albania. *European Scientific Journal,* 19(23): 25–42. DOI: https://doi.org/10.19044/esj.2023.v19n23p25

[6] Bratić, Vjekoslav, Martina Pezer, and Stanić Branko (2023). Asset declarations – an effective corruption prevention instrument in Southeast Europe or paper tiger? *IPF Notes,* 16(130): 1–12. DOI:https://doi.org/10.3326/in.2023.130

[7] Cazacu, Mihai, Alexandra Horobet, Marinela-Luminita-Emanuela Zlatea, and Lucian Belasco (2023). Researching the impact of corruption and organized crime on FDI in Europe: A literature review. *Economies of the Balkan and Eastern European Countries, KnE Social Sciences,* 2023: 1–15. DOI:https://doi.org/10.18502/kss.v8i1.12631

[8] Corrado, Germana, Luisa Corrado, Giuseppe De Michele, Francesco and Salustri (2023). Are perceptions of corruption matching experience? Evidence from microdata. *The British Journal of Criminology,* 63(3): 687–708. DOI: https://doi.org/10.1093/bjc/azac025

[9] Cozma, Adeline-Cristina *et al*. (2023). Corruption, deforestation, and tourism – European case study. *Heliyon,* 9(8): E19075. DOI:https://doi.org/10.1016/j.heliyon.2023.e19075

[10] Guo, Qingram *et al*. (2023). The roles of organic farming, renewable energy, and corruption on the biodiversity crisis: A European perspective. *Environmental Science and Pollution Research,* 30(11): 31696–31710. DOI:https://doi.org/10.1007/s11356-022-24344-3

[11] Hrudovenko, O. S. (2022). Administrative and legal status of the department for the prevention and detection of corruption of the ministry of defense of Ukraine. *Actual Problems of Native Jurisprudence,* 4: 79–83. DOI:https://doi.org/10.32782/3922123

[12] Kalienichenko, L. I., and Slynko, D. V. (2022). Concept, features and types of corruption. *Law and Safety,* 84(1): 39–46. DOI: https://doi.org/10.32631/pb.2022.1.04

[13] Kanojia, Siddharth, Ojha, Shashi Bhushan, and Muzaffar Hussian Mir (2023). Scrutinizing anti-corruption initiatives in Europe: Lessons to learn for India? *Journal of Liberty and International Affairs. Institute for Research and European Studies,* 9(2): 469–94. DOI: https://doi.org/10.47305/JLIA2392629k

[14] Karpacheva, E., and Hock, B. (2023). Foreign whistleblowing: The impact of US extraterritorial enforcement on anti-corruption laws in Europe. *Journal of Financial Crime*, 31(1): 1–13. DOI: https://doi.org/10.1108/JFC-11-2022-0283

[15] Kolomoiets, Tatiana, and Oleksii Makarenkov (2021). Digital intervention in legal mechanisms for detecting the proceeds of corruption. *Baltic Journal of Economic Studies,* 7(5): 235–242. DOI: https://doi.org/10.30525/2256-0742/2021-7-5-235-242

[16] Kornienko, M., and Tertyshnyk, V. (2021). Anti-corruption: Strategy and practice. *Problems of Legality,* 152: 87–101. DOI: https://doi.org/10.21564/2414-990x.152.226127

[17] Kubbe, Inna, and Stoyan Panov (2023). Corruption in Europe. Edited by Chandan Kumar Jha, Ajit Mishra, Sudipta Sarangi. *The Political Economy of Corruption*. Routledge, 189–215. DOI:https://doi.org/10.4324/9781003142300-13

[18] Letki, Natalia, Maciej A. Górecki, and Adam Gendźwiłł (2023). 'They accept bribes; we accept bribery': Conditional effects of corrupt encounters on the evaluation of public institutions. *British Journal of Political Science,* 53(2): 690–697. DOI: https://doi.org/10.1017/S0007123422000047

[19] Loishyna, Natalia *et al*. (2019). Compliance control of conflict of interests in the general system of internal control and resource management. *Journal of Scientific Papers 'Social Development and Security',* 9(5): 58–80. DOI: https://doi.org/10.33445/sds.2019.9.5.4

[20] Maslii, Natalia *et al*. (2018). Modern technologies of detection and prevention of corruption in emerging information society. *Problems and Perspectives in Management,* 16(1): 58–67. DOI:https://doi.org/10.21511/ppm.16(1).2018.06

[21] Miliienko, Olena (2023). Public-Private Partnership as a Paradigm for Building Socially Responsible Business: Successful Implementation and Plotting of Corruption Schemes and Related Criminal Liability. *Pakistan Journal of Criminology,* 15(3): 337-354.

[22] Miroshnyk, M., Shevchuk, A., Kalitnyk, M., and Pikul, R. (2023). Study of problem issues regarding the implementation of measures for the prevention and detection of corruption in the armed forces of Ukraine during a special period. *International Scientific Journal 'Internauka',* 15(149): 1–15. DOI:https://doi.org/10.25313/2520-2057-2023-15-9166

[23] Mmakwena, Modipa, Sandie Masuku Clement, and Kholofelo Annah Rakubu (2023). Corruption within the traffic police environment: Challenges and possible solutions. *Pakistan Journal of Criminology,* 15(4): 533–549.

[24] Motuzna, A. V., and Reznik, M. O. (2022). Theoretical and legal bases of research of legalization of criminal proceedings and directions of their detection. *Analytical and Comparative Jurisprudence,* 3: 117–120. DOI:https://doi.org/10.24144/2788-6018.2021.03.21

[25] Pchelina, O. (2022). On the question of criminal procedural regulation of the term 'electronic assets obtained by criminal route.' *Uzhhorod National University Herald. Series: Law,* 71: 327–332. DOI:https://doi.org/10.24144/2307-3322.2022.71.55

[26] Shevchenko, Nataliia, Marta Kopytko, and Iryna Mihus (2023). Directions of decreasing the level of corruption in Ukraine in the conditions of crisis phenomena and increasing the need for legalization of income. *Scientific Notes of the University'KROK'* 2: 21–28. DOI: 10.31732/2663-2209-2022-70-21-28

[27] Shovkun, Yurii (2023). The subject composition of control over compliance by public servants with the legal restrictions established for them. *Analytical and Comparative Jurisprudence,* 4: 292–296. DOI:https://doi.org/10.24144/2788-6018.2023.04.49

[28] Shylo, S. (2023). Peculiarities of the application of legislation on the prevention of corruption in the conditions of martial law. *Uzhhorod National University Herald. Series: Law,* 2(74): 86–93. DOI:https://doi.org/10.24144/2307-3322.2022.74.48

[29] Sokolenko, Liudmyla (2023). The conceptual significance of internal audit in the armed forces of Ukraine. *Form and Finance,* 1(99): 49–55. DOI: https://doi.org/10.33146/2307-9878-2023-1(99)-49-55

[30] Tavolzhanskyi, Oleksii *et al*. (2023). Anti-Corruption Legislation of Certain Member States of the European Union: Theory and Practice. *Pakistan Journal of Criminology,* 15(1): 31-48.

[31] Tokarieva, K. O., and Golub, M. V. (2023). Peculiarities of some law enforcement agencies' activities: National and foreign experience. *Bulletin of Kharkiv National University of Internal Affairs,* 101(2): 84–95. DOI:https://doi.org/10.32631/v.2023.2.08

[32] Tsymbalenko, Ya (2021). The origin of authorized person for corruption prevention and detection institute establishing in Ukraine. *Law and Public Administration,* 1: 271–278. DOI:https://doi.org/10.32840/pdu.2021.1.40

[33] Vasylchyshyn, Oleksandra (2021). Financial crimes in the fiscal sphere as a threat to the economic security of Ukraine. *World of Finance,* 1(66): 124–137. DOI: https://doi.org/10.35774/sf2021.01.124

[34] Statista (2023). Annual aggregate digital economy and society index (DESI) scores for European Union member states from 2017 to 2022. Available at: https://www.statista.com/statistics/1372137/eu-digitalization-desi-member-states/

[35] Transparency International (2023). Corruption Perceptions Index. Available at: https://www.transparency.org/en/cpi/2023

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Socio-Economic Aspects of Accessibility to Museums and Galleries in Europe by Removing Barriers

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Abstract: The paper deals with the theoretical and empirical investigation of socio-economic aspects of accessibility to museums and galleries by removing various barriers. While there are certain costs associated with barrier removal, making museum and galleries accessible also leads to an increase in visitor numbers, resulting in higher incomes. Thus, accessibility in turn, impacts both economy and society. The aim is to examine and identify the socio-economic aspects associated with making museums and galleries accessible to all and to compare the approach to this process in Slovakia and abroad. The study analyses primary data collected through a combination of questionnaire survey and interviews. The research sample consists of Slovak museums and galleries (n=52) and associations from 6 European countries. Results reveal that the main problem lies in the elimination of architectural barriers, which is caused by the historical nature of buildings and the financial difficulty associated with technical modifications. The lack of financial resources is as well considered to be a fundamental hindrance to the process of removing barriers. However, making culture accessible to people with disabilities is not driven by internal motivation, but rather by an obligation arising from the law. The findings also underscore that representatives from museums, galleries, and associations acknowledge that while the immediate economic benefits may not be readily apparent, the long-term impact on the institution's attractiveness and visitor experience and happiness is profound. Moreover, implemented modifications are beneficial to a significantly broader audience, which expands the potential target group and may contribute to employment.

Keywords: socio-economic aspects; accessibility; disability; museums and galleries.

JEL Classification: O12; N44; L83; Z32.

Introduction

Tourism sector plays a crucial role in the financial development and economic growth of numerous countries, consistently ranking among the most prosperous industries globally. Additionally, the positive effects of tourism reverberate throughout the community, amplifying benefits across both the economy and society (Mohanty and Samal 2023; Mishra *et al.* 2023).

Despite globalization and technical progress, for disabled people, participating in tourism can be still difficult and challenging, mainly due to barriers resulting from inappropriate environmental solutions (Smith 1987; Darcy and Buhalis 2010; Agovino *et al.* 2017, Linderová 2018; Reyes-García *et al.* 2021) inappropriate communication and behaviour of staff (Darcy and Buhalis 2010; Linderová 2018), lack of financial resources (Agovino *et al.* 2017; Linderová 2018) or lack of relevant information about accessibility (Darcy and Buhalis 2010; Agovino *et al.* 2017). The partial or complete removal of such obstacles would represent the full integration of this minority group of population into society. Making tourism attractions accessible to everyone also means an increase in the number of visitors to tourism attractions and facilities (Agovino *et al.* 2017).

Currently, within the European Union, approximately 87 million people have some form of disability (European Council, 2022). Disability concerns not only people with long-term or temporary physical, mental or sensory disabilities, but also persons of short or tall stature in interaction with various barriers (UNWTO, 2013). Buhalis, Darcy and Ambrose (2012) add that the aging population, which is willing and able to travel, will soon make up more than 25% of the total European population. This statement is consistent with data from Eurostat (2023), which shows an increasing tendency in the percentage of the aging population. In 2022, people over 65 years of age accounted for 21.1% of the total European population.

We consider this issue to be topical and its solution is gaining importance in the development of tourism industry due to the growing number of people with disabilities (WHO, 2023) and population ageing (Buhalis, Darcy and Ambrose 2012) as an irreversible global trend. Even with the growing recognition of the importance of removing barriers in recent years, little attention is given to understanding the process. While existing literature acknowledges the socio-economic significance of accessibility in tourism (Agovino *et al.* 2017; Chikuta, Du Plessis and Saayman 2018; Cavapozzi and Zantomio 2020; Reyes-García *et al.* 2021; Rubio-Escuderos *et al.* 2021; Moura, Eusébio and Devile 2022; Załuska, Kwiatkowska-Ciotucha and Grześkowiak 2022; Gonda 2023), there remains a notable gap in examining this phenomenon within specific cultural attractions, which may highly impact both society and economic growth. Bridging this gap is crucial for developing targeted strategies that effectively promote accessibility while also addressing the diverse needs and interests of stakeholders involved in the management and utilization of cultural attraction such as museums and galleries. Therefore, the paper deals with the theoretical and empirical investigation of socio-economic aspects of accessibility to museums and galleries by removing various barriers. The aim is to examine and identify the socio-economic aspects associated with making museums and galleries accessible to all and to compare the approach to this process in Slovakia and abroad

1. Literature Review

1.1. Accessibility to Museums and Galleries as Tourist Attractions for Disabled Visitors

Barriers limiting participation in tourism can be understood as factors that can inhibit or influence motivation, needs and overall satisfaction with traveling, leading disabled people to be more selective (Melian, Prats and Coromina 2018; Perangin-Angin, Tavakoli and Kusumo 2023). While Reyes-García *et al.* (2021) focused on physical, sensory, and cognitive barriers resulting from various types of disabilities and their needs, Linderová (2018) classifies barriers mainly on the supply side including architectural, social, and economic constraints. This categorization aligns with the framework proposed by Darcy and Buhalis (2010), where instead of economic barriers, the authors identified information barriers, arising from a lack of information, as well as the inaccessibility of information. On the other hand, Crawford, Jackson and Godbey (1991) demonstrated a hierarchical structure of constraints consisting of interpersonal, intrapersonal, and structural barriers. Additionally, other authors such as Eusébio *et al.* (2023) and Hefny (2024) also lean to this categorization.

Fuchs (2024) asserts, that the removal of these barriers in the tourism industry is related mostly to the airport facilities, accommodation services, transportation and infrastructure, recreational activities, health, and wellness. As Mastrogiuseppe, Span and Bortolotti (2021) state cultural heritage as well as museums and galleries are increasingly interested in adopting strategies to improve accessibility. Similarly, Hannko (2015) and Kovačić *et al.* (2024) argue, that museums and galleries face evolving global trends and emergent challenges to keep up with a dynamic time, necessitating greater emphasis on meeting the requirements of a highly diverse audience to enhanced social inclusivity. Improving the accessibility of cultural attractions offers the opportunity for disabled people to partake a unique experience (Naniopoulos and Tsalis 2015), and therefore accessibility is the basis for the effective use of tourism resources (Kahtani, Xia and Veenendaal 2011). However, a comprehensive understanding of the preferences and needs of visitors is crucial for the development of an offer that is also adapted to these people (Závodi, Szabó and Alpek 2021).

Similarly, Meskele, Woreta and Weldesenbet (2018) underscore the significance of making attractions accessible, while it mainly requires a holistic (Andani, Rostron and Sertyesilisik 2013; Koustriava and Koutsmani 2023) and systematic approach, as it is a multidimensional phenomenon (Partarakis *et al.* 2016; Leahy and Ferri 2023). Entities responsible for managing and promoting cultural attractions should therefore take all appropriate measures to ensure that people with disabilities have access to activities and attractions and are able to participate, develop and use their creative, artistic, and intellectual potential not only for their benefit, but also for the enrichment of society (UNWTO, 2013). Naniopoulos and Tsalis (2015) warns that the evaluation of the current state of accessibility of cultural attractions is inevitable for the definition of alternative solutions for improving accessibility, whereas UNWTO (2023) emphasizes the need for adherence to international standards such as ISO Standard 21902 to facilitate accessibility.

According to Andani, Roston and Sertyesilisik (2013) as well as Linderová (2016), challenges frequently emerge in reconciling the concept of accessibility with monument preservation. Koustriava and Koutsmani (2023) state that this may be the reason why buildings of the recent past are more accessible than listed building.

Several other authors point out the necessity of preserving cultural and historical attractions (Naniopoulos and Tsalis, 2015; Lynch and Proverbs 2020).

Facilitating accessibility to cultural attractions also mostly affects the level of development of the country, and therefore, despite the higher prevalence of disabled people in developing countries, the implementation of accessibility is lower (Marsin, Ariffin and Shahminan 2014; Reyes-García *et al.* 2021; Kovačić *et al.* 2024). Another factor is the attendance, and therefore museums with higher number of visitors are achieving better accessibility (Kruczek *et al.* 2024). Moreover, Lynch and Proverbs (2020) identified various challenging factors that can influence barrier removal, including financing, lack of training and motivation, public opinion and last, but not least conflicts between debarierization efforts and business objectives.

1.2. Socio-Economic Aspects Associated with Making Cultural Facilities Accessible to All by Removing Barriers

Disability is a social phenomenon that no society can avoid. Disadvantages in the field of communication, social relations, and social integration are often associated with any disability (Kollarová and Kollar 2010; Faizefu and Neba 2024). Alongside aspects such as unemployment, poverty, crime, sexual, racial, ethnic, and gender discrimination, it is one of the most frequent factors of social exclusion (Koutsogeorgou *et al.* 2014; Gura *et al.* 2020; Haluwalia, Bhat, and Rani 2021; Önal *et al.* 2024). Furthermore, individuals with disabilities and their families incur supplementary expenses beyond typical living costs related to healthcare, assistive devices or personal assistance, transport, specialized diets and more (Mitra *et al.* 2017; Warren *et al.* 2023). This extra disability costs may vary depending on factors such as severity of disability, life cycle or household composition (Mitra *et al.* 2017).

People with disabilities thus face significant barriers in accessing health care, education, employment, or normal leisure activities (European Commission, 2021). For most people, traveling is important. It makes them happier, and, thus, it is an essential factor in the development of the quality of life (Gonda, Nagy and Raffay 2019). Travel can provide an opportunity for personal development through discovering new places, cultures, and civilizations, engaging in physical, artistic, sports, and leisure activities (ISTO, 2011). Among other things, it has been proven that free time and related activities create a sense of freedom. In conjunction with accessible tourism, this can promote social inclusion, develop knowledge, strengthen skills and abilities of disabled people, and help to cope with stress. This positive contribution extends to the mental and physical health and well-being of disabled persons (Kastenholz, Eusébio and Figueiredo 2015; Moura, Kastenholz and Pereira 2017; Cavapozzi and Zantomio 2020).

The search for independence, adventure, and risk are a set of driving forces for people with disabilities, or motivational factors (Shi, Cole and Chancellor 2012; Rubio-Escuderos *et al.* 2021). Other motives for participation in tourism, such as personal satisfaction, socialization, relaxation, discovery, and learning, are mentioned by Linderová (2016) and Eusébio *et al.* (2023). Additionally, by expanding the scope of their basic knowledge, they increase their educational level, which in turn affects a person's social profile (Gúčik 2020).

However, the decision to participate in tourism depends on health status and socioeconomic factors, including age, education, work history, type of accommodation, and frequency of establishing social relationships. Establishing social relationships can help overcome barriers caused by disability (Cavapozzi and Zantomio 2020).

A comprehensive understanding of the preferences and attitudes of visitors is crucial for the development of an offer that is also adapted to people with disabilities (Závodi, Szabó and Alpek 2021). This group of people is becoming an increasingly significant market segment thanks to the trend of the global population aging (Linderová 2016). Gonda (2021, 2023) states that substantial improvement in physical accessibility could result in exponential demand growth, because a differentiated product offer enables participation in tourism even for the socially disadvantaged or disabled population groups.

In the context of benefits, it may represent a business opportunity through the implementation of innovations (Zenko and Sardi 2014), because disabled visitors are considered to be loyal customers who often return to places with good accessibility, their average length of stay in the destination is longer and they usually do not travel alone, which also results in economic benefits (Domínguez, Fraiz and Alén 2013; Souca 2010; Linderová 2015; Linderová and Janeček 2017). Chikuta, Du Plessis and Saayman (2018) align with this statement, adding that disabled people spend more money per day and usually demand more services.

As articulated by some other authors, the development of a service chain adapted to the requirements and needs of individuals with disabilities may contribute to economic growth, employment, and competitiveness (Agovino *et al.* 2017; Kučera and Gavurová 2020; Santana-Santana, Peña-Alonso and Espino 2020; Liu *et al.* 2023). Linderová (2015) also highlights the opportunities arising from removing barriers, noting that it stimulates local production, and generate employment opportunities in the tourism industry as well as in related and supporting industries, which is one of the direct economic gains. According to Kovačić *et al.* (2024) accessibility furthermore contributes to socially responsible business and improve the image of cultural attractions and as noted by Liu *et al.* (2023), it leads to warmer and more considerate experiences and services being provided. Even, Leiras and Eusébio (2023) identified correlation between accessibility conditions and visitors' satisfaction.

Agovino *et al.* (2017) divide the economic benefits of accessibility into microeconomic and macroeconomic. From a microeconomic point of view, the authors consider the mitigation of seasonal fluctuations and the extension of the tourist season, the possibility of diversifying the offer and improving its quality, and the possibility of higher incomes to be an advantage. From a macroeconomic point of view, these advantages are related to the possibility of developing tourism at the national level, as well as to the strengthening of the sector providing a significant source of jobs and income from abroad. Frye (2015) adds that if tourism destinations were fully accessible, an additional 3.4 million jobs would be created for the European economy. Among other things, demand could increase by 44% per year, leading to an additional €142 million of GDP. Moreover, certain European Union countries observe a significant and positive impact on economic indicators due to the development of barrier-free tourism facilities, potentially up to a 20% increase. This implies that making these facilities accessible is not just a cost but an investment that leads to better economic outcomes in terms of income (Kučera and Gavurová 2020).

Although barrier removal primarily focuses on disabled people, according to Marčeková and Šebová (2020), it does not negatively impact the majority group of the population; rather, it enhances their safety and the overall attractiveness of the environment. Therefore, the accessibility is a condition for the full inclusion of people with disabilities or other special needs in society and simultaneously offers significant economic opportunities (Agovino *et al.* 2017).

Based on the above, we conclude that the socio-economic aspects of removing barriers can be understood as a set of interrelated social and economic factors. Understanding these aspects is crucial when designing and implementing effective measures to support inclusivity and equality, ensuring equal opportunities for all target groups to participate in tourism.

2. Materials and Methods

The aim of the paper is to examine and identify the socio-economic aspects associated with making museums and galleries accessible to all and to compare the approach to this process in Slovakia and abroad.

The collection of primary data was carried out through structured questionnaire disseminated electronically to representatives of Slovak museums and galleries. The investigation seeks insights into their perspectives on adapting facilities to all visitors as a possible business opportunity and the costs and revenues associated with the process. An overview of registered museums and galleries in Slovakia are maintained by the Ministry of Culture of the Slovak Republic in the Register of Museums and Galleries. Only those facilities that meet the conditions for performance of basic professional activities are entered in the register. As of the latest update on April 14, 2022, the Slovak Republic records a total of 94 museums and 25 galleries. Since two museums (Slovak National Museum and Slovak Technical Museum) and one gallery (Slovak National Gallery) have other organizational units, or displaced workplaces, which are also recorded in the register, our basic research sample consists of a total of 153 subjects.

The questionnaire garnered a response rate of 34%, indicating the participation of approximately one-third of the sampled subjects (n=52). In the realm of participation, museums accounted for the predominant share at 78.8%, with galleries contributing to 21.2% in our survey. The representativeness of the examined sample categorized by the type of facility, *i.e.* museum or gallery, was verified using the Chi-square goodness-of-fit test at the $\alpha=0.05$ significance level and we can conclude that the sample is representative (p-value = 0.692 > 0.05). For data processing and analysis, we utilized the MS Office Excel program and the SPSS statistical software.

In addition to the questionnaire, for better understanding of this process, we conducted structured interviews with representatives of museum associations in Slovakia and selected foreign countries who have expressed their willingness to partake in our study, aiming to obtain the necessary information. In our survey participated representatives of Czech Republic (Association of Museums and Galleries), Poland (Narodowy Instytut Muzeów), Austria (Museumsbund Österreich), Germany (Deutscher Museumsbund), and Netherlands (Museum4all). The interviews took place from September 2023 to January 2024 and were designed to assess and draw comparisons regarding the barrier removal in museum and galleries within both domestic and international contexts. The interview questions are oriented to the process of making museums and galleries accessible which is certainly associated with some obligations, obstacles, and social and economic benefits. The atlas.ti software was used for visual processing of the data.

3. Research Results

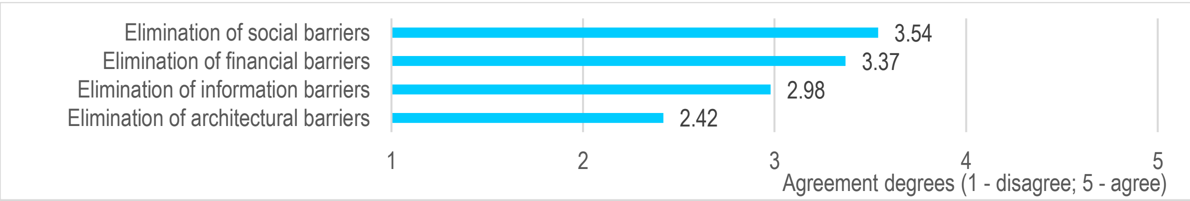
3.1. Attitudes Towards Debarierization among Representatives of Slovakian Museums and Galleries

A substantial majority of the surveyed museums and galleries employ 10-49 employees (73.1%). Based on the age of the building, our survey included mainly museums and galleries aged 100-249 years (40.4%). This is followed by the age category of 250-499 years, which makes up a share of 23.1%. Even facilities in the 500-1000 range (21.2%) participated in the survey. Our investigation primarily involved facilities situated in single-story (25%) and two-story (46.2%) buildings, indicating that the issue of barrier removal pertains to a significant majority of these facilities.

Currently, the largest target group of examined museums and galleries are children (36.5%), followed by adults (25%) and students (21.2%). One reason for this could be that museums and galleries focus a significant portion of their activities on educational programs primarily tailored for children. However, survey also indicates that only 32.7% of the participating museums and galleries maintain statistics on visitors with disabilities, while their share is low, and the values range from 0.5% to 50%. It is crucial to note that individuals with disabilities in Slovakia predominantly visit museums and galleries accompanied (96.2%).

Using a scale ranging from 1 (indicating minimal attention) to 5 (reflecting significant attention), we determined the extent to which managers pay attention to the removal of specific barriers that can prevent disabled people from visiting the facility (Figure 1).

Figure 1. Elimination of specific barriers



Source: own.

Based on the average values derived from the survey responses, museum and gallery managers pay significant attention to the elimination of social barriers, with an average value of 3.54 and a standard deviation of 1.39. In comparison, relatively less attention is allocated to addressing information barriers (mean value of 2.98), and the lowest emphasis is observed in the removal of architectural barriers (mean value of 2.42).

Considering that removing barriers is a time-consuming and financially difficult process and largely influenced by the legislation of the given state, we were interested in how these restrictions are preventing museums and galleries from initiatives associated with barrier removal (Table 1).

Table 1. Order of factors preventing from removing barriers

Factors	Friedman test (value)	Wilcoxon test	
		Rank	p-value
Financial difficulty	2.47	1.	-
Legislative regulations	1.66	2.	0.000
Time-consuming	1.87	2.	0.213

Source: own.

The results of the survey show that the biggest factor hindering from making museums and galleries accessible is the financial difficulty with an average value of 4.2. Friedman's test confirmed that individual factors do not hinder the adaptation of museums and galleries equally (p-value = 0.00). The Wilcoxon test helped us determine the order of these obstacles based on their statistical significance, while we found that financial difficulty really dominates.

We view positively that more than half of the participating facilities express interest in the issue of removing barriers and making culture accessible to people with disabilities (mean value 3.7) (Figure 2). Additionally, most of the respondents expressed empathy and willingness to prioritize this target group in the future, aiming to make their facilities accessible to physically disabled people (mean value 3.8).

Respondents took a neutral to negative attitude on the question regarding barrier removal as a possible business opportunity. We can therefore conclude that managers of museums and galleries do not perceive removing barriers as a possible business opportunity (mean value 2.6) or as a tool for increasing number of visitors (mean value 2.9).

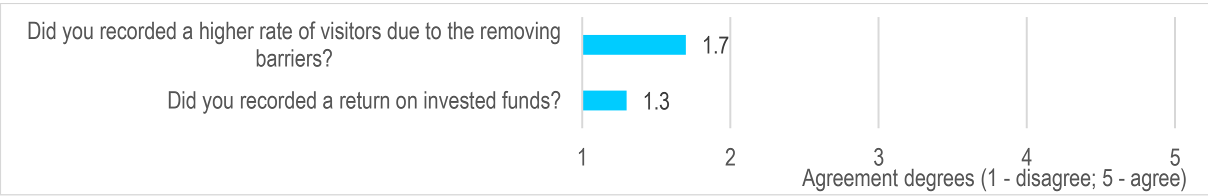
Figure 2. Attitudes to removing barriers as a business opportunity

Source: own.

The following questions related to specific data resulting from the process of removing barriers, and therefore only those museums and galleries that in recent years adapted and made their facilities accessible to the needs of the physically disabled visitors answered. Specifically, it concerns 25 (48.1%) of examined facilities in Slovakia. First, we were interested in whether the addressed museums and galleries recorded a higher rate of visitors due to the accessibility, since it benefits not only people with disabilities, but the whole society.

In accordance with the survey outcomes, the accessibility initiatives implemented by museums and galleries exhibit a minimal impact on number of visitors, while according to up to 56% of museums and galleries, number of visitors did not increase at all due to barrier removal (mean value on Likert scale 1.7). An increase in a number of visitors would also mean higher incomes, which would return the funds invested in barrier removal. We therefore asked the managers of museums and galleries to what extent they recorded a return on invested funds, expressing their answers on a scale of 1 (indicating no return) to 5 (indicating a complete return on investment) (Figure 3).

Figure 3. Impact of barrier removal on visitor numbers and return on investment



Source: own.

Since process of removing barriers does not result in an increase in number of visitors, the return-on-investment rate is also relatively low, with up to 80% of facilities not yet seeing a return on the financial resources they invested to remove barriers (mean value on Likert scale 1.3). The central issue may be the low entrance fee for disabled visitors, which currently ranges from €0.10 to €8 for visiting a single exposition or exhibition, excluding entities offering free entry for disabled visitors (34.6%).

Additionally, insights into the temporal aspect of return on investment were sought, with responses from 40% of facilities. However, only one gallery provided a specific timeframe, indicating an 8-year span for the return on investment. Notably, half of the surveyed facilities were unable to calculate or specify the exact duration of the return, while two facilities indicated either minimal return or an ongoing process. One of the reasons given was the fact that it is part of state-funded organization, and therefore it is not monitored.

The final open-ended question, answered by 15 respondents, inquired about additional benefits perceived from the process of removing barriers. A substantial proportion, comprising 46.7% of the participants, reported not discerning any notable benefits resulting from the debarierization efforts.

The responses provided by the participants indicate that the barrier removal in museums and galleries plays a pivotal role in fostering inclusive access to culture, extending beyond visitors to encompass disabled artists who gain opportunities to showcase their art in galleries. Additionally, museums and galleries have reported favourable responses from organizations and educational institutions engaged with these individuals.

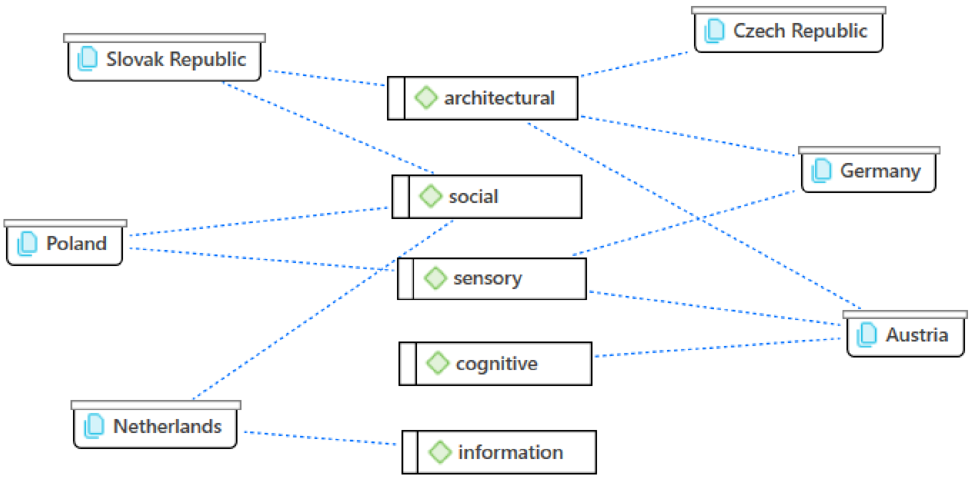
3.2. Improving Accessibility to Museums and Galleries: A Comparison of Slovakia and Selected European Countries in Debarierization Efforts

To accomplish a comparative analysis of the barrier removal and accessibility improvement to museums and galleries between Slovakia and other countries, we carried out interviews with representatives of associations that cover these cultural facilities in Slovakia and various European countries (Netherlands, Austria, Germany, Poland, and the Czech Republic).

a) The current situation and barriers encountered by people with disabilities when visiting museums and galleries

The responses from individual countries varied (Figure 1).

Figure 1. Barriers encountered by disabled visitors when visiting museums and galleries



Source: own.

In Slovakia, the predominant challenge pertains to architectural barriers, primarily due to the prevalence of museums situated in historical buildings. However, not every museum has trained staff to assist individuals with mental, visual, or hearing disabilities, which can be considered as a more significant barrier. Similarly, in Austria, German, and the Czech Republic, architectural barriers are the predominant issue. Many of these museums are also located in listed buildings, posing challenges for achieving universal accessibility. Despite the dedicated efforts of museum staff, addressing architectural barriers requires extensive technical modifications and equipment, often surpassing the available financial resources for Austrian and German museums. Approximately 800 Austrian museums operate solely on a voluntary basis, making it more difficult to ensure barrier-free access due to the financial situation.

> *'People with mobility impairments cannot visit all museums without barriers; many museums are in listed buildings that cannot be made accessible to all people. For blind people, people with visual impairments, deaf people, people with hearing impairments and people with learning disabilities, a barrier-free visit to museums often fails due to a lack of resources.'* (Representative of Museumsbund Österreich)

In Germany, efforts are being made to mitigate information barriers through enhanced information dissemination on museum websites and improved digital accessibility. At the same time, staff training is becoming standardized, although there is still space for improvement.

The Czech association's website provides information on whether each facility offers barrier-free access for visitors with disabilities, thereby partially eliminating information barriers. Contrary in the Netherlands, individuals with disabilities encounter information barriers, facing challenges in determining which museums are accessible. Additionally, there is a lack of a comprehensive overview of accessible museums and information is often hidden on websites, making it difficult for potential visitors to find. However, disabled individuals frequently exhibit a lack of interest in museums, due to unawareness of their potential appeal despite their physical limitations.

> *'First of all, people have a problem finding which museums are accessible to them. The information is often hidden far away on museum websites. And people often don't know where to find an overview of museums that are accessible. But it is also often the case that people are not interested in museums because they do not know that they can also be interesting despite their limitations. Much of the offering consists of special tours, but little has been adjusted in the museums themselves. And if there is a problem, it is not always known to the staff and security what is and is not allowed and what is not possible.'* (Representative of Museum4all)

In terms of architecture, information, communication, and digitization, 13.5% of the examined museums in Poland are fully adapted and 56.8% are partially adapted. Recordings in Polish sign language (6.2%), easy-to-read texts (9.8%) and induction loops (10.2%) can be considered the biggest deficiency.

b) Debarierization efforts aimed at museums and galleries

Other questions were more complex, and it were focused on approach to process of removing barriers. It can be concluded that nowadays museums in Slovakia are willing to make their exhibits accessible even to disabled visitors. The first reason is precisely the fact that culture should be accessible to all groups without distinction. Simultaneously, a higher number of visitors increases the attractiveness of museums. In the pursuit of enhancing culture accessible, museums take different measures depending on which disability they choose to focus on. A big trend is the introduction of haptic elements and accompanying texts in Braille, specifically catering to individuals with visual impairments. Museums are somewhat less devoted to the mentally disabled and deaf, considering their inherent ability to visually perceive the exhibitions.

Currently, removing barriers can be partly supported by the Ministry of Culture's assistance program. Additional financial resources can be secured through diverse project arrangements and an art support fund. For instance, integrating accessibility elements into scientific activities or within the development of new exhibits may offer avenues for obtaining funding.

From interviews it resulted that in Austria, the Czech Republic, and the Netherlands, due to legislation, they have no other option than to work on improving accessibility for the disabled visitors. In many cases the impetus for such initiatives arises not from internal motivations but rather from a legal obligation stemming from national laws.

> *„Because of the legislation, museums have no choice but to work to improve accessibility. So, it is often not an intrinsic motivation but the obligation to do something that gets them started. Now this is often by offering special programming and making the building more accessible. Sometimes it is integrated into the exhibitions and made more accessible.'* (Representative of Museum4all)

In the Czech Republic, accessibility of museums and galleries is solved continuously and long-term. Haptic exhibitions and programs for deaf visitors are implemented. Both larger and smaller museums, which also cooperate with local organizations, are dedicated to people with sensory disabilities. A good example is the Technical Museum in Brno, which includes the Typhoid Department. At the same time, conferences are held on this topic and methodological materials are published.

Museums in Austria predominantly focus on addressing the needs of individuals with limited mobility. Specifically, when planning exhibitions or establishing a permanent exhibition, efforts are made to provide barrier-free access to the maximum extent feasible. In that case, the implementation of induction hearing aids, simply written text or an audio guide is also considered. However, the widespread implementation of accessibility measures is hindered by financial constraints, as funding through grants and subsidies is often required. Not all museums have the financial resources to undertake comprehensive accessibility initiatives.

In the Netherlands, the government is making some efforts to enhance financial support for accessibility projects, but these measures are still relatively limited. German museums are equally interested in adapting culture to disabled visitors. As stated, 'Once they put accessibility on the list of priorities, most of them start with one bit and they increase the accessibility step by step'. Funding for these accessibility measures predominantly also comes from public resources and specialized programs. These museums most often deal with architectural and language barriers with particular attention given to obstacles faced by visitors with visual impairments. However, the special needs of individuals with hearing impairments and those with autism spectrum disorders are often insufficiently understood.

Polish museums and galleries demonstrate a keen interest in enhancing accessibility for individuals with special needs. The association covering museums organized around 35 trainings on museum accessibility for people with special needs with more than 500 participants. Additionally, museum staff receives training from other institutions and non-governmental organizations. Financial support for initiatives aimed at improving collection accessibility for this target group primarily comes from grant programs.

Currently, the examined museums are generally governed by legislation when making premises and services accessible for visitors with disabilities. In addition, there are guidelines in line with the global standard, and certain organizations issue quality marks, though their practical application can prove challenging for many museums. In the case of Slovak Republic, the basic document for museums is primarily the valid Code of Ethics for museums, stating that they should be accessible to the public. Notably, it stands as a moral principle rather than a legal regulation. Legislatively, Slovakia lacks a specific regulation compelling museums to ensure accessibility for individuals with disabilities.

In the Czech Republic, in addition to Act no. 122/2000 Coll., on the protection of collections of a museum nature, ordering the removal of architectural and other barriers, they also manage a publication from a national colloquium on the theme 'Museum for All' focused on accessible communication between museums and visitors, which includes theoretical and methodological texts and examples of good practice and serves as a guideline for museums and galleries.

Since the implementation of the Disability Equality Act on January 1, 2006, museums in Austria are obliged to ensure barrier-free access. The representative of the association covering Austrian museums considers this law a foundational document for enhancing accessibility in museums, which museums follow.

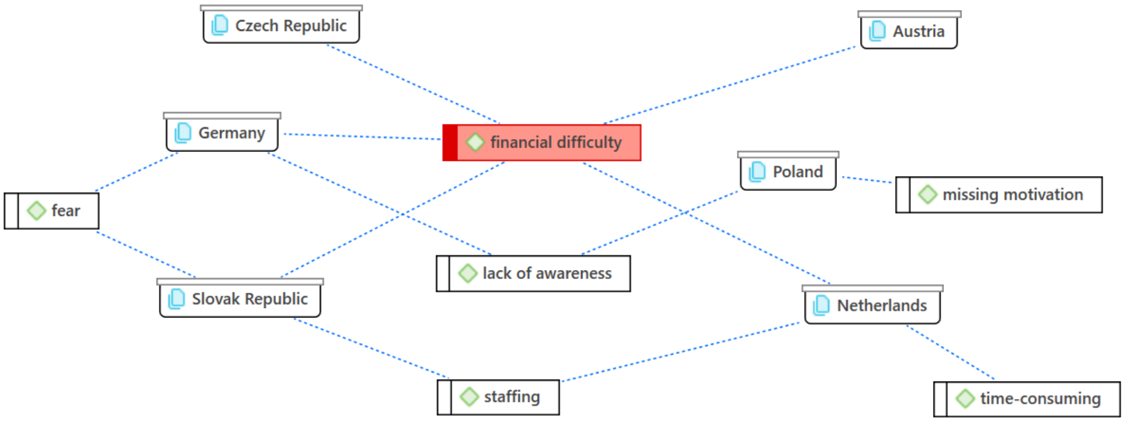
From a legislative point of view, in addition to the Convention on the Rights of Persons with Disabilities, which entered into force in Germany on May 3, 2008, museums also follow the national action plan on the path to an inclusive society (Unser Weg in eine inclusie Gesellschaft). However, Germany has numerous documents addressing inclusion and individuals with disabilities. According to the representative, the guide containing practical measures and recommendations for museums, published by the German Museum Association (Das inklusive Museum – Leitfaden), can be considered the foundational and most crucial document.

In Poland, museums and galleries primarily rely on Building law, law ensuring accessibility for individuals with special needs, regulations of the Ministry of Infrastructure on the technical conditions that buildings and their location must meet, and regulations of the Ministry of Development specifying the detailed scope and form of the building project for architectural accessibility. Regarding digital accessibility, museums are governed by laws on the electronification of activities of entities, the digital accessibility of websites and mobile applications of public entities, and government regulations on the national interoperability framework, minimum requirements for public registers and exchange of information in electronic form, and minimum requirements for ICT systems.

c) Obstacles and benefits associated with barrier removal

In the case of Slovak museums, the one of significant problems is the financial difficulty, as it often involves costly technical solutions that often may degrade quickly. Another problem is the fear of museum owners, because as stated '*on one hand managers would like to have accessible museum, but there is no one to attend to these visitors*', and thus staffing is another frequent obstacle (Figure 2).

Figure 2. Obstacles related to barrier removal across examined countries



Source: own.

The same obstacles related to barrier removal were identified across the other examined countries. The interviews revealed that the primary obstacle to making museums accessible to the disabled is a lack of financial resources across all countries, apart from Poland. Moreover, in the Netherlands, time is also a significant barrier when adapting museums to the needs of people with disabilities. Not every museum has the staff and resources to deal with this. In addition to the above, fear of change may be considered as an obstacle in Germany.

> *'The knowledge exists. The reasons to do so are well accepted. The will is there. The habits are strong. Change needs a giving up of habits. This is hard for everyone.'* (Representative of Deutscher Museumsbund)

According to the representative of the Polish association, the crucial factor lies in the approach and motivation of museum staff to implement solutions that ensure accessibility '*with sufficient commitment and awareness, museums can achieve good results even with more limited financial resources or technical possibilities*'.

Regarding the benefits arising from the accessibility improvement to museums, the representative of Slovak association pointed out that discussing economic growth or financial profit is challenging, as most museums in Slovakia offer free entry to visitors with disabilities and half-price admission for their companions. Accessible elements benefit not only disabled visitors but also older visitors and mothers with children, so it is more about making the object attractive and fostering a positive experience, which is priceless.

Responses from both Austria and the Netherlands align closely, indicating that museums initiating debarierization efforts receive positive reactions. Notably, implemented modifications have proven to benefit a broader audience beyond individuals with disabilities. With removing barriers comes the opportunity to offer multi-sensory and better cultural experiences.

> *„We notice that the museums that do get started receive very positive reactions. They also see that adjustments they have made actually serve a much broader audience, not just people with disabilities. It offers the opportunity to offer multi-sensory and better cultural experiences.'* (Representative of Museum4all)

The representative of the Polish association also emphasized that the elimination of barriers in museums leads to the expansion of the potential audience engaging with the content presented by museums and galleries. Increasing interest among people with special needs usually requires time and increased promotion, but from a broader societal integration perspective, it is absolutely worth it.

In the case of the Czech Republic, museums should fulfil an internationally valid definition supported not only by Czech legislation but also endorsed by the International Council of Museums (ICOM). According to this definition, museums are expected to be open to the public, accessible, inclusive, and provide diverse stimuli for education, enjoyment, and knowledge-sharing.

Discussions and Conclusion

Considering the increasing number of people with disabilities (WHO, 2023) and the growing tendency of the aging population (Buhalis, Darcy and Ambrose 2012), several authors currently emphasize the need to remove barriers in tourism industry (Zenko and Sardi 2014; Naniopoulos and Tsalis 2015; Linderová 2016; Meskele, Woreta and Weldesenbet 2018; Marčeková and Šebová 2020; Gonda 2021).

Our primary focus was on the examination of socio-economic aspects associated with the barrier removal and making museums and galleries accessible to disadvantaged groups of the population. The selection of museums and galleries as the subjects of investigation was based on the assumption that culture can be considered a pivotal role of economic and social changes in Europe (Pahos, Stamos and Kicosev 2010), and at the same time culture stands out as a principal draw for tourism for domestic as well as foreign visitors, because they express the identity of the place (Dimache, Wondirad and Agyeiwaah 2017).

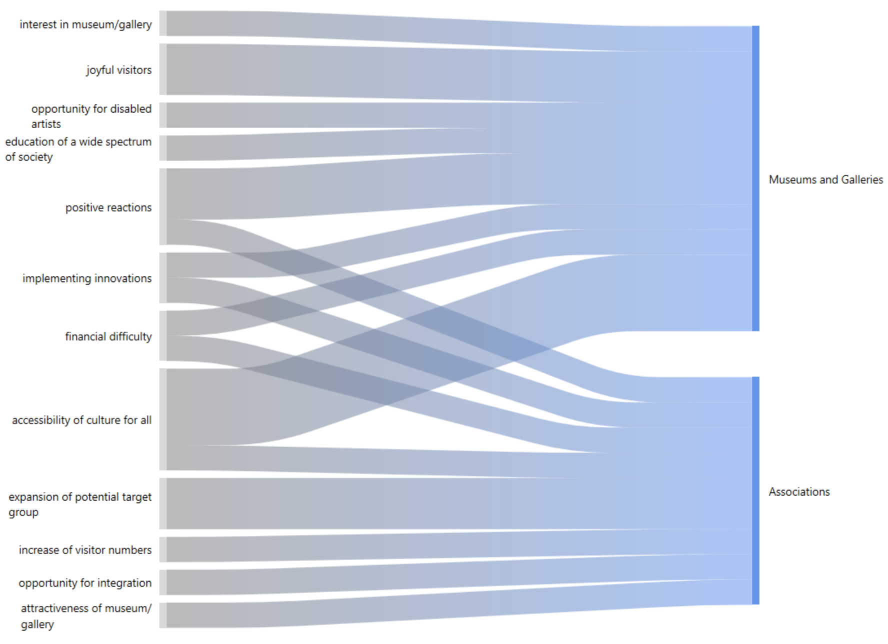
The outcomes of the theoretical exploration and analysis indicate that the integration of accessibility and inclusion should constitute a common standard in museums, accompanied by the education of the staff to effectively meet the needs of a diverse society (Reyes-García *et al.* 2021). The managers of Slovak museums and galleries place the greatest emphasis on the removal of social barriers and the least attention is paid to the elimination of architectural barriers. This trend is observed both in Slovakia and the examined European countries, and it is often attributed to the historical character of these facilities (Andani, Roston and Sertyesilisik 2013; Linderová 2016; Koustriava and Koutsmani 2023).

The results of the survey show that the attention is mainly paid to people with sensory disabilities, and thus we do not agree that the greatest attention should be paid to people with physical disabilities when making museums accessible (Linderová, 2016; Reyes-García *et al.* 2021).

In improving accessibility to museums and galleries, not only in Slovakia, but also in the examined European countries, the lack of financial resources is the biggest obstacle for managers, which is in line with the assertion that adapting museums in historic buildings is often financially and time-consuming (Reyes-García *et al.* 2021), because cultural facilities are not sufficiently financially supported and getting a budget to improve accessibility can be difficult (Leahy and Ferri 2023; Kruczek *et al.* 2024). At the same time, we can agree with Linderová (2016), according to which the adaptation of the building for people with reduced mobility is financially demanding, as it involves significant construction modifications requiring the removal of the threshold, the expansion of door frames, the installation of ramps, elevators, etc.

We rely on the assertion that for cultural facilities, improving accessibility holds the potential to simultaneously serve as a business opportunity (Souca 2010; Agovino *et al.* 2017; Chikuta, Du Plessi and Saayman 2018; Marčeková and Šebová 2020) and a means to gain a competitive advantage (Michopoulou *et al.* 2015; Marčeková and Šebová 2020; Santana-Santana, Peña-Alonso and Espino 2020). Despite the expressed interest of museums and galleries in barrier removal and their intention to focus on this target group in the future, our survey results indicate that they do not perceive this process as a business opportunity. The reason may be the fact that disabled people are not among the most numerous target groups of visitors, and in most cases, they have free or discounted entry, as does the accompanying person. The results of the analysis also confirm that disabled people do not travel alone (Souca 2010), and they most often come to museums and galleries accompanied.

Figure 3. Perceptions of removing barriers by representatives of museums and galleries and associations



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Representatives from museums, galleries, and associations acknowledge that while the immediate economic benefits may not be readily apparent, the long-term impact on the institution's attractiveness and visitor experience is profound.

The Sankey diagram (Figure 3) visually illustrates the perceptions of removing barriers by representatives of museums and galleries and associations.

Concurrently, it is affirmed that a systematic barrier removal can contribute to the social integration of the target group into society (Darcy and Dickson 2009; Blichfeldt and Nicolaisen 2011; Pagán 2012; Kastenholz, Eusébio and Figueiredo 2015; Linderová 2015; Agovino *et al.* 2017; Moura, Kastenholz and Pereira 2017; Gonda, Nagy and Raffay 2019; Cavapozzi and Zantomio 2020; Rubio-Escuderos *et al.* 2021), and that the accessible premises and the services provided actually serve a wider audience, thereby expanding potential target group (Darcy and Dickson 2009; Gonda 2021; Reyes-García *et al.* 2021) and improves the cultural experience (Deffner *et al.* 2015; Naniopoulos and Tsalis 2015).

Removing barriers demonstrates its effectiveness in bringing joy and satisfaction to visitors with disabilities, enabling them to fully utilize and enjoy the services and amenities offered by museums and galleries. Thus, we can state that eliminating barriers in museums and galleries primarily contributes to making culture accessible to all without distinction. In consequence, museums, and galleries, as well as associations, meet with positive reactions not only from diverse visitors, but also from organizations working with these people recognizing the value of inclusive cultural experiences.

At the same time, there is a motivation for implementing innovations that improve the cultural experience and increase the attractiveness and competitiveness of museums and galleries. With removing barriers even comes the opportunity to offer multi-sensory and better cultural experiences. Moreover, the implemented modifications and accessibility elements are also used by older visitors or mothers with children, thus expanding the potential target group that receives the content presented by museums and galleries.

Debarierization efforts even broaden the educational reach of cultural institutions, enabling a wider spectrum of society to participate in educational programs and events. Thus, it is indisputable that the effective use of resources of a cultural and historical nature increases the educational level of the population at the same time.

Although increasing interest among people with special needs usually requires time it can be viewed as a unique opportunity for integrating all groups into society, thereby reducing social disparities.

Despite stakeholders indicating that it is a financially demanding process, accessibility may not only influence the number of visitors but also employment opportunities. A barrier-free environment creates favourable conditions for the employment of disabled individuals, including disabled artists, who can exhibit their works in galleries.

Findings of this research indicate that removing barriers enhances the independence of people with disabilities, fosters their participation in social life, and stimulates the demand for cultural experiences. Moreover, it creates opportunities for learning and employment by establishing suitable conditions. This underscores the significance of accessibility by removing barriers as a phenomenon that influences both the social and economic environment, which is line with the Załuska, Kwiatkowska-Ciotucha and Grześkowiak (2022), stating that preparing the tourism industry to provide accessible services to people with special needs, is crucial from both social and economic aspect.

The findings of this study enrich accessibility tourism research, by contributing valuable insights into socio-economic aspects of removing various barriers and making culture accessible to disabled people. The results of the paper create a prerequisite for a deeper investigation of the intersection of the barrier removal and tourism not to limit only on evaluating the current state of accessibility. Due to the limited number of respondents, we cannot generalize the results to all museums and galleries, which we consider to be the biggest limitation.

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Credit Authorship Contribution Statement

Ľubica Šebová: conceptualization of the project, administered and supervised the project, participated in the subsequent stages of writing, review, editing, and visualization.

Izabela Lazurová: conceptualization of the project, conducted investigations, developed methodologies, administered the project, performed formal analyses, drafted the original manuscript, data curation, validation of findings, participation in review and editing, and visualized the results.

Radka Marčeková: conceptualization of the project, participated in the subsequent stages of writing, review, editing, and visualization, funding acquisition.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Declaration of Use of Generative AI and AI-assisted Technologies

The authors declare that they have not used generative AI and AI-assisted technologies during the preparation of this work.

References

[1] Agovino, Massimiliano, Mariaconcetta Casaccia, Antonio Garofalo, and Katia Marchesano, K. (2017). Tourism and disability in Italy. Limits and opportunities. *Tourism Management Perspectives* 23: 58-677. DOI:https://doi.org/10.1016/j.tmp.2017.05.001

[2] Andani, Alexander, Jack Rostron and Begum Sertyesilisik (2013). An Investigation into Access Issues Affecting Historic Built Environment. *American Journal of Civil Engineering and Architecture,* 1(2): 21-31. DOI:https://doi.org/10.12691/ajcea-1-2-1

[3] Blichfeldt, Bodil S. and Jaqueline Nicolaisen (2011). Disabled Travel: Not easy, but Doable. *Current Issues in Tourism,* 14(1): 79-102. DOI: https://doi.org/10.1080/13683500903370159

[4] Buhalis, Dimitrios, Simon Darcy and Ivor Ambrose (2012). *Best Practice in Accessible Toursim: Inclusion, Disability, Ageing Population and Tourism*. Channel View Publications.

[5] Cavapozzi, Danilo and Francesca Zantomio (2020). Senior Tourism in Italy: The role of disability and socioeconomics characteristics. *Journal of Population Ageing,* 14(14): 229-245. DOI:https://doi.org/10.1007/s12062-020-09286-3

[6] Chikuta, Oliver, Engelina Du Plessis and Melville Saayman (2018). Accessibility Expectations of Tourists with Disabilities in National Parks. *Tourism Planning and Development,* 16: 1-18. DOI:https://doi.org/10.1080/21568316.2018.1447509

[7] Crawford, Duane W., Edgar L. Jackson and Geoffrey Godbey (1991). A hierarchical model of leisure constraints. *Leisure Sciences,* 13(4): 309-320. DOI: https://doi.org/10.1080/01490409109513147

[8] Darcy, Simon and Dimitrios Buhalis (2010). *Accessible Tourism: Concepts and Issues*. View Channel publications.

[9] Darcy, Simon and Tracey J. Dickson (2009). A Whole-of-Life Approach to Tourism: The Case of Accessible Tourism Experience. *Journal of Hospitality and Tourism Management,* 16(1): 32-44. DOI:https://doi.org/10.1375/jhtm.16.1.32

[10] Deffner, Alex *et al.* (2015). Accessibility to Culture and Heritage: Designing for all. Paper presented at the AESOP Prague Annual Congress 2015: Definite space - fuzzy responsibility, July 13-16, in Prague, Czech Republic.

[11] Dimache, Alexandru, Amare Wondirad and Elizabeth Agyeiwaah (2017). One museum, two stories: Place identity at the Hong Kong Museum of History. *Tourism Management,* 63: 287 – 301. DOI:https://doi.org/10.1016/j.tourman.2017.06.020

[12] Domínguez, Trinidad, Jose A. Fraiz and Elisa Alén (2013). Economic profitability of accessible tourism for the tourism sector in Spain. *Tourism Economics,* 19(6): 1385-1399. DOI: https://doi.org/10.5367/te.2013.0246

[13] Eusébio, Celeste, Joana P. Alves, Maria J. Carneiro and Leonor Teixeira (2023). Needs, motivations, constraints and benefits of people with disabilities participating in tourism activities: the view of formal caregivers. *Annals of Leisure Research*. DOI: https://doi.org/10.1080/11745398.2023.2190141

[14] Faizefu, Ambei R. and Busi E. Neba (2024). A Historical Perspective on Social Exclusion and Physical Disabilities. *International Journal of Cognitive Neuroscience and Psychology* 2, no. 1.

[15] Frye, Ann (2015). Capitalising on the grey-haired globetrotters: Economic aspects of increasing tourism among older and disabled people. Available at: https://www.oecd-ilibrary.org/docserver/5jrvzrqdmnxr-en.pdf?expires=1715345556andid=idandaccname=guestandchecksum=C9DB12C40C3DC388380739AEC9AB21FA

[16] Fuchs, Kevin (2024). The Barriers to Accessible Tourism in Phuket: Toward an Exploratory Framework with Implications for Tourism Planning. *Tourism: An International Interdisciplinary Journal,* 71(4): 798-805. DOI:10.37741/t.71.4.10

[17] Gonda, Tibor, Dávid Nagy and Zoltán Raffay (2019). The impact of tourism on the quality of life and happiness. *Interdisciplinary Management Research,* 15: 1790-1803. Available at: https://nx15738.your-storageshare.de/s/CMPGdyk82YLACoG

[18] Gonda, Tibor (2023). The importance of infrastructure in the development of accessible tourism. *Journal of Infrastructure, Policy and Development* 8(2). DOI: 10.24294/jipd.v8i2.2735

[19] Gonda, Tibor (2021). Travelling habits of people with disabilities. In *Geojournal of Tourism and Geosites,* 37(3): 844-850. DOI: https://doi.org/10.30892/gtg.37315-717

[20] Gúčik, Marián (2020). *Cestovný ruch v ekonomike a spoločnosti*. Wolters Kluwer.

[21] Gura, Dmitry, Nadezhda Kiryunikova, Elina Lesovaya and Saida Pshidatok (2020). Barrier-free environment as an aspect for the development of accessible ecotourism. *E3S Web of Conferences* 175(21). DOI:10.1051/e3sconf/202017510013

[22] Haluwalia, Sumit, MoMuhammad Bhat and Meera Rani (2021). Exploring the Factors of Social Exclusion: Empirical Study of Rural Haryana, India. *Conteporary Voice of Dalit,* 14(2). DOI:10.1177/2455328X211000565

[23] Hanko, Jaroslav (2015). *Práca s handicapovaným návštevníkom v múzeu*. Zväz múzeí na Slovensku.

[24] Hefny, Lamiaa (2024). For accessible tourism experience: Exploring the blog sphere of people with disabilities. *Advances in Hospitality and Tourism Research* 12, no. 1: 33-61. DOI: 10.30519/ahtr.1283500.

[25] Kahtani, Al S., Jianhong Xia and Bert Veenendaal (2011). Measuring accessibility to tourist attractions. Available at: https://www.researchgate.net/profile/Jianhong-cecilia-Xia/publication/257603174_Measuring_accessibility_to_tourist_attractions/links/0deec5257a8df61769000000/Measuring-accessibility-to-tourist-attractions.pdf

[26] Kastenholz, Elisabeth, Celeste Eusébio and Elisabete Figueiredo (2015). Contributions of tourism to social inclusion of persons with disability. *Disability and Society* 30(8): 1259-1281. DOI:https://doi.org/10.1080/09687599.2015.1075868

[27] Kollarová, Alena and Miloš Kollar (2010). *Viacnásobné postihnutie ako sociálny problém*. Available at: https://www.prohuman.sk/socialna-praca/viacnasobne-postihnutie-ako-socialny-problem

[28] Koustriava, Eleni and Maria Koutsmani (2023). Spatial and Information Accessibility of Museums and Places of Historical Interest: A Comparison between London and Thessaloniki. *Sustainability* 15(24). DOI:https://doi.org/10.3390/su152416611

[29] Koutsogeorgou, Eleni *et al.* (2014). Social capital, disability, and usefulness of the International Classification of Functioning, Disability and Health for the development and monitoring of policy interventions. *Disability and Society,* 29(7): 1104-1116. DOI: https://doi.org/10.1080/09687599.2014.910106

[30] Kovačić, Sanja, *et al.* (2024). Let us hear the voice of the audience: groups facing the risk of cultural exclusion and cultural accessibility in Vojvodina province, Serbia. *Universal Access in the Information Society*. DOI:10.1007/s10209-024-01102-5

[31] Kruczek, Zygmunt *et al.* (2024). Accessibility of Cultural Heritage Sites for People with Disabilities: A Case Study on Krakow Museums. *Sustainability,* 16. DOI: https://doi.org/10.3390/su16010318

[32] Kučera, Peter and Beáta Gavurová (2020). *Stav bariér k mobilite a dostupnosti základných ľudských potrieb na Slovensku za rok 2019. Situačná správa. Košice.* Technická univerzita Košice. Available at: https://www.researchgate.net/publication/340660782_Stav_barier_k_mobilite_a_dostupnosti_zakladnych_ludskych_potrieb_na_Slovensku_za_rok_2019

[33] Leahy, Ann and Delia Ferri (2023). Barriers to cultural participation by people with disabilities in Europe: a study across 28 countries. *Disability and Society*. DOI:https://doi.org/doi.org/10.1080/09687599.2023.2222898

[34] Leiras, Ana and Celeste Eusébio (2023). Perceived image of accessible tourism destinations: a data mining analysis of Google Maps reviews. *Current Issues in Tourism*. DOI:https://doi.org/10.1080/13683500.2023.2230338

[35] Linderová, Ivica, and Petr Janeček (2017). Accessible tourism for all – current state in the Czech business and non-business environment. *Ekonómie a Management*, 20(4). DOI: 10.15240/tul/001/2017-4-012

[36] Linderová, Ivica (2015). Ekonomické a sociokultúrne dopady sociálneho cestovného ruchu. Paper presented at Hradec Economic Days, February 3-4, in Hradec Králové, Available at: https://uni.uhk.cz/hed/site/assets/files/1048/proceedings_2015_2.pdf

[37] Linderová, Ivica (2016). Přístupnost památek UNESCO pro zdravotně postižené návštevníky v České republice. Paper presented at XI International Conference: Topical Issues of Tourism, February 24-25, in Jihlava. Available at: https://kcr.vspj.cz/uvod/archiv/konference/conference-topical-issues-of-tourism-2016

[38] Linderová, Ivica (2018). *Cestovní ruch osob se zdravotním postižením*. Brno: Paido,

[39] Liu, Jialu, Yifei Chen, Hongyun Kang and Chunlin Li (2023). Development Trends and Opportunities in China's Accessible Tourism Market. *BCP Business and Management,* 50: 77-86. DOI:10.54691/bcpbm.v50i.5572

[40] Lynch, Suzanna and David Proverbs (2020). How adaptation of historic listed buildings affords access. *Interantional Journal of Building, Pathology and Adaption,* 38(4): 589-605. DOI:10.1108/IJBPA-11-2018-0093

[41] Marčeková, Radka and Ľubica Šebová (2020). *Ponuka cestovného ruchu pre zdravotne znevýhodnených návštevníkov na Slovensku.* Vydavateľstvo Belianum.

[42] Marsin, Jamilia M., Syed A. I. Ariffin and Raja N. Shahminan (2014). Comparison of legislation concerning people with disability and heritage environment in Malaysia and developed countries. Paper presented at IOP Conference Series: Earth and Environmental Science, Kuching, in Sarawak, Malaysia. DOI:https://doi.org/doi:10.1088/1755-1315/18/1/012178

[43] Mastrogiuseppe, Marilina, Stefania Span and Elena Bortolotti (2021). Improving accessibility to cultural heritage for people with Intellectual Disabilities: A tool for observing the obstacles and facilitators for the access to knowledge. *European Journal of Disability Research,* 15(2): 113-123. DOI:https://doi.org/10.1016/j.alter.2020.06.016

[44] Melian, Ariadna. G., Lluís Prats and Lluis Coromina (2018). Tourism constraints for Spanish tourists with disabilities: Scale development and validation. *Documents d'anàlisi geogràfica* 64(1): 49-71. DOI:https://doi.org/10.5565/rev/dag.364

[45] Meskele, Ashenafi T., Solomon L. Woreta and Engdu G. Weldesenbet (2018). Accessible Tourism Challenges and Development Issues in Tourist Facilities and Attraction Sites of the Amhara Region World Heritage Sites, Ethiopia*. International Journal of Hospitality and Tourism Systems,* 11(1): 26-37.

[46] Michopoulou, Eleni, Simon Darcy, Ivor Ambrose and Dimitros Buhalis (2015). Accessible tourism futures: the world we dream to live in and the opportunities we hope to have. *Journals of Tourism Futures,* 1(3): 179-188. DOI: https://doi.org/10.1108/JTF-08-2015-0043

[47] Mishra, P. K., Himanshu, B. Rout, Debasis Sahoo, Predip Kumar and S. R. Chaini (2023). International Tourism, Financial Deepening and Economic Growth: Insights from Southern African Countries. *Theoretical and Practical Research in Economic Fields*, 14, 1(27): 74-84. DOI: https://doi.org/10.14505/tpref.v14.1(27).07

[48] Mitra, Sophie *et al.* (2017). Extra costs of living with a disability: A review and agenda for research. *Disability and Health Journal,* 10(4): 475-484. DOI: 10.1016/j.dhjo.2017.04.007

[49] Mohanty, Rojalin and Ansuman Samal (2023). The Study on Socio-Economic Impacts of Tourism in the Golden Triangle of Odisha. *Theoretical and Practocaô Research in Economic Fields* 14, 2(28): 94-104. DOI:https://doi.org/10.14505/tpref.v14.1(27).09

[50] Moura, Andrei, Celeste Eusébio and Eugénia Devile (2022). The 'why' and 'what for' of participation in tourism activities: travel motivations of people with disabilities. *Current Issues in Tourism,* 26(6): 941-957. DOI:10.1080/13683500.2022.2044292

[51] Moura, Andreia F. A., Elisabeth Kastenholz and Anabela M. S. Pereira (2017). Accessible tourism and its benefits for coping with stress. *Journal of Policy Research in Tourism, Leisure and Events,* 10(3): 241-264. DOI: https://doi.org/10.1080/19407963.2017.1409750

[52] Naniopoulos, Aristotelis and Panagiotis Tsalis (2015). A Methodology for Facing the Accessibility of Monuments Developed and Realised in Thessaloniki, Greece. *Journal of Tourism Futures,* 1(2): 240-253. DOI: https://doi.org/10.1108/JTF-03-2015-0007

[53] Önal, Özgür, Merve Güblü, Merve H. Akyol, Ahmet N. Kişioğlu and Ersin Uskun (2024). The impact of perceived social support and social exclusion on the quality of life of individuals with disabilities: A moderation analysis. *Psychology Research on Education and Social Sciences,* 5(1): 1-11. DOI:10.5281/zenodo.10673583

[54] Pagán, Ricardo (2012). Time allocation in tourism for people with disabilities. *Annals of Tourism Research,* 39(3): 1514-1537. DOI: https://doi.org/10.1016/j.annals.2012.04.005

[55] Pahos, AnaMaria, Athanasois Stamos and Sasa Kicosev, S. (2010). Cultural Tourism in Europe. *UTMS Journal of Economics,* 1(1): 85-92. Available at: https://www.utmsjoe.mk/files/Vol.1%20No.1/0-13-_085-92_Pahos_AM_Stamos_AthanasiosKicosev_Sasa.pdf

[56] Partarakis, Nikolaos *et al.* (2016). Accessibility of Cultural Heritage Exhibits. Paper presented at 10th International Conference on Universal Access in Human-Computer Interaction, July 17-22, in Toronto, Canada. DOI: https://doi.org/10.1007/978-3-319-40244-4_43

[57] Perangin-Angin, Rosliyana, Rokhshad Tavakoli and Camelia Kusumo (2023). Inclusive tourism: the experience and expectations of Indonesian wheelchair tourists in nature tourism. *Tourism Recreation Research,* 48(6): 955-968. DOI: https://doi.org/10.1080/02508281.2023.2221092

[58] Reyes-García, María E., Fernando Criado-García, José A. Camúñez-Ruíz and María Casado-Pérez (2021). Accessibility to Cultural Tourism: The Case of the Major Museums in the City of Seville. *Sustainability,* 13(6). DOI: https://doi.org/10.3390/su13063432

[59] Rubio-Escuderos, Lucía, Hugo García-Andreau, Eleni Michopoulou and Dimitrios Buhalis (2021). Perspectives on experiences of tourists with disabilities: implications for their daily lives and for the tourist industry. *Tourism Recreation Researc,* 49(1). DOI: https://doi.org/10.1080/02508281.2021.1981071

[60] Santana-Santan, Sara B., Carolina Peña-Alonso and Emma P. Espino (2020). Assessing physical accessibility conditions to tourist attractions. The case of Maspalomas Costa Canaria urban area (Gran Canaria, Spain). *Applied Geography,* 125(1). DOI: https://doi.org/10.1016/j.apgeog.2020.102327

[61] Shi, Lei., Shu Cole, Charles Chancellor (2012). Understanding leisure travel motivations of travellers with acquired mobility impairments. *Tourism Management,* 33(1): 228-231. DOI: 10.1016/j.tourman.2011.02.007

[62] Smith, Ralph W. (1987). Leisure of disabled tourists. *Annals of Tourism Research* 14(3): 376–389. DOI:https://doi.org/10.1016/0160-7383(87)90109-5

[63] Souca, Maria L. (2010). Accessible Tourism – The Ignored Opportunity. *Annals of the University of Orodea: Economic Science* 1(1): 1154-1157.

[64] Warren, Andrew, Wanjira Chege, Meghan Greene and Lisa Berdie (2023). The Financial Health of People With Disabilities. Key Obstacles and Opportunities. Available at: https://finhealthnetwork.org/wp-content/uploads/2023/08/The-Financial-Health-of-People-With-Disabilities_Key-Obstacles-and-Opportunities.pdf

[65] Załuska, Urszula, Dorota Kwiatkowska-Ciotucha and Alicja Greśkowiak (2022). Travelling from Perspective of Persons with Disability: Results of an International Survey. *International Journal of Environmental Research and Public Health* 19(17). DOI: https://doi.org/10.3390/ijerph191710575

[66] Závodi, Bence, Géza Szabó and Levente B. Alpek (2021). Survey of the Consumer Attitude of Tourists Visisting South Transdanubia, Hungary. *GeoJournal of Tourism and Geosites,* 34(1): 245-250. DOI:https://doi.org/10.30892/gtg.34133-644

[67] Zenko, Zdenka and Valentina Sardi (2014). Systematic thinking for socially responsible innovations in social tourism for people with disabilities. *Kybernetes,* 43(3/4): 652-666. DOI: 10.1108/K-09-2013-0211

[68] European Commission (2021). *Únia rovnosti: Stratégia v oblasti práv osôb so zdravotným postihnutím na roky* 2021 – 2030. Available at: https://eur-lex.europa.eu/legal-content/SK/TXT/?uri=COM:2021:101:FIN#PP4Contents

[69] European Council (2022). *Infographic – Disability in the EU: facts and figures*. Available at: https://www.consilium.europa.eu/en/infographics/disability-eu-facts-figures/

[70] Eurostat (2023). *Population structure and ageing*. Available at: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Population_structure_and_ageing#The_share_of_elderly_people_continues_to_in crease

[71] ISTO (2011). *The social and economic benefits of social tourism*. Available at: http://nationbuilder.s3.amazonaws.com/appgonsocialtourism/pages/23/attachments/original/ISTO_-_Inquiry_Social_Tourism.ISTO.pdf?1314889615

[72] UNWTO (2013). Recommendations on accessible Tourism for all. Available at: https://www.accessibletourism.org/resources/accesibilityen_2013_unwto.pdf

[73] UNWTO (2023). Recommendations for key players in the cultural tourism ecosystem. Available at: https://webunwto.s3.eu-west-1.amazonaws.com/s3fs-public/2023-09/Cultura-ING_ACC.pdf?VersionId=JUTDNhf8hNBZdgAeBayWzv.ZOqlD.Eta

[74] WHO (2023). Disability. Available at: https://www.who.int/news-room/fact-sheets/detail/disability-and-health

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An Investigation on the Relation between Traditional Banking and Peer-to-Peer Lending from a Management Perspective

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Abstract: This research explores how P2P lending in India has impacted traditional banking. The leading influence of traditional banks has been threatened by P2P lending, a disruptive phenomenon of the lending business. In P2P financing, lenders and borrowers are linked directly together, with no need for institutions to stand as intermediaries. This method has numerous advantages, among them lower operating costs, fast approval of loans and increased access to banking services for the underprivileged. Our research was aimed at India's potential for peer-to-peer lending to disrupt existing banks or form a new market. This research not only introduces problems encountered by banks in consumer finance management, it also recognizes that these problems cannot be fully blamed on P2P lending technologies in any event. The results contribute to ongoing concerns over the dynamic interactions between traditional banking and peer-to-peer lending in emerging nations. The findings suggest a need for further research to determine the long-term impacts of these interactions on financial stability. This is crucial for policymakers and financial institutions to make informed decisions.

Keywords: qualitative study; peer-to-peer lending; financial institutions; traditional banking; FinTech.

JEL Classification: G21; G23; G28; M13.

Introduction

The banking industry holds a significant position in the global economy, with a rich history and substantial influence on modern industrialized societies. This is primarily due to a fundamental and vital service that they offer: loans. Loans provided to both corporations and consumers have played a significant role in driving the expansion and modernization of our economy (Liang and Reichert, 2006). Nevertheless, this sector has shown resistance to change and has been associated with significant economic downturns, like the 2008 financial crisis (Matthew Johnston 2021). There are doubts about whether the traditional banking system is the most suitable institutional framework to meet our financial needs. In many developing nations, the conventional banking sector remains the primary provider of financial services to the public despite these barriers. However, in recent years, the financial sector has seen a boom in innovation and new technology. This has presented a challenge to banks' traditional power. Commonly known as Fintech, has the rapid growth of financial technology placed pressure on the banking industry to innovate and stay competitive.

Fintech is an exploration of how companies can improve their financial services by using software and electronic technology. Peer-to-peer lending, mobile banking apps, and new industry innovation have all been made feasible by fintech, which has drastically transformed banks. Peer-to-peer lending is a new financial alternative introduced by fintech. (Yeo and Jun, 2020) explain about the idea of peer-to-peer lending, which is utilizing online platforms to establish a direct relationship between investors and borrowers.

Based on a recent report by Fintech report 2023, it is projected that the revenues of the fintech industry will grow at a rate almost three times faster than that of traditional banks (McKinsey and Company report, 2023). According to a recent report, the fintech industry is projected to reach a staggering value of $1.5 trillion by 2030. This growth is primarily fueled by the emerging economies in the APAC region, including India, China, and Indonesia. From 2012 to 2022, the fintech industry experienced rapid growth, with a significant increase in acceptance rates, the number of fintech start-ups, and investments (Statista report, 2023). Nevertheless, the global fintech market faced a challenging period in the first half of 2023. It encountered anticipated obstacles like high inflation, increasing interest rates, and the on-going conflict between Russia and Ukraine. Additionally, there were unforeseen difficulties, such as the collapse of multiple banks in the United States (kpmg.com, 2023). Despite these challenges, there was a significant rise in fintech financing in the Americas, with the amount increasing from $28.9 billion in the second half of 2022 to $36 billion in the first half of 2023 (deloitte.com, 2023). Upon closer examination, it becomes evident that peer-to-peer (P2P) lending is a rapidly growing industry. According to projections, the global P2P lending market is expected to experience significant growth in the coming years. It is estimated that the market will expand at a compound annual growth rate of 25%, reaching a value of USD 1024.45 billion by 2032. Following the success of micro-, small-, and medium-scale enterprises (MSMEs) in emerging economies, the trend continued to surge periodically. It is projected that by 2027 this transition will grow at a 19.5% rate, which means it is significant in terms of world popularity. The P2P lending industry has been found to be expanding in India. If various assumptions hold true, India's peer-to-peer lending industry is estimated to be worth 10.5 billion U.S. dollars. The compound annual growth rate from 2021 to 2026 is estimated at 21.6%. India's P2P lending industry is thriving because of the widespread use of smart phones and the internet combined with a population of borrower's. But they are priced out of conventional financial services. The economy is making more and more calls for credit, while its regulatory framework is helpful. In any case, with it becoming harder for more p2p in India, the Reserve Bank of India (RBI) has increased oversight over the sector. In spite of these obstacles many people think that the future must be bright for peer-to-peer lending, since several new platforms are entering the market.

The numbers confirm the optimistic forecasts of economists who say that as income levels rise, so too does demand for financial services. As of the (worldbank.org/Global Findex, 2021), the Indian adults who had bank accounts accounted for 78%, equal to the national average but 6 percentage points higher than in other developing economies (Klapper, L.et.al,2021). Millions more accounts were opened as a result of the government's Pradhan Mantri Jan Dhan Yojana financial inclusion initiative, which is responsible for the rise. In India, 35 percent of individuals currently use digital payments (Klapper *et al.* n.d.)(Yan carriere *et al.* 2021). Surprisingly, a significant portion of bank accounts in India remain unused, with a considerable number of Indian women either using their accounts sparingly or not at all (Yan carriere *et al.* 2021),(womensworldbanking.org, 2019). Although a significant number of people have bank accounts, there are still obstacles to overcome in encouraging regular use of these accounts. It is unfortunate that a significant portion of the local population is unable to access or afford basic financial services for various reasons. Even in countries where most people have bank accounts, they still lack access to other crucial financial services, with loans being the most prominent example (McKinsey and Company report, 2023). Although there has been progress in promoting financial inclusion worldwide, certain essential financial services remain inadequate in both developed and developing economies.

The issue stems from the banks themselves and their selection of consumers. Conventional financial institutions often need a credit history, proof of employment, and collateral as prerequisites for granting loans. (René M. Stulz *et al.* 2016) asserts that banks give utmost importance to the process of selecting clients and minimizing risks. Many people in developing and emerging economies may not have access to sufficient banking services because credit history, collateral, and other crucial data that banks need to accurately assess risk are not readily available to them. Getting a loan approved may be challenging and often ends in failure (Khatri, 2019). Nevertheless, this problem can also impact developed nations. Loans aren't provided to about 31% of the US population because of poor credit or insufficient collateral. 'Among the individuals who requested credit, 24 percent experienced at least one instance of denial in the year prior to the survey, while 31 percent either faced denial or were given a lower amount of credit than they initially requested' (Reserve Board, 2019). The worldwide issue of accessing financial institutions affects economies in both developed and developing countries.

When traditional lenders impose stringent risk standards, P2P lending platforms might step in to address the needs of borrowers who still need money. What are the benefits to underserved consumers of peer-to-peer lending, and how does it differ from traditional banking? By connecting borrowers and lenders (sometimes called 'investors') directly, P2P lending platforms do away with the need for banks and other conventional financial organizations. This facilitates peer-to-peer lending using the internet. Lenders have the ability to select their desired degree of risk when providing loans, which leads to the establishment of a stronger market where individuals who are ready to take on greater risk by lending to borrowers with poor credit may connect and engage in financial transactions. Lenders have the advantage of not being constrained by regulations or risk evaluation systems like banks, which allows them more freedom and the ability to reach consumer segments that banks are unable to access. (Yeo and Jun, 2020) state that peer-to-peer finance mostly focuses on borrowers who have credit ratings ranging from low to mid-level.

The innovative technology and broad appeal of P2P lending have the potential to destabilize the banking industry beyond its traditional customer base. The potential for upheaval in the rapidly expanding P2P lending sector is under discussion, owing to its reduced operational expenses and adaptability in contrast to traditional banks (Global Ventures, 2020). When it comes to comparing conventional banks with peer-to-peer lending platforms, it becomes clear that the latter may have an edge. This is because they offer lower interest rates, provide more convenient access to financial services, have quicker loan application procedures, and boast higher approval rates.

1. Problem Statement

Considering the unique aspects of P2P lending in contrast to conventional banking: In India, where banks have been around for a long time, how does peer-to-peer lending fit in? Is peer-to-peer lending seen by banks as a potential danger to the banking sector, or do P2P lending platforms establish their own market independent of banks, focusing on underserved consumer groups that banks ignore?

For the find out the relationship between traditional banks and peer to peer lending this study takes a qualitative approach, unlike previous quantitative studies, this research proposes to conducting interviews with bank and peer to peer lending professionals will offer a new viewpoint on this on-going discussion. Moreover, it will enhance the current reservoir of information regarding the topic. By focusing on India, we can conduct a thorough analysis of a developing market in a particular country, while also facilitating future investigations into similar markets that possess similar attributes, so enhancing our understanding and expanding this relation.

1.2 Research Gap

The existing literature on peer-to-peer (P2P) lending's impact on the financial sector reveals a lack in understanding about its relationship to traditional banking. According to (Lenz, 2016), peer-to-peer lending's cost-effectiveness, which results from comparatively less regulatory requirements and decrease of overheads could cause it to displace traditional banks as the primary lender. By highlighting examples of these collaborations in the US, Lenz Rainer makes the case that P2P lending businesses and banks may work together. According to (Balyuk *et al.* 2018), P2P lending and banking are closely intertwined. The author gives an example of how P2P platforms that target consumers underserved by traditional financial institutions might effectively solve issues in the credit market. (Yeo and Jun, 2020) that further study be done on the risks associated with P2P lending for banks and how it affects various economies.

The study's overarching goal is to dissect the connection between P2P lending and conventional banking in India. This study will build on previous research to examine the impact of P2P lending on the Indian credit market and its relationship to conventional banks. The choice of India as a research location is consistent with (Yeo and Jun, 2020) suggestion that an investigation be conducted into the role played by P2P lending enterprises in developing countries. The study aims to improve the current conversation by providing a thorough understanding of the interactions between traditional banking and peer-to-peer lending in the context of India.

1.3 Research Question

How does traditional banking in India relate to peer-to-peer lending? The following are two assumptions that have been made based on our previous research.

1. What ways does P2P lending significantly disrupt the traditional banking industry?. If so, how precisely?
2. Is the P2P lending industry separate from the regular banking industry? If so, how precisely?

Two hypotheses exist on the nature of the relationship between peer-to-peer lending and more conventional forms of banking: rivalry (disruption) and independence (the establishment of a new market). In order to answer the research question: How do peer-to-peer lending and conventional banking interact in India?

2. Literature Review

Based on an analysis of the 2019 annual reports from the four largest banks in the US, it appears that bank revenue may be broadly classified into three types: interest, fees, and commissions. The provision of loans by banks results in two streams of income: fees and interest. Loans account for around 50-63% of net interest revenue (NIR), according to the annual reports of major US banks at mx.com. There is room for disruption if peer-to-peer (P2P) lending can provide loan services that are faster or more cost-effective than what banks offer, as lending accounts for a significant portion of conventional banks' net interest revenue. When dealing with this issue, it is essential to keep in mind the differences in client categories. The argument might be made that the two businesses serve distinct clientele because of the underlying differences between them. P2P lenders aim for high-risk, high-reward borrowers, in contrast to banks that mostly serve low-risk, low-reward consumers. Some have argued that the unique credit market being formed by the P2P lending sector is a direct result of the wide variety of customers it serves (Yeo and Jun 2020). Also, any disturbance in the consumer lending sector probably won't have much of an impact on the profitability of traditional banks because a large percentage of their loans are mortgages, which have little to do with the P2P lending market. We divided the research streams into three separate categories for our literature review. To kick off our research, we will review the literature that supports the idea that a new market sector has emerged thanks to P2P lending. Then we will look at the research that shows how P2P lending has produced problems. Finally, we'll take a look at the research that focuses on how P2P lending has affected traditional banks in India. It should be noted that much of the literature we reviewed presented arguments for both sides of the issue, and very few provided a clear resolution to the relationship. Regardless, we have compiled data supporting both theories and presented it in the following manner.

2.1 Evidence that Peer to Peer Lending Is Creating a Separate Market

P2P lending has been recognized as a disruptive influence in the financial sector, establishing a distinct marketplace for individuals to engage and exchange information (Wang *et al.* 2009). In order to succeed in this market, it depends on information technology and social media as a key factor. Previous studies have examined various factors that influence P2P lending such as financial, demographic, and social aspects (Bachmann and Funk 2011a). Nonetheless, the introduction of P2P has raised concerns about data authentication and regulatory measures (Suryono *et al.* 2019). Thus, the results of these investigations clearly show that while P2P lending is setting up an independent industry but it still requires close scrutiny and supervision. (Wang *et al.* 2009) posit that through this type of borrowing arrangement individuals can connect with each other in a way that creates a unique industry within finance. (Bachmann and Funk 2011b) claim that commercial online platforms for P2P lending began emerging during the year 2005 which initiated up a new market. According to them loan procedure has marked itself by its different types of financial traits from social ones. In his study (Suryono *et al.* 2019) designates China as the leading market for P2P lending platforms arguing how it is creating a prospering yet distinct commercial sector in particular, this paper argues that the employment of AI in P2P lending platforms represents a shift in dynamics, which is consistent with the notion that P2P lending establishes a separate market. In so doing, (Milne and Parboteeah 2016) acknowledges peer-to-peer financing as complementary to rather than a substitute for conventional banking, especially for small companies, thus enabling the simultaneous creation of different market. As per (Chen 2012) P2P lending provides an alternative means of borrowing and investing without reliance on traditional financial intermediaries. This emphasizes the existence of a separate market.

In her work, (Sulastri and Janssen 2022, 2023) examines the obstacles and distinctive attributes of P2P lending platforms, presenting empirical data that supports the notion of P2P lending establishing a different market with qualities that set it apart from traditional banking. (Lynn *et al.* n.d.) contend that P2P lending obviates conventional financial intermediaries, so promoting financial inclusion and engendering a distinct market. The studied literature together establishes a consensus that P2P lending is generating a distinct market through the introduction of distinctive dynamics, technologies, and structures that differentiate it from conventional banking. These studies provide in-depth understanding of the growth of P2P lending as a transformational factor in the financial industry, adding to the on-going discussion on the creation of a separate market within the larger financial environment. While it can be argued that they are not causing major changes in the industry due to their focus on specific customer segments and the inability of P2P lending to compete with mortgage loan interest rates, it is important to note that consumer lending still contributes a significant portion of revenue to traditional banks. If P2P lending manages to capture a significant market share in the consumer lending sector, it could potentially lead to disruption.

2.2 Evidence That Peer to Peer Lending Is Disrupting the Traditional Banking Industry

When it comes to small companies in the UK, P2P lending is considered by some as a great source of loans, although it only represents some part of total bank credit (Milne and Parboteeah 2016). It is perceived as a complement to traditional banking with the possibility that banks might adapt through cooperating with P2P lending platforms (Milne and Parboteeah 2016). On success in borrowing finance and characterizing features on loans as well as regulation approaches, most reviews on P2P lending are US- and China-centric. The future of financial industry may be changing due to P2P lending ensuring effective information flow and perfect markets (Wang *et al.* 2009). Nonetheless, more research is essential into the performance and determinants of P2P loan platforms; the significance of behavioural traits; and the interplay between P2P loaning and traditional financing channels (A. Basha *et al.* 2021).

There is a tangled literature on the connection between P2P lending and conventional banking with different experts having different views over whether this emerging financial innovation is disruptive. (Milne and Parboteeah 2016) claims that P2P lending is essentially supplementary to traditional banking, emphasizing how banks need to adapt to its advent. However, research conducted by (Suryono *et al.* 2019) indicates that China's P2P lending sector poses a formidable hurdle to conventional banking, therefore implying the prospect of disruptive impacts. (Wang *et al.* 2009) points out that creating a marketplace of people as opposed to things is among the constructs of P2P lending and hence challenges the existing lending models. Also, commercial peer-to-peer lending platforms are starting to emerge; this suggests a new industry according to (Bachmann and Funk, 2011b). (Chen, 2012) points out that technological change in borrowing has occurred especially on 'peer-to-peer' basis which is another form of borrowing or investment. Such a strategy involves evaluating creditworthiness in a unique way through both 'hard' and 'soft' information. (Su, 2021) asserts that the integration of blockchain technology into P2P lending resolves trust-related issues efficiently thus indicating possible major disruption. According to (Lynn *et al.* n.d.), P2P lending eliminates conventional financial intermediaries and promotes financial inclusion, allowing a new market to emerge.

Similarly, there is different borrower conduct which shows p2p has affected the banking sector in a particular way. For instance, (Ayal *et al.* 2019) discovered that irrationality levels among P2P borrowers are higher than those of people who take bank loans implying that there exist a distinct disorder in lending dynamics. On the other hand, (Stern *et al.* 2017) focus on the distribution of peer-to-peer (P2P) lending across geographic areas and found out that there is a negative correlation between outstanding balances of peer-to-peer lending and size of traditional banking sector. This implies that locations with substantial P2P borrowing can cause disruption in their economies and the wider economy as well The author examines regulatory challenges in relation to P2P loans and argues that obstacles relating to trust, education levels, and data analysis hinder inclusive P2P loan systems from being developed within any country such as China; however it may be important to add that this research has some shortcomings; In his article, (Teplý *et al.* 2021) suggests that blockchain technology will facilitate an increase in finance for peer-to-peer or P2P platforms. Therefore, financial markets could be transformed significantly by these.

The mixture of various investigations demonstrates that P2P lending does not only supplement but also disrupts traditional banking. The impact is seen in market dynamics, technological change, borrower behaviour and regulatory issues. This forces traditional financial institutions to observe and react. The changing dynamics of the financial industry need established institutions to respond proactively to this disruptive force in order to navigate effectively. Nevertheless, peer-to-peer lending has the potential to offer more competitive interest rates due to reduced operational and administrative expenses. The question now is whether it can compete with the current banking system in mortgages, where they make the most money. The problem is in how P2P lending operates. In order to compete with the low-interest mortgage loans offered by traditional banks in India—which range from 1% to 2%—investors and lenders will need to match the borrower's loans. If a loan has a maturity date between 25 and 60 years, the interest rate the lender charges must be the same or lower. It would be challenging for P2P lending to entice investors in this market because of the risk/reward ratio and the time duration, which makes it unable to compete with banks. How big of an impact peer-to-peer lending will have on banks, whether or not it will attract clients who aren't already customers of banks, and whether or not it will create a new market segment altogether are all questions that remain unanswered.

2.3 Literature Review India Specific

Peer-to-peer (P2P) lending has revolutionized the financial landscape, offering an alternative lending model that operates outside the traditional banking framework. This literature review delves into the evidence supporting the idea that P2P lending is not only creating a distinct market in India but is also disrupting the conventional banking industry.

2.3.1 Creating a Separate Market in India

According to Nitin Balwani's (2020) survey, it shows that P2P lending has la borne the potential for transformation in India. P2P lending platforms use the newest technological methods for risk management, making them popular both with lenders and borrowers. It has led to the creation of an entirely new business model where traditional financial intermediaries are completely bypassed (Balwani 2020). In direct opposition to this view, others like (A. Basha *et al.* 2021) take the view that the P2P lending market produces a special ecosystem, where strangers can borrow money from each other and carry out transactions within a social platform. (Dias *et al.* 2022) say that the business in the country is making preparations for the technology era in p2p lending.

2.3.2 Disrupting the Traditional Banking Industry in India

A P2P lending revolution in the traditional banking industry is very evident from found among many well-written pieces of literature. Balwani (2020) says that new technology adoption coupled with more and more popular among borrowers and lenders make P2P lending platforms look like a quick, hassle-free alternative to the usual banks. Moreover, Wang *et al.* (2009) have noted how P2P lending could easily bypass financial intermediaries in favour of a more direct marketplace between individuals--an initiative that should only serve to disturb the traditional banking model. (Bachmann and Funk 2012) place it well these observations with regard to how P2P lending affects the overall changes in borrowers' behaviours. According to Bachmann and Funk (2011b), the Internet of Finance describes the P2P lending industry as a rapidly growing credit source that cuts out traditional intermediaries and hints at a major transformation in finance.

The literature review furnished strong evidence that P2P lending is producing not just another market in India, but remodelling the entire traditional bank industry. The financial landscape in India is being transformed by P2P lending platforms, as they are becoming more popular with new technology and business models.

2.4 Theory

The impact of innovation on the conventional banking sector may be better understood with the help of Clayton Christensen's Theory of Disruptive Innovation. The conventional banking sector faces competition from peer-to-peer lending, a kind of disruptive innovation, due to its many negative traits. These include catering to niche markets, providing an unusual combination of features, and being unable to innovate because of the profit margins obtained by catering to these niches. There are five steps to the disruption process: 1) Incumbent businesses innovate to satisfy their most profitable and demanding customers. 2) While the incumbents ignore this market segment, new entrants meet their needs at a lower cost and gain traction. 3) The incumbents do not respond to the new entrant. 4) Eventually, the new entrants move upmarket and appeal to the incumbent's 'mainstream' customers. 5) Once the new entrant starts attracting the incumbent's mainstream customers, disruption happens.

Legitimacy theory emphasizes the importance of corporations adapting to new societal demands to survive and avoid bankruptcy. It emphasizes the importance of maintaining a well-established legitimation strategy to manage existing challenges and pressures, which influences the perception of an organization by stakeholders.

Knowledge sharing as a means of gaining an advantage in a competitive market is central to the cooperation concept put out by Larsen *et al.* (1998). It frequently involves cooperation between two organizations that compete with one another. Strategic alliances are often formalized through mutual benefit. A win-win situation in which both organizations team up and reap the benefits. In game theory, it combines competition and cooperation. (Brandenburger and Nalebuff 1996) brought the co-opetition theory out into the open for public consumption and economic research scholars to notice. They observed how it governs many business interrelationships and supply chains.

When looking at the connection between P2P lending and India's conventional banking system, Clayton Christensen's idea of disruptive innovation becomes quite pertinent. An explanation of disruptive change and its mechanism to create in the traditional banking business is provided by Christensen's thesis. A peer-to-peer lending industry is just around the corner, thus conventional banks' loans should be seen as risks.

The link between traditional banking and the P2P lending business in India is better understood via the perspective of co-opetition theory, which this study employs. The study's methodology makes Christensen's thesis of disruptive innovation stand out for its predictive potential and significance.

3. Research Methodology

3.1 Research Method

The study utilizes a qualitative approach to examine the connection between P2P lending sites and traditional banks, providing valuable insights into the viewpoints of industry professionals regarding the disruptive potential of P2P lending.

3.2 Research Design

With a focus on bank and peer-to-peer lending top management, this exploratory study design seeks to examine the connection between P2P lending and traditional banking in India. It uses descriptive, explanatory, exploratory, and predictive elements to provide new insights and make predictions. The study's philosophical assumptions are interpretivist, requiring an exploratory mindset to fully comprehend the phenomena.

3.3 Practical Method

Using a qualitative technique for in-depth interviews and subjectivist perspectives, together with pilot research for efficient data gathering, the study follows the interpretivism paradigm in methodology.

3.4 Sample Method

Small sample sizes enable more efficient data gathering and faster results when researchers gather information from companies such as banks and P2P lending companies. The two types of sampling methods are non-probability and probability. Non-probability sampling was selected for this study because it fits well with the interpretivist philosophical research perspective. In-depth interviews and pertinent social actors will be the main subjects of the study.

3.5 Interview Design and Data Collecting Technique

A conversation between two or more persons to collect information for a research question is called an interview. Structured, semi-structured, and unstructured are the three categories. We will employ a semi-structured interview style with standardized questions for management of P2P lending platforms and banks in our study. This approach allows for greater flexibility in inquiry and is consistent with our interpretivist research attitude.

3.6 Pilot Testing

Pilot testing is essential for gathering data since it helps to improve interview guidelines and eliminates errors. Improvements were made after a pilot interview with a banking sector expert revealed flaws. For greater openness, fewer questions were asked, and timed interviews were discussed in order to get better answers.

3.7 Interview Conducting

After completing developing and testing of our interview method, we began gathering information about professionals working in banks and loan applications.

Table 1. Detailed information of Interviews

S.NO	Financial Institutions	Interviewee	Position	Interview method	Interview duration	Date
1	SBI Bank	Respondent 1	Branch Manager	Online	1 hour	45275
2	HDFC Bank	Respondent 2	Deputy sales Manager	Online	55 Min	45275
3	ICICI Bank	Respondent 3	Area Sales Manager	Online	1 hour 10 min	45277
4	Axis Bank	Respondent 4	Branch Manager	Online	53 min	45280
5	Kotak Mahindra Bank	Respondent 5	Asst. Branch Manager	Online	45 min	45280
6	Bank of Baroda	Respondent 6	Branch Manager	Online	50 min	45283
7	Home credit, India	Respondent 7	Senior Operations Manager	Online	1 hour	45275
8	Zest Money, India.	Respondent 8	Risk Analyst	Online	50 min	45280
9	EarlySalary (Fibe), India	Respondent 9	Business Development Manager	Online	55 min	45282
10	QuickCredit India	Respondent 10	Customer Service Manager	Online	45 min	45284

Source: Generated by the authors (interview information)

Data was gathered from peer groups and social media accounts. We reached out to them by means of a telephone conversation. Ultimately, we have compiled a definitive roster of interviewee information. We obtained a total of 10 participants, with 6 representing banks and 4 representing peer-to-peer lending applications. The following Table 1 contains data related to our interviews. Traditional banks are included before P2P lending platforms in the sequence of interview dates.

3.8 Data Analysis Method

Examining qualitative data involves a methodical procedure as outlined by (Miles *et al.* 1994). Data collection is the first phase, involving the gathering of information through interviews. Afterwards, data reduction is utilized to filter and discard unnecessary or redundant data, concentrating on what is crucial for the study question. Visualization methods, such as tables, assist in condensing and arranging intricate data. Thematic coding is next utilized to identify key words or phrases, followed by thematic analysis, which entails constructing an organized table to document noteworthy discoveries from each participant by NVivo software. The last stages involve deducing and forming conclusions by amalgamating the structured data, employing applicable theories, and summarizing the most significant findings. This methodical technique guarantees a thorough and perceptive examination of qualitative data, so enhancing an in-depth understanding of the topic under research.

4. Empirical Findings

4.1 Overview of Empirical Findings

The answers that we got were from a total of ten participants, six of whom represented banks and four of whom represented peer-to-peer lending applications. The responses were categorized according to the following topics: lending, risk profile, challenges, cooperation and competition, regulations, and future outlook as shown in Table 2. We have created a summary of all of the responses received from respondents for the various themes. As shown in Table 3, we summarized every single response from each and every responder in a theme-based manner.

Table 2. Overview of Interview Responses

Financial Institutions/ Themes	Lending	Risk profile	Challenges	Cooperation and Competition	Regulation	Future Outlook
SBI Bank	Balance between the efficiency of digital banking and the importance of personal information, ensuring a smooth and customer-centric loan application experience.	The bank's risk-averse business model and diligent risk assessment practices have minimal concerns about customers using alternative financing methods.	SBI bank faces challenges such as a digital business model shift, rising interest rates, and expanding digitally signed documents due to technological advancements and changing customer preferences.	SBI plans to crowd fund project investments for individuals with excess funds to engage in business ventures, aiming to mitigate the perceived rivalry from Peer-to-Peer (P2P) lending platforms.	They acknowledge RBI's credit risk assessments and documentation as crucial. However, they acknowledge the challenges of implementing new regulations in the rapidly growing sector. They emphasize the need for a balance between innovation and safeguards to prevent financial crises.	Traditional banks will continue to play a crucial role in society, adapting to the evolving financial landscape. P2P lending systems, while not posing a direct threat, may gain prominence in providing alternative borrowing options.
HDFC Bank	The bank values personal contact and leverages branch staff to	HDFC uses a comprehensive rating system. Concerns about	HDFC faces challenges in adapting to digital business model, rising	HDFC plans a crowdfunding initiative to connect private customers	Respondent 2 advocates for regulations to protect customers	Traditional banks like HDFC remain crucial in the financial sector, despite digital advancements.

Financial Institutions/ Themes	Lending	Risk profile	Challenges	Cooperation and Competition	Regulation	Future Outlook
	enhance customer experience, catering to both digital-savvy and traditional clients.	alternative financing methods are minimal due to diligent risk assessments.	interest rates, and expanding digital document signing, while P2P lending remains unaddressed due to traditional services.	and business ventures, despite P2P lending being a potential competitor, focusing on risk-to-return ratio and potential benefits.	from predatory lending, acknowledging challenges in implementing new regulations, while HDFC emphasizes the need for a balanced regulatory framework.	P2P lending systems may evolve, catering to specific borrower segments seeking alternative financing options.
ICICI Bank	The bank values the human touch and leverages branch staff for customer satisfaction.	Concerns about alternative financing methods are minimized through diligent risk assessments and emphasis on collateral.	ICICI faces challenges in adapting to digital business model, rising interest rates, and expanding digital document signing, prioritizing continuous digital innovation to meet customer expectations.	ICICI plans to launch a crowdfunding initiative to connect private customers with business ventures, despite P2P lending being a potential competitor, focusing on risk-to-return ratio.	Respondent 3 advocates for regulations to protect customers from predatory lending practices, acknowledging existing RBI regulations and ICICI's need for a balanced regulatory framework.	Traditional banks, like ICICI, will continue to shape society's financial landscape, despite digital challenges. They will adapt by embracing digitalization while maintaining personalized services. P2P lending systems may play a role in the evolving financial ecosystem.
Axis Bank	The bank values personal contact and utilizes branch staff to enhance customer experience.This approach caters to both the digitally inclined and those preferring face-to-face interactions.	Axis Bank employs a unique creditworthiness assessment methodology, allows local branches to make educated judgments, distinguishes itself from digital rivals, reduces concerns about alternative financing options, and stresses collateral.	Axis Bank faces challenges in transitioning to a digital business model, adapting to rising interest rates, and expanding digital document signing, despite prioritizing continuous digital innovation.	Axis Bank explores crowdfunding for private customers to connect with business ventures, focusing on risk-to-return ratio and potential future dynamics, despite P2P lending's uncertain benefits in India.	Respondent 4 advocates for regulations to protect customers from predatory lending, acknowledging existing RBI regulations and challenges in implementing new regulations.	Traditional banks, like Axis Bank, will continue to dominate the financial landscape due to their extensive experience, infrastructure, and customer trust. P2P lending systems may impact the financial ecosystem.

Financial Institutions/ Themes	Lending	Risk profile	Challenges	Cooperation and Competition	Regulation	Future Outlook
Kotak Mahindra Bank	The bank values the human touch and leverages branch staff for customer satisfaction.	Kotak Mahindra Bank employs a thorough grading system, explicit rejection reasons, risk evaluations, and collateral focus to allow local branches to make educated judgments while reducing worries about alternative funding sources.	Kotak faces challenges in adapting to digital business model, rising interest rates, and expanding digital document signing, prioritizing continuous digital innovation to meet customer expectations.	Kotak plans a crowdfunding initiative to connect private customers and business ventures, focusing on risk-to-return ratio and potential future dynamics, despite P2P lending's less favorable benefits in India.	Respondent 5 advocates for regulations to protect customers from predatory lending practices, acknowledging existing RBI regulations and recognizing challenges in implementing new regulations.	Kotak Mahindra Bank, will continue to shape society's financial landscape, despite digital challenges. They will adapt by integrating digital solutions while maintaining physical presence. P2P lending systems may influence the financial ecosystem,However, they emphasize the risk-to-return ratio and cautious approach. The benefits of
Bank of Baroda	The bank values personal contact and utilizes branch staff to enhance customer experience. This approach caters to both the digitally inclined and those preferring face-to-face interactions.	Bank of Baroda has a distinctive creditworthiness evaluation approach, enabling local branches to make well-informed judgments, distinguishing itself from digital rivals, alleviating worries about alternative sources of funding, and placing emphasis on collateral.	Bank of Baroda faces challenges in transitioning to digital business model, adapting to rising interest rates, and expanding digital document signing, despite prioritizing continuous digital innovation.	Bank of Baroda explores crowdfunding for business ventures, focusing on risk-to-return ratio and potential future dynamics, despite P2P lending's perceived disadvantages in India.	Respondent 6 advocates for regulations to protect customers from predatory lending practices, while Bank of Baroda acknowledges existing RBI regulations and challenges in implementing new regulations.	Bank of Baroda, will continue to play a crucial role in society's financial system, despite digital competition.The bank is also considering collaboration with P2P lending platforms to enhance their service offerings. P2P lending in India may become more apparent over time.
Home credit, India	We provide loans to individual borrowers by matching them with the lenders on our platform. We emphasize the credit check and risk identification in lending.	We provide our risk score of borrowers using the credit score and income verify and the propriety algorithm to categorize customers into risk profiles. We provide the rejection reasons and	The Operations Manager faces regulatory uncertainties and adapting to fintech, while traditional banks pose challenges. Healthy competition encourages	P2P lending platforms face competition from traditional financial institutions and fintech companies. They are exploring partnerships with banks to create synergy and	Regulations are essential for the stability and integrity of the P2P lending industry. Regulations safeguards the lenders and borrowers, build trust and	P2P lending systems are expected to revolutionise the way financial services are currently delivered and democratise access for those who don't find themselves as the demographic of traditional banks. The traditional banks will also

Financial Institutions/ Themes	Lending	Risk profile	Challenges	Cooperation and Competition	Regulation	Future Outlook
		how to improve to become creditworthy.	innovation and customer-centric solutions.	benefit both parties. The banks face stiff competition from the fintech platforms. However, both the sector believes it caters to a different clientele and prefer to see it as a complementary rather than competing dynamic.	encourage innovation. The traditional banking regulators may not be suitable for P2P lending. P2P lending requires a specific regulatory framework for fair competition and sustainable growth.	compete and emerge as bigger banks with the help of fintech companies. They will collaborate with P2P lending platforms to continue to stay on the mainstream choice of customers'.
Zest Money, India.	We emphasize transparency and ethical lending practices. Loan Breakdown: Currently, our lending portfolio is skewed towards private loans, constituting about 70% of our total loans.	Customer risk evaluation uses credit scoring, behavioral analysis, and machine learning algorithms to classify customers into risk categories. Rejected customers receive detailed explanations, highlighting the need for alternative financial solutions and financial inclusion.	Challenges include regulatory adaptation, cybersecurity concerns, risk management, and traditional bank challenges, requiring innovation and personalized lending experiences to stay ahead in the market.	The company is considering collaboration with traditional banks to leverage the strengths of both P2P lending platforms and traditional banks. This could involve data insights, technological integration, or co-developing innovative financial products. While there may be competition, both platforms can create a more diverse and inclusive financial ecosystem.	Regulations are crucial for consumer protection, market integrity, and trust, and can support P2P lending growth. A balanced approach considering both sectors' needs and challenges is essential for a fair financial landscape.	P2P lending systems are expected to result in the overall financial inclusion and challenge the current banking models. The traditional banks also will collaborate with fintech and incorporating P2P lending platforms and using their technology to increase their offerings to the market and become 'bigger banks' and become available to a broader customer base
EarlySalary (Fibe), India	Loan Breakdown: Approximately 65% of our lending portfolio comprises	The customer risk's evaluation is done in traditional credit scoring and alternative	The P2P lending sector faces challenges in technology adoption and regulatory	The two categories can use P2P lending technology and lending systems at	Rules and regulations in the P2P lending sector will keep it secure and	The P2P lending platforms, with the expected democratization of finance and gap-inclusivity, embracing

Financial Institutions/ Themes	Lending	Risk profile	Challenges	Cooperation and Competition	Regulation	Future Outlook
	private loans, showcasing the diverse lending opportunities available on our platform.	data analysis for lenders' decision.The customers, who get rejected, get detailed explanations to engage them in risk and explain the borrowing process to increase financial literacy, hoping to get them responsible customers as well. Challenging the traditional banks to engage with a flexible solution. The two kinds of platforms – P2P lending and traditional banks/ fintech platforms, the traditional banks can provide a solution for both kinds..	compliance, while traditional banks present regulatory challenges but also offer collaboration and complementary services.	the back end to lend money. Aside from competition, the banks could collaborate to create a more diverse and inclusive financial ecosystem. They have the opportunity to create more flexible solutions for the customer. They avail each other's computing opportunities.	reliable as a source of venture financing. These rules will protect customers and encourage creativity. The more dynamic the criteria are, the more helpful they can be to a P2P platform, as traditional banks might benefit from predictable and stringent rules and regulations.	technology and regulations, are anticipated to provide personalized financial aid to any individual. It is our belief that innovation is good for the credit industry and the society it serves.
QuickCredit India	Loan Breakdown: Private loans dominate our lending portfolio, constituting around 80% of our total loans.	Risk evaluation is an approach that includes credit scoring, income confirmation and behavioural analysis to offer the knowledge necessary for a customer to make well-informed judgments. Picked and verified customers	The role involves adapting to evolving customer expectations and technological advancements, while addressing regulatory challenges from traditional banks to enhance personalized lending experiences.	P2P lending platforms are competitors to digital lenders and traditional banks, but they also see potential for collaboration. They envision a dynamic relationship where P2P platforms can offer agility and innovation, complementing traditional banks'	Regulations are crucial for a fair and secure environment for borrowers and lenders, building trust and setting clear standards for transparency, ethical practices, and responsible lending. They can be flexible and impact both	P2P lending systems are expected to enhance financial inclusion, offering tailored solutions to those unable to access traditional channels. Traditional banks, despite facing challenges from fintech and P2P platforms, are expected to embrace digital transformation and collaborate with innovative players.

Financial Institutions/ Themes	Lending	Risk profile	Challenges	Cooperation and Competition	Regulation	Future Outlook
		receive a comprehensive elucidation to support good borrowing activities and offer the local branches a method of reasoning. The sample technique should help consumers whose applications are refused completely and allay concerns related to traditional financial institutions.		stability and customer base. This could involve co-lending, allowing both parties to create diverse financial products. They see themselves as potential collaborators rather than a secondary market	traditional banks and P2P lending platforms, ensuring fair competition and consumer protection.	

Source: Generated by the authors from Interviewee responses

5. Discussion

The analysis performed on its main findings and implications, tackling the influence of P2P lending on traditional banking and potentials for disruption; and challenges and opportunities for financial inclusion in India. Moreover, it is given insights from bank managers, decision-makers as well as P2P lending platform representatives that were helped to comprehend the continuing discussion about the association between traditional banks and P2P lending. To distinguish P2P lending, this discussion will highlight some of them such as low operational costs, quick loan approvals, increased accessibility to banking services among the less privileged. It will also tackle whether P2P lending can develop a separate market segment and problems that commercial banks have while managing consumer finance. Also, it will look at the effects of P2P lending on financial inclusion with regard to banks adapting to the rise of such practices.

India's financial landscape is being transformed extensively with both traditional bankers as well as P2Plending platforms making changes in their respective loaning practices. This discourse examines some of the themes that are connected to how loans are granted, risk control, problems, teamwork and rivalry existing among the banks in India.

5.1 Themes

5.1.1 Lending Practices

Digital efficiencies and relationships need to be balanced. Their lending practices include thorough credit evaluations as well as risk assessments - both are crucial. They are willing to take the risk for private borrowers, not for bad loans.

5.1.2 Risk Management

In HDFC, Axis Bank, Kotak Mahindra Bank, and Bank of Baroda, they follow an extremely conservative model, using credit scoring, income comparative methods, and debt service ratios. They also have to also fight an AI algorithm for customer risk assessment. Applicants who are not approved will receive a detailed breakdown of their application, helping to improve literacy. Similarly, Home Credit, Zest Money, EarlySalary, and QuickCredit belong to P2P lending platforms. These companies are equally responsible for lending. But they catch up with you in technology adoption issues as well as such a challenge for regulatory compliance.

Table 3. Summary of Interview Responses

Financial Institutions /Themes	Lending	Risk profile	Challenges	Cooperation and Competition	Regulation	Future Outlook
Summary	The bank balances digital efficiency with personal connections for a smooth mortgage application experience. It leverages branch staff to enhance customer experience, catering to both digital and traditional clients. The bank facilitates loans by matching consumers with potential lenders, ensuring responsible lending through thorough credit checks and risk assessments. The lending portfolio is predominantly private, with 65% and 80% of total loans being private loans.	HDFC, Axis Bank, Kotak Mahindra Bank and Bank of Baroda have outlets implementing careful risk-averse business module and risk evaluation techniques to reduce concerns over alternative financing methods along with several ways used to maximize the chances of an individual loan or proposal getting accepted. For instance, SBI bank, HDFC, ICICI, Axis Bank, Kotak, and Bank of Baroda are also using methods focused on risk-averse business models and risk evaluation techniques..	SBI Banks, HDFC, ICICI, Axis Bank, Kotak, and Bank of Baroda have embraced digital business model changes and the rise in rates and digital document signing. Traditional banks face challenges in implementing recent situations, while peertopeer lending faces the issues of tech adaptation and regulatory compliance.The Operations Manager faces regulatory uncertainties and fintech adoption, while traditional banks face cybersecurity concerns and risk management. The role requires adapting to evolving customer expectations and addressing regulatory challenges to enhance personalized lending experiences.	SBI, HDFC, ICICI, Axis Bank, Kotak, and Bank of Baroda are exploring crowdfunding initiatives to connect private customers with business ventures Peer to peer lending faces a competition from both banks and fintech companies for collaborations. It explores banking opportunities and creates a win-win situation for both the banks and the P2P lending industry. This can be data insights, fintech integration, or both parties developing products together to make a sturdy financing system.	RBI's credit risk assessment, documentation is highly demanding for the P2P lending sector. However, implementation of new regulations could be difficult. P2P lending is a necessity to save from loan sharks, and implementation of new rules is crucial. The current RBI policies have already been acknowledged. Regulations are necessary for customer protection and market integrity and to trust on which P2P lending can grow. Traditional banks also benefit from the same rules; however, P2P lending systems may be hindered for massive funding unless a clear, dynamic governing system is formulated for responsible lending.	Traditional banks like chase HDFC and ICICI will continue to have a significant role in the world as we adapt to the new financing changes, and P2P lending may be significant in the league providing alternative funding to borrowers catering to new segments of borrowers.Despite digital challenges, traditional banks like Axis Bank, Kotak Mahindra Bank, and Bank of Baroda will continue to dominate the financial landscape. P2P lending systems are expected to revolutionize financial services, democratize access, and increase financial inclusion. As technology advances, traditional banks can collaborate with fintech and P2P lending platforms to expand offerings and meet evolving consumer expectations.

Source: Generated by the authors from Interviewee responses using NVivo

5.1.2 Risk Management

In HDFC, Axis Bank, Kotak Mahindra Bank, and Bank of Baroda, they follow an extremely conservative model, using credit scoring, income comparative methods, and debt service ratios. They also have to also fight an AI algorithm for customer risk assessment. Applicants who are not approved will receive a detailed breakdown of their application, helping to improve literacy. Similarly, Home Credit, Zest Money, EarlySalary, and QuickCredit belong to P2P lending platforms. These companies are equally responsible for lending. But they catch up with you in technology adoption issues as well as such a challenge for regulatory compliance.

5.1.3 Challenges

Banks and p2p lending platforms as well encounter a few challenges in the digital era such as requirements of digital models to be fulfilled, high-interest rates, use of e-signature system. These problems rise, enforcing people to law and also raise concirns of security and risks. Regulatory uncertainty, Internet security issues and risk concerns are the common thing both the sector have to phase simultaneously.

5.1.4 Cooperation and Competition

There is a current increase in trend of conventional banks and recom and p2p platforms with social networking and banking one of the aims of p2p platforms. They are also trying to co-operate with banks. Peer to peer lending and traditional banks are also struggling against already set-up competitions and language barriers, time gaps, regulatory restrictions on sharing of sensitive information. Birding enforcement agencies in various jurisdictions in various ways like formal agreements, regional enforcement co-operation, and official interaction.

5.1.5 Regulation

The regulatory environment, notably the function of the Reserve Bank of India (RBI), influences the actions of both conventional banks and peer-to-peer lending platforms. Unlike conventional banks, peer-to-peer (P2P) networks need dynamic and explicit regulations that incentivize prudent lending practices. The purpose is to guarantee interoperability, which means that several legal laws function effortlessly together to accomplish the same result. International cooperation on digital markets must ensure that competition cases and laws around the world are consistent. A toolbox for international cooperation in competition enforcement already exists, but it does not include cooperation in competition policy and has flaws in relation to current and proposed legislation.

5.1.6 Future Outlook

HDFC and ICICI banks will continue to be vital in the ever-changing financial space. In this regard, alternative borrowing options such as P2P lending systems are expected to become more widely used thereby contributing towards financial inclusion. Moreover, increased offerings resulting from partnership between traditional banks with fintech or P2P lending companies would help them match emerging customer preferences.

5.2 P2P Lending Disruption

P2P lending platforms' empirical findings indicate that the banking industry may not be as disrupted as previous research has suggested. The Indian banks interviewed did not raise their risk thresholds due to P2P lending, which is different from the expectation. There is thus a coexistence between banks and P2P lending platforms who appear to concentrate on diverse customer segments.

The platform's technological benefits, such as real-time transactional information for credit assessments, might attract clients who are too dangerous for conventional banks. As far as the younger generation who favour online banking services are concerned, geographical factors that come into play include accessibility of the service through the internet. There seems to be no disruption in the mortgage market but traditional banks have adapted and innovated in order to remain competitive in a wider fintech industry including P2P lending. However, consumer lending has been bit disrupted by P2P lending platforms lowering interest rates because of lower operational costs. But there is a big change for building a separate new market in consumer lending from unserved and underserved consumers as their segments.

For example, traditional banks have had to adapt and innovate as a result of digitalization and lower operational costs that characterize the broad fintech industry other than only P2P lending for it to survive current competition dynamics.

5.3 P2P Lending: A Separate Market

Empirical results confirm that banks of traditional nature select their customers with regard to low-risk lending through regulatory and financial constraints. On the other hand, P2P lending has created a distinct credit market by targeting people from traditional banks who have been overlooked due to different risk parameters. The variation in risk appetites between banks and p2p lending platforms shows in Stulz's work and studies also back it up allowing P2P lending to address the riskier customer segments. However, P2P lenders have regulatory constraints which allow them to be flexible in whatever they do whereas some concerns may arise among traditional banks as a result of regulatory differences. Whereas mortgage loans still remain the fortresses for traditional banks, there is potential for disruption in the future. P2P lenders, who are coming up with new products and services, may become threats especially when banks focus on profitable customer segments. Co-opetition is a concept that suggests competition together with cooperation between P2P lending and traditional banks.

This demonstrates how peer-to-peer lending creates a new market by targeting consumers deemed too risky by conventional banks. Disparities in rules and technology advancements have contributed to the spread of peer-to-peer lending. Traditional banks continue to dominate some areas, but there is plenty of room for disruption and co-opetition, indicating a dynamic future for the financial industry.

Conclusion

The traditional banks know to adopt the digitisation is necessary and change in financial environment. The trend of P2P lending system also faces similar situations. However, as several tactics like crowd funding are used, they finally adapted to adjust.

To tackle the issues of digitisation, suggestions given by these parties include developing a comprehensive regulatory framework that, while prioritizing the safety of clients, tries to maintain the integrity of the market. In contrast, the P2P platforms see opportunities to co-partner with the traditional banks to make use of their strengths and combat the common obstacles.

The traditional banks as the peer-to-peer lending platforms and expect that the consumers in India are receiving the sub-served or under-served formal credit giving the loans to everyone. This friendship between the traditional banks and the P2P lending platforms will help them in building more inclusive financial landscape; it is the ultimate aim of India in the consumer credit sector. The traditional banks and the P2P lending platforms can have a friendly relationship to have a more financial and a fairer environment. Some of the points to remember in this friendship between the two includes:

Consumers want an easier way and whole digital process to avail private banking services. It is crucial to have a thoughtful regulatory framework with the customer and market integrity to the P2P lending platform. The traditional banks and P2P lending platforms can work together to make acquisitions, partnerships, or any other business linkages. Banks using fintech solutions for improving consumer experiences and making digital agility to have separate resources. There have been using some of the analyses to make the financing options facing people more inclusive in the formal sort of credit. Consumer credit sector intends to create a more inclusive financial landscape and a more reliable environment. Read also Investments that are getting popular for the lenders and the borrower.

Future Research Directions

Future research in the financial sector needs to concentrate on various domains if it is to come up with a better comprehension of the changing financial landscape. Regulatory dynamics are among the areas that are worth studying further since they will be crucial in striking a balance between promoting innovation and protecting consumer interests in both traditional banking and peer-to-peer lending. Among other things, researchers must investigate effective responses and adaptation of regulators to rapid technological advances – these insights will be invaluable for developing an integrated and flexible regulatory framework. Also, it is highly important to examine the shifting preferences of customers at this era of technology. This will help us highlight what factors influence borrowers when choosing between traditional banks and peer-to-peer lending platforms. This means that financial institutions can use this information to tailor their services accordingly so that they meet the emerging demands of consumers. Conversely, it is inevitable that there will be a great deal of research into possible mechanisms for collaboration between traditional banks and P2P lending platforms. For more integrated and robust financial system, some specific strategies, advantages, challenges and risks should be considered when deciding about cooperation. In terms of digital era risk management strategies, there is another area which needs to be dealt with urgently; this is effective measures in relation to cyber security as well as data protection and technology acceptance for both conventional banks and P2P lending platforms. However they raise other concerns such as their efficiency in connecting private clients with corporate organizations or addressing competition worries amid others. Comparative global perspectives will help to understand how the same challenges and opportunities are approached in different jurisdictions by financial institutions and lending platforms; this will give insight into the future direction of the finance industry.

Credit Authorship Contribution Statement

Madhusmita Mohanty Supervised the research process to ensure its excellence and validity. Provided expert knowledge of NVivo software qualitative analysis methodologies. Verified the analytical methodologies and supervised the study.

Sarasanabelli Prasanna Kumari conducted a literature review and data collection process. Data was analyzed using NVivo software for qualitative analysis. Interpreted the findings and contributed to the article.

Declaration of Competing Interest

The authors declare that there are no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Declaration of Use of Generative AI and AI-assisted Technologies

The authors declare that they have not used generative AI and AI-assisted technologies during the preparation of this work.

References

[1] Ayal, S., Bar-Haim, D., and Ofir, M. (2019). Behavioral biases in peer-to-peer (p2p) lending. In Behavioral Finance: The Coming of Age (pp. 367–400). World Scientific Publishing Co. Pte. Ltd. DOI:https://doi.org/10.1142/9789813279469_0011

[2] Bachmann, A., and Funk, B. (2011a). Article in The Journal of Internet Banking and Commerce. http://www.arraydev.com/commerce/jibc/

[3] Bachmann, A., and Funk, B. (2011b). Article in The Journal of Internet Banking and Commerce. http://www.arraydev.com/commerce/jibc/

[4] Balyuk, T., *et al.* (2018). Financial Innovation and Borrowers: Evidence from Peer-to-Peer Lending. In AFA PhD Poster Session.

[5] Basha, S., Elgammal, M. M., and Abuzayed, B. M. (2021). Online peer-to-peer lending: A review of the literature. *Electronic Commerce Research and Applications*, 48: 101069. DOI:https://doi.org/10.1016/j.elerap.2021.101069

[6] Brandenburger, A. M., and Nalebuff, B. J. (1996). Universal lessons every manager can learn from Andy Grove's paranoia. Available at: https://spinup-000d1a-wp-offload-media.s3.amazonaws.com/faculty/wp-content/uploads/sites/8/2019/06/InsideIntel_HBR1996.pdf

[7] Chen, D. H. Chaodong (2012). A Comparative Study of online P2P Lending in the USA and China. *Journal of Internet Banking and Commerce*, 17(2): 1–15.

[8] Dias, S., Mahajan, J., and Godwin, B. (2022). Antecedents of Adoption of Peer to Peer (P2P) Lending – A Fintech Innovation in India. 2022 International Conference on Trends in Quantum Computing and Emerging Business Technologies (TQCEBT), 1–5. DOI: https://doi.org/10.1109/TQCEBT54229.2022.10041485

[9] Khatri, P. (2019). An Overview of the Peer-to-Peer Lending Industry of India. *International Journal of Business and Management Invention (IJBMI)*, 1–11. DOI: https://doi.org/10.13140/RG.2.2.35247.25765

[10] Klapper, I. L., Singer, D., and Ansar, S. (2021). Country Brief the Global Findex Database

[11] Larsen, T., Levine, L., and Degross, J. (1998). Co-Opetition and Knowledge Transfer.

[12] Lenz, R. (2016). Peer-to-peer lending: Opportunities and risks. *European Journal of Risk Regulation*, 7(4): 688–700. DOI: https://doi.org/10.1017/S1867299X00010126

[13] Liang, HY., and Reichert, A. (2006). The relationship between economic growth and banking sector development. *Banks and Bank Systems*, 1(2): 19-35.

[14] Lynn, T., Mooney, J. G., Rosati, P., and Cummins, M. (2024). Palgrave Studies in Digital Business and Enabling Technologies Series Editors: Disrupting Finance FinTech and Strategy in the 21st Century. Available at: http://www.palgrave.com/gp/series/16004

[15] Matthew Johnston. (2021). Why Banks Don't Need Your Money to Make Loans. Investopedia.Com. Available at: https://www.investopedia.com/articles/investing/022416/why-banks-dont-need-your-money-make-loans.asp

[16] Miles, M. B., Huberman, A Michael, and Saldaña, J. (1994). Qualitative Data Analysis A Methods Sourcebook Edition.

[17] Milne, A., and Parboteeah, P. (2016). The Business Models and Economics of Peer-to-Peer Lending. SSRN Electronic Journal. DOI: https://doi.org/10.2139/ssrn.2763682

[18] Stulz, René M. *et al.* (2016). Behavioral Risk Management in the Financial Services Industry: The Role of Culture, Governance, and Financial Reporting. Available at: www.newyorkfed.org/research.

[19] Stern, C., Makinen, M., and Qian, Z. (2017). FinTechs in China – with a special focus on peer-to-peer lending. *Journal of Chinese Economic and Foreign Trade Studies*, 10(3): 215–228. DOI:https://doi.org/10.1108/JCEFTS-06-2017-0015

[20] Su, X. (2021). The Plight on the Development of P2P Online Lending and the Countermeasures Using Blockchain. DOI: https://doi.org/10.2991/aebmr.k.210319.041

[21] Sulastri, R., and Janssen, M. (2022). The elements of the Peer-to-peer (P2P) lending system. 15th International Conference on Theory and Practice of Electronic Governance, 424–431. DOI:https://doi.org/10.1145/3560107.3560172

[22] Sulastri, R., and Janssen, M. (2023). Challenges in designing an inclusive Peer-to-peer (P2P) lending system. Proceedings of the 24th Annual International Conference on Digital Government Research, 55–65. DOI:https://doi.org/10.1145/3598469.3598475

[23] Suryono, R. R., Purwandari, B., and Budi, I. (2019). Peer to Peer (P2P) Lending Problems and Potential Solutions: A Systematic Literature Review. *Procedia Computer Science*, 161: 204–214. DOI:https://doi.org/10.1016/j.procs.2019.11.116

[24] Teplý, P., Roshwalb, Y., and Polena, M. (2021). Financial Disintermediation: The Case of Peer-to-Peer Lending. In The Palgrave Handbook of FinTech and Blockchain (pp. 375–401). Springer International Publishing. DOI: https://doi.org/10.1007/978-3-030-66433-6_17

[25] Wang, H., Greiner, M., and Aronson, J. E. (2009). People-to-people lending: The emerging e-commerce transformation of a financial market. In Value Creation in E-Business Management: 15th Americas Conference on Information Systems, AMCIS 2009, SIGeBIZ track, San Francisco, CA, USA, August 6-9, 2009. Selected Papers (pp. 182-195). Springer Berlin Heidelberg.

[26] Yan carriere, Vikram Haksar, and Manasa Patnam (2021). Stacking up financial inclusion gains in India. International monetary fund.

[27] Yeo, E., and Jun, J. (2020). Peer-to-Peer Lending and Bank Risks: A Closer Look. *Sustainability*, 12(15): 6107. DOI: https://doi.org/10.3390/su12156107

[28] www.deloitte.com (2023). Fintech by the numbers Incumbents, startups, investors adapt to maturing ecosystem Contents.

[29] Global Ventures. (2020). MENA Fintech Report. Available at: https://Www.Global.vc/Thoughts/Fintech-in-Mena-Report

[30] www.kpmg.com (2023). Pulse of Fintech Biannual analysis of global fintech funding.

[31] McKinsey and Company report. (2023). Fintechs: A new paradigm of growth. McKinsey and Company.

[32] Reserve Board, F. (2019). Annual Report. Available at: https://www.federalreserve.gov/publications/files/2019-annual-report.pdf

[33] Statista report. (2023). Available at: https://www.statista.com/outlook/dmo/fintech/worldwide. Statista Outlook.

[34] www.womensworldbanking.org (2019). Indian Women Aren't Using Their Bank Accounts. This Is How and Why Women's World Banking Plans to Change That.

[35] www.worldbank.org/Global_Findex (2021). The Global Findex Database 2021: Financial Inclusion, Digital Payments, and Resilience in the Age of COVID-19.

Appendix:

Interview Guide: Examining the relationship Between Traditional Banking and P2P lending

Research Problem

What the relationship exists between the conventional banking sector and peer-to-peer lending?
1. Is peer-to-peer lending disruption the established banking sector? If yes, in what manners?
2. Is peer-to-peer lending creating a new market apart from traditional banking Sector? If yes, in what manners?
General Questions

- Is it acceptable to record the interview?
- You are free to quit the survey at any moment or to retract your responses.
- We'll email you the analysis and empirical results of your responses before the release of the article.
- Could you please indicate your name, position, and company name? If not, please proceed anonymously.

Interview Questions for Banks

1. Could you briefly describe your daily duties and activities at the bank?
2. What effects has the growing use of online financial services and digital banking had on the traditional banking sector? What effect does it have for your bank?

Lending

3. How does your organization normally handle loans to individual customers?
4. In your lending portfolio, what is the percentage breakdown of private vs corporate loans?

Risk profile

5. Do you have any particular customer classifications in place, and how do you evaluate risk for your customers?
6. How do customers who are rejection for a loan proceed? Are there recommendations for reapplication or attempts at follow-up?
7. How do you feel about customers who get rejected by traditional banks going to other lenders like P2P lending? Do you anticipate that this tendency will provide any difficulties?
8. When comparing P2P lending services to regular bank lending services, what possible concerns do you see for customers using them?

Challenges

9. What are the main issues that your bank is now facing, and how do they connect to your role?
10. Do you think that peer-to-peer lending platforms provide an obstacle for your business? If so, what difficulties do they cause and how might these difficulties be decreased?

Cooperation and Competition

11. Aside from other banks, who do you consider to be your primary competitors at this time?
12. Do you currently or in the future think about collaborating with P2P lending platforms? If yes, how do you picture this collaboration taking shape?
13. How would you characterize the present state of affairs between banks and peer-to-peer lending platforms? Do you consider them to be a secondary market or competitors?

Regulations

14. Do you believe that regulations controlling the P2P lending sector should be in place to protect consumers?
15. Do you think that the banking sector benefits more from current rules than P2P lending platforms, and vice versa?

Future outlook

16. How do you see the traditional banks' place in our society going forward?
17. What do you think P2P lending systems will play in our society going forward?

Interview Questions for Peer-to-peer lending

General Questions

1. Could you describe your daily duties and activities on the P2P lending platform?
2. What effects has the P2P lending platform seen from the growing use of online financial services and digital banking?

Lending

3. How does your P2P lending platform normally handle loans to individual consumers?
4. In your lending portfolio, what is the percentage breakdown of private vs corporate loans?

Risk profile

5. How do you evaluate a customer's risk, and do you have any particular customer classifications in place? How is this different from the banking sector?
6. How do customers who are rejected for a loan proceed? Are there recommendations for reapplication or attempts at follow-up?
7. How do you feel about customers who get rejected by traditional banks going to other lenders like P2P lending? Do you anticipate that this tendency will provide any difficulties to banks?
8. When comparing P2P lending services to regular banking services, what possible concerns do you see for customers using them?

Challenges

9. What are the main issues that your organization is now facing, and how do they connect to your role?
10. Do you think that your organization faces challenges from traditional banks? If so, what difficulties do they cause and how might these difficulties be reduced?

Cooperation and Competition

11. Aside from other P2P lending platforms, who do you consider to be your primary competitors at this time?
12. Do you currently or in the future think about collaborating with traditional banks? If yes, how do you picture this collaboration taking shape?
13. How would you characterize the present state of affairs between banks and peer-to-peer lending platforms? Do you consider them to be a secondary market or competitors?

Regulations

14. Do you believe that regulations controlling the P2P lending sector should be in place to protect consumers?
15. Do you think that the banking sector benefits more from current rules than P2P lending platforms, and vice versa?

Future Outlook

16. What do you think P2P lending systems will play in our society going forward?
17. What do you think traditional banks will play in our society going forward?

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Green Products in Banks. Case of an Emerging Country

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Abstract: This paper explored in depth the issue of green finance within Tunisian banks. The main objective of this research was to understand how Banks can play a significant role in the development of green finance in Tunisia. In a first step, we explained the undeniable importance of green finance which presents an essential pillar of the transition towards a more sustainable and environmentally friendly economy. Financial institutions play a vital role in promoting green financial products. Banks have started to offer products and services focused on sustainability. However, these efforts are insufficient, and it is necessary to strengthen them. For this, we examined the perception of Tunisian customers towards the green financial products of Banks as well as the factors influencing their attitudes, a detailed survey reveals that awareness is growing and that trust and relevance are crucial elements to encourage their adoption. In conclusion, this work has highlighted the importance of green finance in the Tunisian context. It offers food for thought for decision-makers, practitioners, and researchers who wish to contribute to the sustainable development of the banking sector in Tunisia.

Keywords: green finance; ESG; sustainable development; CSR.

JEL Classification: M14; A13; R11.

Introduction

The whole planet is in motion due to climate risks, as a result, investors and banks are converting one by one to sustainable finance which can transform these risks into opportunities. Certainly, with the encouragement of governments and central banks, it is becoming a constantly evolving field.

Indeed, banks play a crucial role in the development of green finance due to their central position in the financial system and ability to mobilize significant capital. Their involvement is essential to catalyze the financing of sustainable projects and contribute to the transition towards a greener and more resilient economy. Here are the main aspects that underline the crucial role of banks in the development of green finance:

Direct financing for green projects: Banks can provide direct financing for green projects, whether they are renewable energy installations, energy efficiency, clean transportation, or other sustainable initiatives. They can grant specific loans to these projects based on their potential for positive environmental impact.

Issuing green bonds: Banks can issue green bonds to finance sustainable projects. Bedendo M, Nocera G and Siming L, (2023), By issuing these bonds, banks attract investors concerned about environmental impact and mobilize additional capital for green projects. Peterson K. Ozili (2022).

Green financing advisory: Banks play an important role in advising businesses and institutions on how to structure and finance green projects. Their financial expertise allows them to assess the risks and opportunities associated with sustainable investments, which can encourage more projects to adopt a green approach.

Integration of ESG criteria: Banks also have a critical role in integrating environmental, social, and governance (ESG) criteria into their operations and investment decisions. By considering ESG risks and the social and environmental impacts of their activities, banks can drive sustainable and responsible business practices across the financial sector.

Customer Awareness: Banks play a key role in creating awareness among their customers about green financial products and services. They can encourage individuals and businesses to opt for responsible financial solutions, such as green savings accounts, green loans, low-carbon credit cards, etc. This awareness helps broaden the base of potential investors and borrowers for green projects. Development of innovative green financial products, Assessment, and management of climate risks, and Influence on companies as important creditors and investors, banks have a significant influence on the companies they finance. They can use their voting power at general meetings and their dialogues with companies to encourage the adoption of sustainable business practices, the reduction of carbon emissions, and the implementation of ESG strategies.

In summary, banks have a crucial role in the development of green finance as main providers of financing for sustainable projects and as catalysts for the integration of ESG criteria in the financial sector. Their commitment and influence can significantly contribute to the transition to a greener and socially responsible economy (Daubanes *et al.* 2022; Flammer 2021; Sangiorgi and Schopohl 2021).

This paper seeks to explore in depth the crucial role of green finance in the fight against climate change while looking at how international organizations are working together to develop this concept on a global scale. More specifically, it will focus on the evolution of green financing in Tunisia and the opportunities and challenges facing this country in its quest for a more sustainable future.

In this context, this work will aim to present and clarify the concept of green finance. To better understand this concept, we proposed to treat it in the form of the following sections:

The first section sets out the definition and issues of green finance, the second focuses on the theoretical foundation of the research the third section focuses on the literature review by showing the role of banks and the State in the development of green finance, and finally the fourth section presents the practical study of the perception of green products in Tunisian banks as well as the results found.

1. Literature Review

1.1. Definition and Challenges of Green Finance

The Financial Market Council has defined green finance, by its objective, as any financial operation having the preservation of the environment and the promotion of the energy and ecological transition.

It is part of responsible investment (RI) approaches adding environmental, social, and governance (ESG) criteria to financial criteria.

Green finance refers to the use of financial products and investment instruments to support projects, businesses, and initiatives that contribute to environmental protection and sustainability. It aims to generate both financial returns and positive environmental and social benefits. (W. Li, H. Hu and Z. Hong, 2024)

For green financing to achieve its objectives, it is necessary to bring together certain basic issues:

- The energy transition: it is the main challenge of green finance through the financing of projects that serve to increase the share of renewable energies in the energy mix and reduce greenhouse gas emissions.
- Sustainable management of natural resources: green finance, by financing projects that reduce pollution and preserve natural resources (biodiversity, water, and soil), can contribute to the sustainable management of these natural resources.
- Social impact: by improving public health by encouraging investment in social infrastructure and clean transportation and by creating local jobs in renewable energies, green finance can have a positive social impact.
- Climate and financial risks: green finance helps manage these risks by financing projects that take climate impacts into account.
- The favorable regulatory framework: this is a very important issue for green finance. Governments and regulators can encourage investment in green projects by creating tax incentives and promoting transparency and disclosure of information on climate risks and environmental performance.

Indeed, green finance aims to decarbonize our economies and to meet this objective, it relies on various green financial assets. They are the set of instruments and products that finance projects and companies that have positive impacts on the environment according to the financial market advice definition.

As an example, we can cite green bonds and sustainable bonds.

Green bonds, also called green bonds, are issued to finance projects with a specific positive environmental impact. The funds raised by the issuance of green bonds are exclusively allocated to projects that contribute to the protection of the environment and the transition to a greener and sustainable economy. These projects may include initiatives related to renewable energy (solar, wind, hydro), energy efficiency, clean transportation, waste management, and protection of biodiversity, among others. Green bonds are often certified according to recognized standards, such as the International Capital Market Association's (ICMA) Green Bond Principles (GBP), to ensure that financed projects comply with required environmental criteria.

Sustainable bonds, also called ‘sustainability bonds’ or ‘social bonds’, are issued to finance projects with a positive environmental and social impact. Unlike green bonds which primarily focus on environmental projects, sustainability bonds have a broader approach by including projects that contribute to environmental and social sustainability. Funds raised through the issuance of sustainability bonds can be allocated to projects that promote gender equality, improve working conditions, strengthen food security, and support education, among other social and environmental initiatives.

In summary, the main difference between green bonds and sustainable bonds lies in the specific purpose of the projects they finance. Green bonds are issued to support exclusively environmental projects, while sustainability bonds have a broader approach by including both environmental and social projects. Both types of bonds aim to mobilize capital for positive impact projects, thereby contributing to the transition to a more sustainable and socially responsible economy.

1.2. Theoretical Basis of the Research

1.2.1. Green Marketing Theory

This theory focuses on how consumers perceive and respond to environmentally friendly products and marketing efforts. In the context of banks offering green products, consumer perceptions can be influenced by various green marketing strategies employed by banks, such as promoting environmental benefits, highlighting sustainable practices, and granting eco-labels or certifications. The theory suggests that consumers' positive perception of green products in banks is influenced by their awareness, knowledge, attitudes, and beliefs related to environmental issues.

1.2.2. Theory of Planned Behavior

The theory of planned behavior (TPB) is used extensively within and across multiple contextual studies (Ajzen 1991). TPB is the superior model theory for examining or understanding human behavior (Hagger 2019). The TPB aims to understand the complex nature of Generation Y's green behavior on green products. The TPB is developed from the theory of reasoned action (TRA) insufficiency to determine human behaviors based on perceived behavioral control (PBC); which is seen as a special case for TPB (Ajzen 1991).

1.2.3. Stakeholder Theory

This theory emphasizes the importance of considering the interests and expectations of various stakeholders, including customers, in organizational decision-making. In the case of green products offered by banks, customers are key stakeholders whose perception matters. Banks that offer green products are likely to be perceived positively by environmentally conscious customers, who value sustainable practices and prioritize environmental considerations in their banking choices. The theory suggests that banks that align their offerings with their customers' values and expectations can improve their reputation and build customer loyalty. Hooda KS and Yadav S (2023).

1.2.4. Institutional Theory

This theory focuses on the influence of institutional pressures and norms on organizational behavior. In the context of green products in banks, institutions such as regulations, industry standards, and societal expectations play an important role in banks' perception and adoption of green practices. Banks can offer green products in response to external pressures and to maintain their legitimacy in a society increasingly concerned about environmental issues. The theory suggests that the perception of green products in banks is influenced by the broader institutional environment and the extent to which banks conform to or deviate from existing standards. B. Guy Peters (2022).

These theoretical foundations provide different insights into the perception of green products in banks. Actual perception is likely influenced by a combination of these theories, as well as contextual factors such as individual values, beliefs, and sociocultural influences.

1.3. Role of Green Finance in the Transition to a Sustainable Economy

Papista and Krystallis (2013) and Huang (2022) report that numerous studies aiming to explain pro-environmental behaviors have mobilized different versions of models based on the influence of values, beliefs, or attitudes on pro-environmental behaviors such as the purchase of green products.

Financing the energy transition

Green finance plays a key role in financing the transition to clean and renewable energy sources. It supports the development of solar, wind, hydro, and other low-carbon energy projects.

Promoting energy efficiency

Green finance encourages investment in projects and technologies aimed at improving energy efficiency. This includes initiatives such as the energy retrofit of buildings, the use of energy-efficient lighting technologies, and the adoption of sustainable transport systems.

Encouraging sustainable business practices

Green finance incentivizes companies to adopt sustainable business practices by integrating ESG considerations into their operations. It promotes environmental and social responsibility, climate risk management, the promotion of diversity and inclusion, and stakeholder accountability.

1.4. Impact of Green Bonds on the Financing of Sustainable Projects

Mobilization of specific capital: Green bonds attract investors specifically interested in projects with a positive environmental impact. This allows capital to be mobilized toward projects that may not have been financed otherwise or that would have had more difficulty obtaining traditional financing.

Financing sustainable projects: Green bonds are issued to finance specific projects that meet rigorous environmental criteria. These projects may include renewable energy initiatives (solar, wind, hydro), energy efficiency, clean transportation, waste management, and biodiversity protection, among others.

Improved transparency and disclosure: Green bond issuers are required to provide transparent information on the use of funds and the environmental impact of the projects financed. This strengthens investor confidence in the real impact of green bonds and encourages the disclosure of data on the environmental performance of projects.

Development of the sustainable investment market: The increasing issuance of green bonds has contributed to the development of a market dedicated to sustainable investments (Rahman *et al.* 2024).

This attracts more investors and capital to environmentally friendly initiatives, driving growth and innovation in the sustainable projects sector.

Strengthening Commitment to Sustainability: Issuing green bonds encourages issuers to make a greater commitment to sustainability and environmental responsibility. This can lead businesses and governments to adopt more sustainable business practices and take concrete steps to reduce their environmental footprint.

1.5. The Advantages of Green Bonds

Ottman, Stafford, and Hartman (2006) identify five main types of personal benefits of green products for consumers: (1) efficiency and savings; (2) health and safety; (3) performance; (4) symbolism and status; (5) practicality. The rise in popularity of car sharing is linked to the fact that it allows access to a vehicle while limiting maintenance expenses, repairs, and insurance, has.

a.Benefits for investors:

- Portfolio diversification: Green bonds offer investors an opportunity to diversify their investment portfolio by investing in projects with positive environmental and social impact.
- Financial return: Although green bonds have an environmental and social objective, they offer financial returns similar to those of traditional bonds (Johnstone and Tan 2015).
- Brand image and reputation: Investing in green bonds can improve the brand image and reputation of investors by showing their commitment to sustainable development (Bennett and Williams 2011).
- Risk management: Investors can use green bonds to manage environmental and social risks in their investment portfolio.
- Mésonnier (2022) and Degryse *et al.* (2020) also use the Eurostat GHG emission data (matched with the French and the Belgian credit registers, respectively) to analyze changes in the lending attitude of banks to polluting sectors.
- Assessment of risks and opportunities: Green bonds allow investors to measure the risks and opportunities associated with sustainable investments and to better understand the environmental and social impacts associated with the projects financed.

- Influence on Business Practices: Investors can exert influence on the business practices of issuers by using their investment power to encourage issuers to adopt sustainable and responsible business practices. Spaargaren G. (2003)
- Regulatory compliance: In some cases, green bonds can be used to comply with certain environmental or social regulations.
- Development of new financial products: The green bond market has spurred the development of new sustainable financial products, such as sustainable mutual funds and stock indices (Devinney, Auger, and Eckhardt 2012).

b. Benefits for issuers:

- Access to new investors: Green bonds allow issuers to access a new group of investors interested in environmental and socially responsible projects.
- Brand image and reputation: Issuing green bonds can improve the brand image and reputation of issuers by showing their commitment to sustainable development.
- Diversification of financing sources: Green bonds allow issuers to diversify their financing sources by issuing bonds that are specifically intended to finance environmentally and socially responsible projects.
- Tax and regulatory benefits: Some governments offer tax and regulatory benefits to green bond issuers to encourage investment in environmental and socially responsible projects.
- Innovation: Issuing green bonds encourages innovation in sustainable products and services, which can provide competitive advantages for issuers.
- Access to less expensive sources of financing: For issuers with a strong reputation for sustainability, green bonds can provide access to less expensive sources of financing than traditional bonds.
- Better investor visibility: Green bonds can provide issuers with better visibility to investors seeking sustainable investment opportunities.
- Social and environmental responsibility: By issuing green bonds, issuers can demonstrate their commitment to social and environmental responsibility and strengthen their reputation among stakeholders.

2. Experimental Methods

In Tunisia, even if progress in green finance seems timid for the moment, it is interesting to refer to companies whose job is to protect the environment and those seeking to follow the path of energy and ecological transition.

To satisfy the objectives of the stakeholders, these companies in an approach of social responsibility have contributed to the challenges of sustainable development, and have chosen to involve citizens and partners by popularizing the tools making it possible to facilitate green economy projects, to create an environment promoting ecological objectives, blocking energy-intensive projects and favoring green projects with a big impact on carbon reduction. Renewable energy projects strengthening the solar market and supporting the implementation of the Tunisian solar plan have taken shape.

The Tunisian state has put in place public policies to encourage green financing. Among these policies, we can cite; the legal framework, by The finance law of the year 2022 seems to have as its main aim the protection of the environment, focusing on the encouragement of a green economy through financing. The tax and customs incentive through tax exemption for the benefit of companies with green activities advanced by article 29, of December 28, 2021, relating to the 2022 finance law which opted for the encouragement of the implementation of solar energy in the country by importing solar collectors, the import of the latter now brings to its author the advantage of reducing customs charges to 10% of the customs tariff in force.

3. Case Studies

The Tunisian State has established several public-private partnerships (SUNREF TUNISIE program, the French Development Agency (AFD), the European Union, the National Agency for Energy Management (ANME), the National Agency of Environmental Protection (ANPE), for green financing. These partnerships make it possible to mobilize significant financial resources to support environmental projects. Public-private partnerships also promote collaboration between public and private actors for the implementation of sustainable and innovative solutions.

In this context, this work will aim to present and clarify the concept of green finance. To better understand this concept, we proposed a questionnaire with the following central question: Regarding 'green finance', do you think that, currently, the terms 'finance' and 'green' can coexist? The term FINANCE evokes notions and logics of 'profitability', wealth', 'freedom', 'and excess' … while the term GREEN evokes the notions and logics of 'ecology', 'nature', 'respect ', 'limits' which a priori seem contradictory.

Data collection was carried out using an online form which was distributed to participants strategically. Participants were invited to complete the form which was designed in a user-friendly manner to ensure a pleasant experience for participants, thus promoting an optimal response rate. Our sample is made up of sixty-three individuals of different intellectual levels.

4. Research Results

The results obtained from the responses of 63 participants provide significant insight into their perceptions and attitudes towards Banks' green products.

Table 1. Distribution of Respondents according to their sex

Tranche	Effective	Percentage
Women	52	82.4%
Men	11	17.6%
Total	63	100%

Source: Authors

➢ The data shows that the majority of respondents are women, making up 82.4% of the sample, while men make up 17.6%. This distribution may have implications for how different genders perceive and interact with sustainable financial products.

Table 2. Perceptions of Green Finance Depending on the Socio-Professional Category of Participants

What is green finance?	Unemployed	student	Member of the liberal profession	Employee	Total
A form of finance that aims to finance sustainable projects.	1	15	7	7	30
A form of finance that aims to finance economically profitable projects.	3	6	5	3	17
A form of finance that aims to finance socially responsible projects.	3	9	2	2	16
Total	7	30	14	12	63

Source: Authors

➢ Analysis of the responses reveals that the most numerous students associate green finance with the financing of sustainable projects, with 15 positive responses. Employees and members of liberal professions also have a preference for this definition, with 7 responses each. Regarding the definition of green finance as financing economically profitable projects, the unemployed and students are the main respondents. Finally, regarding the definition of green finance as financing of socially responsible projects, students are still in the lead, with 9 positive responses.

Green finance is a growing field that integrates economic, environmental, and social aspects. The responses given by participants reflect this diversity of perspectives. It is important to note that green finance can encompass all of these dimensions.

Financing sustainable projects: This interpretation emphasizes environmental sustainability. Investments in sustainable projects aim to minimize negative impacts on the environment while promoting responsible use of natural resources.

Economic profitability: The idea that green finance is economically profitable indicates that investors can achieve a positive return on investment by supporting environmentally friendly projects. This encourages the alignment of financial interests with environmental goals.

Social Responsibility: The social responsibility aspect of green finance highlights the importance of considering positive social impacts while financing sustainable projects. This includes aspects such as creating green jobs and promoting fair practices.

➢ Green finance encompasses a wide range of interpretations, from environmental sustainability to economic profitability to social responsibility. This diversity reflects the complexity and versatility of green finance as a field that aims to reconcile financial objectives with environmental and social imperatives.

Table 3. Participants' Opinions on the Reputation of Sustainable Businesses and the Relevance of Environmental Sustainability in the Selection of Financial Products Depending on Age

				Your age is	
Do you think that companies that adopt sustainable and environmentally friendly practices have a better reputation and are more attractive to investors?	Would you say that environmental sustainability is an important factor to consider when selecting a financial product?	Between 25 and 34 years old.	Between 35 and 44 years old.	Under 25.	Total
Yes	Yes	14	7	21	42
Total of yes		14	7	21	42
Total		14	7	21	42

Source: Authors

- The data appears to be linked to two separate questions asked of respondents:

The first question concerns the perception of sustainable and environmentally friendly practices by companies and their impact on reputation and attractiveness to investors.

The second question concerns the importance of environmental sustainability when selecting a financial product. Responses to the first question indicate that 42 respondents answered 'Yes' to the question of whether companies that adopt such practices have a better reputation and are more attractive to investors.

- Reputation and Investor Attractiveness: The perception that companies adopting sustainable practices have a better reputation and are more attractive to investors is consistent with current financial market trends. Investors, particularly institutional investors and Environmental, Social, and Governance (ESG) funds, are increasingly giving importance to environmental, social, and governance (ESG) factors in their investment decisions. Companies with high ESG ratings often have lower financing costs and are more attractive to responsible investors.

Importance of Environmental Sustainability: The second question, regarding the importance of environmental sustainability when selecting a financial product, suggests that respondents consider this aspect when choosing financial products. This may indicate that they attach importance to sustainable investments or financial products that incorporate ESG criteria.

- Data shows that the majority of respondents believe that companies that adopt sustainable and environmentally friendly practices have a better reputation and are more attractive to investors. This perception reflects the growing importance of environmental sustainability in the financial world.

The second question regarding the importance of environmental sustainability when selecting a financial product indicates that sustainability is a factor considered by many investors and consumers. This suggests a trend towards greater environmental awareness and a growing demand for financial products aligned with ESG criteria.

Overall, this data highlights the growing importance of environmental sustainability in investment and consumption decisions, with potential implications for businesses and financial products seeking to meet this growing demand.

Table 4. Investor Motivations for Green Products: An Analysis of Participants' Preferences

	Percentage
Reduce financial risks linked to climate change	19.6%
Improve their brand image, reputation, and attractiveness	21.6%
Position yourself advantageously in the future economy	27.5%
Take advantage of tax advantages and subsidies granted by the State	27.5%
Generate attractive financial returns	2%

Source: Authors

- Reducing Financial Risks: The response that people are investing in green products to reduce financial risks related to climate change is important. Investors increasingly view climate change as a potential risk to their portfolios. By investing in green companies and products, they seek to minimize the risks associated with exposure to industries vulnerable to climate disruption.

Improving Brand Image and Reputation: Improving brand image and reputation is also a key factor. Companies that adopt sustainable practices often attract loyal customers and strengthen their reputation among stakeholders. This can result in greater customer loyalty and better company valuation.

Positioning in the Future Economy: Investing in green products to position yourself advantageously in the future economy reflects the long-term perspective. Investors recognize that future economies will be focused on sustainability, and they seek to anticipate this trend by investing in green sectors and technologies.

Tax Advantages and Subsidies: Some investors are attracted by the tax advantages and subsidies granted by the State for green investments. These financial incentives can make investments in green products more financially attractive.

Attractive Financial Returns: Although fewer respondents chose this option, the potential to generate attractive financial returns remains significant. Investors do not want to sacrifice profitability by investing in green products, and more and more opportunities offer competitive returns.

➢ Data indicates that the main reason people choose to invest in green products varies, but reducing financial risks from climate change and improving brand image and reputation are key factors. Additionally, the long-term perspective of positioning oneself in the future economy and benefiting from tax benefits and government subsidies also plays an important role. This shows that green investments are influenced by a combination of financial, economic, and social motivations. Investors are increasingly aware of the financial benefits and opportunities that green products offer while recognizing the importance of long-term sustainability for businesses and the economy.

Table 5. Participants' Preferences Regarding the Main Role of Banks in Green Finance

Tranche	Percentage
Finance and sustainable projects	51%
Encourage businesses to adopt sustainable practices	29.4%
Advising clients on sustainable investments	19.6%
Total	100%

Source: Authors

➢ Economic and financial analysis: The predominance of responses indicating that the main role of banks is to finance sustainable projects (51%) suggests that the majority of participants view financing as a key driver of growth in the green economy. This perspective reflects the need to provide financial resources to support environmentally friendly initiatives and promote economic sustainability. However, 29.4% of respondents consider that the role of banks is to advise clients on sustainable investments, thus highlighting the importance of financial advice in promoting green finance. Finally, 19.6% believe that banks should play an incentive role by encouraging businesses to adopt sustainable practices, thus highlighting the influential power of financial institutions to promote sustainability within the business sector.

➢ In short, the opinions shared by the participants highlight the complexity of the role of banks in green finance. Although financing sustainable projects is seen as a priority, other dimensions, such as financial advice and encouraging companies to adopt sustainable practices, should not be underestimated. This diversity of perspectives highlights the importance of financial institutions in promoting green finance, also the need to adopt a holistic approach to foster a more environmentally friendly economy.

➢ The majority of respondents, regardless of their gender, socio-professional category, or age, seem to have already heard of green products and ecological credits. This indicates some awareness of these concepts within the sample. However, it is notable that among the unemployed, awareness appears to be slightly lower, with 8.33% reporting having already heard of these products.

➢ Overall, the data suggests that awareness of green products and eco-credits is relatively high among respondents, regardless of their socio-professional category, age, or gender. However, there is still room for improvement, particularly among the unemployed. This increased awareness can help further promote green finance and financial sustainability in society.

➢ Description of green products and ecological credits:

Responses to the question of whether participants have ever heard of green products and eco-credits show a diversity of responses and a certain degree of awareness of these concepts. Some responses indicate a general understanding of the nature of green products and eco-credits, while others express a lack of knowledge on the subject. It is important to note that some respondents associate green products with environmentally friendly project financing mechanisms, while others mention things such as eco-labels and financial benefits.

Table 6. Distribution of Awareness of Green Products and Ecological Credits according to Gender, Socio-Professional Category, and Age of Respondents

			Have you ever heard of green products and eco credits before?	
What is your gender?	What is your socio-professional category?	Your age is	Yes	Total
Women	Unemployed	Between 35 and 44 years old	8,33%	8.33%
	Total for unemployed		8,33%	8.33%
	Students	Between 25 and 34 years old	8.33%	8.33%
		Under 25	50%	50%
	Total for student		58.33%	58.33%
	Employee	Between 25 and 34 years old	16.67%	16.67%
		Between 35 and 44 years old	8.33%	8.33%
	Total employee		25%	25%
Total for women			94.67%	91.67%
Man		Over 44 years old	8.33%	8.33%
	Total for men		8.33%	8.33%
Total			100%	100%

Source: Authors

➢ Responses reflect a variety of understandings regarding green products and eco-credits, suggesting that awareness of these concepts may vary considerably among respondents. However, some responses indicate a general understanding of green products as environmentally friendly products and green credits as financing mechanisms for projects with a positive impact on the environment. This highlights the importance of education and awareness to promote green finance.

➢ In conclusion, the answers to the question on understanding green products and ecological credits indicate a diversity of knowledge among the respondents. Some participants have a solid understanding of these concepts, while others need increased awareness. To further promote green finance, it is essential to provide clear and accessible information on these topics and increase awareness of their importance for environmental and financial sustainability.

Table 7. Perception of the Main Characteristic of a Green Credit from Banks in Tunisia Depending on the Age of the Respondents

					Your age is
In your opinion, what is the main characteristic of a green loan offered by banks in Tunisia?	Between 25 and 34 years old.	Between 35 and 44 years old.	Under 25.	Over 44 years old.	Total
The credit comes with a favorable interest rate.	17.78%	12.5%	30.43%	50%	27.45%
The credit is intended to finance environmentally friendly projects.	72.22%	87.5%	60.87%	50%	68.63%
The credit amount covers up to 100% of the equipment acquisition cost.			8.7%		3.92%
Total	100%	100%	100%	100%	100%

Source: Authors

➢ The responses show that the perception of the main characteristic of green credit offered by Tunisian Banks varies depending on the age of the respondents. Among respondents aged under 25, 30.43% believe that green credit comes with an advantageous interest rate, while 60.87% believe that the credit is intended to finance environmentally friendly projects. environment. Among respondents aged 25 to 34, 27.78% think that the advantageous interest rate is the main characteristic, and 72.22% consider that green credit finances environmentally friendly projects. Among respondents aged 35 to 44, 12.50% emphasize the favorable interest rate, and 87.50% emphasize financing environmentally friendly projects. Finally, among respondents over 44 years old, 50.00% believe that green credit comes with an advantageous interest rate, and 50.00% consider that it finances environmentally friendly projects.

➢ In conclusion, the responses show that the main perceived characteristic of green credit offered by Banks in Tunisia varies depending on the age of the respondents. Younger respondents tend to emphasize financing environmentally friendly projects, while older respondents place more emphasis on a favorable interest rate. This variation in perception highlights the importance of understanding the needs and preferences of different segments of the population to design effective and attractive green financial products.

Table 8. Preferences for Green Financial Services and Products according to the Age of Respondents

					Your age is
What types of financial services and products are you most interested in?	Between 25 and 34 years old.	Between 35 and 44 years old.	Under 25.	Over 44 years old.	Total
The green bank card.	6	4	8		18
Green insurance.	3		1		4
Green savings accounts.	8	6	15		29
Ecological credits.	5	1	4	2	12
Total	22	11	28	2	63

Source: Authors

➢ Analysis of the responses highlights respondents' preferences for financial services and products based on their age. Among respondents aged 25 to 34, there appears to be particular interest in green bank cards and green savings accounts. Ecological credits are also attracting some interest. Among respondents aged 35 to 44, green savings accounts are the most popular, followed by the green bank card. Respondents under 25 years old show strong interest in green savings accounts, green bank cards, and ecological loans. Finally, among respondents over 44, green savings accounts are the most popular financial product.

➢ In conclusion, the responses show that green savings accounts are the most widely appreciated financial product, regardless of the age of the respondents. There is also some interest in green bank cards, particularly among younger respondents. Ecological credits, although interesting for some respondents, seem to attract less interest. This table highlights the importance of offering a diverse range of green financial products to meet the preferences and needs of different segments of the population.

Table 9. Opinions of Participants on Improving the Range of Sustainable Financial Products of Tunisian Banks

	Percentage
By offering more advantageous offers to customers	21.6%
By improving communication around its green products	43.1%
By offering more innovative products	35.3%
Total	100%

Source: Authors

➢ Among respondents, 21.6% believe that banks should offer more advantageous offers to customers to improve their range of sustainable financial products. This suggests that some participants consider that financial incentives such as attractive interest rates or tax benefits could encourage more customers to opt for sustainable financial products. On the other hand, 43.1% believe that improving communication around green products is essential. This response highlights the importance of educating customers about the benefits and features of sustainable financial products. Finally, 35.3% believe that the bank should offer more innovative products to attract customers to green finance. This suggests a potential demand for innovative sustainable financial products adapted to customers' changing needs.

➢ In conclusion, the responses indicate that to improve their sustainable financial product ranges, Banks in Tunisia must consider a multi-faceted approach. This includes offering better deals to certain customers, effective communication about green products to increase public awareness, and creating innovative products to meet changing market needs. This diversity of responses highlights the importance of adaptability and strategy to promote green finance within the bank.

5. Discussions

The results of this study reflect increasing awareness among participants of the importance of green finance and environmental sustainability. Recognition of the positive impact of sustainable practices on business reputation highlights changing consumer attitudes. The varied responses to the question on the definition of green finance reveal a general understanding but also some confusion, highlighting the need for more education on this concept.

The results suggest an emerging demand for green financial products. The importance given to environmental sustainability as a criterion for choosing financial products presents an opportunity for Banks to develop their range of sustainable products to the expectations of participants.

However, the low familiarity with green products and ecological credits highlights the need for more targeted and informative communication from Banks. Participants' expectations for more advantageous offers and innovative products indicate possible ways to improve the bank's offering in the field of green finance.

In conclusion, these results provide useful indications for the adaptation of Banks' products and communication strategies, to better respond to the changing needs and expectations of customers in terms of sustainable financial products.

The conclusions drawn from this study highlight a positive development toward increased awareness of the importance of green finance. The recognition that sustainable businesses have a better reputation and are more attractive to investors suggests a positive shift in participants' views towards environmentally friendly practices. The diversity of responses to the question on the definition of green finance highlights the need to further clarify this concept to the general public. This ambiguity could influence participants' perceptions and highlight the importance of continuing education in this area.

The finding that the majority of participants consider environmental sustainability as an important criterion when choosing financial products highlights the opportunity for Banks to capitalize on this growing interest in green products. However, the lack of awareness of green products and eco-friendly loans suggests that the bank can benefit from a more effective communication strategy to increase customer awareness of these offers. Preferences for reasons to invest in green products, including the desire to position themselves favorably in the future economy and to benefit from tax benefits and subsidies, indicate participants' underlying motivations. These insights could guide Banks in their designs of green financial products to meet these specific needs and desires. The identification by the majority of participants of the role of financing sustainable projects as the main responsibility of banks in green finance is consistent with traditional expectations of the banking sector. However, the lack of familiarity with green products and ecological credits shows that Banks have opportunities to expand their ranges of green products while increasing their visibility.

In summary, the results of this study provide a solid basis for Banks to adapt their green product offerings and communication strategies based on changing customer needs, expectations, and perceptions.

Conclusions and Further Research

The study provides an enlightening overview of the attitudes and perceptions of the Tunisian population towards green finance, with important economic implications. Overall, it is clear that green finance has become a topic of growing interest in the country. Investors, particularly younger generations, are showing a strong interest in sustainable financial products and an increased understanding of their economic and social potential.

The idea that companies adopting sustainable practices enjoy a better reputation and are more attractive to investors is a strong signal of the importance of sustainability in the economic landscape. This suggests that companies that integrate sustainable practices into their business model can not only improve their brand image but also attract more investment, which has positive economic implications.

Furthermore, the perception of green finance as a means of financing socially responsible projects highlights a preference for investments with a positive impact on society and the environment. This trend reflects a growing demand for investments aligned with sustainability goals, which can encourage the growth of sustainability-focused projects and businesses.

The perception that banks have a key role in promoting green finance also highlights their potential as influential economic actors. Financial institutions have the opportunity to boost the financing of sustainable projects, which can contribute to job creation and economic growth while promoting the transition to a more environmentally friendly economy.

Ultimately, the study highlights the potential of green finance as an economic driver in Tunisia. Investors are increasingly aware of the potential benefits, both in terms of financial returns and reputation. Businesses and financial institutions have an opportunity to meet this growing demand by developing sustainable financial products and services, which can foster a greener, more resilient economy in the long term. The emphasis placed on green finance can thus contribute to job creation, economic growth, and the preservation of the environment in Tunisia.

Credit Authorship Contribution Statement

Yasmina Jaber: Conceptualization, Investigation, Methodology, Software, writing – original draft, Supervision, Writing – review and editing,

Faten Nasfi Salem: Project administration, Formal analysis, Visualization, Data curation, Validation, Funding acquisition

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Declaration of Use of Generative AI and AI-assisted Technologies

The authors declare that they have not used generative AI and AI-assisted technologies during the preparation of this work.

References

[1] Ajzen, I. (1991). The theory of planned behavior. *Organ. Behav. Hum. Decis. Process*., 50 (2): 179–211.

[2] Bedendo, M., Nocera, G. and Siming, L. (2023). Greening the Financial Sector: Evidence from Bank Green Bonds. Journal *of Business Ethics*, 188: 259–279. Available at: https://hal.science/hal-04318899/document

[3] Bennett, R.E. and Williams (2011). Formative assessment: A critical review. *Assessment in Education Principles Policy and Practice,* 18(1). DOI: http://dx.doi.org/10.1080/0969594X.2010.513678

[4] Daubanes, J.X., Mitali, S.F., and Rochet, J.-C. (2022). Why do firms issue green bonds? Swiss Finance Institute Research Paper 21–97. https://ceepr.mit.edu/wp-content/uploads/2022/01/2022-001.pdf

[5] Degryse, H., Roukny, T., and Tielens, J. (2020). Banking barriers to the green economy. Working paper

[6] Devinney, T., Auger, P. and Eckhardt, G. M. (2012). The Myth of Ethical Consumer, *Business Philosophy.* Available at: http://plataforma.responsable.net/sites/default/files/myth_ethical_consumer.pdf

[7] Flammer, C. (2021). Corporate green bonds. *Journal of Financial Economics*, 12: 499–516. DOI:https://doi.org/10.1016/j.jfineco.2021.01.010

[8] Hagger, M.S. (2019). The Reasoned Action Approach and the Theories of Reasoned Action and Planned Behaviour. *Oxford Bibliographies in Psychology.* New York, NY: Oxford University Press.

[9] Hooda, K.S. and Yadav, S. (2023). Green Finance for Sustainable Aviation Stakeholder Perspectives and Systematic Review. *International Journal of Professional Business Review*, 8(5).

[10] Huang, D. (2022). Green finance, environmental regulation, and regional economic growth: From the perspective of low-carbon technological progress. *Environmental Science and Pollution Research*, 29 (22): 33698–33712. DOI: https://doi.org/10.1007/s11356-022-18582-8

[11] Johnstone, M.L. and Tan, L. P. (2015). An exploration of environmentally conscious consumers and the reasons why they do not buy green products. *Marketing Intelligence and Planning*, 42(2).

[12] Li, W., H. Hu, and Z. Hong (2024). Green finance policy, ESG rating, and cost of debt - Evidence from China. *International Review of Financial Analysis*, vol 92.

[13] Mésonnier, J.-S. (2021). Banks' climate commitments and credit to carbon-intensive industries: New evidence for France. *Climate Policy*, 22: 389–400. DOI: http://dx.doi.org/10.1080/14693062.2021.2012121

[14] Ottman, J. A., Stafford, E. R., & Hartman, C. L. (2006). Avoiding Green Marketing Myopia: Ways to Improve Consumer Appeal for Environmentally Preferable Products. *Environment: Science and Policy for Sustainable Development,* 48*(5),* 22–36. DOI: https://doi.org/10.3200/ENVT.48.5.22-36

[15] Papista, E., Krystallis, A. (2013). Investigating the Types of Value and Cost of Green Brands: Proposition of a Conceptual Framework. J Bus Ethics 115, 75–92. DOI: https://doi.org/10.1007/s10551-012-1367-6

[16] Peters, B. Guy (2022). Institutional Theory, Handbook on Theories of Governance*, Political Science and Public Policy.* DOI: https://doi.org/10.4337/9781800371972.00039

[17] Peterson K. Ozili (2022). Green finance research around the world: a review of literature. *International Journal of Green Economics* (IJGE), 16(1). https://www.inderscience.com/info/inarticle.php?artid=125554

[18] Rahman, Md H, *et al.* (2024). Corporate social responsibility and green financing behavior in Bangladesh: Towards sustainable tourism, *Innovation, and Green Development,* 3(3). DOI:https://doi.org/10.1016/j.igd.2024.100133

[19] Sangiorgi, I., and Schopohl, L. (2021). Explaining green bond issuance using survey evidence: Beyond the geranium. *British Accounting Review*.

[20] Spaargaren, G. (2003). Sustainable Consumption: A Theoretical and Environmental Policy Perspective. Society & Natural Resources, 16(8), 687–701. DOI: https://doi.org/10.1080/08941920309192

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The Role of Blockchain Technologies in Changing the Structure of the Financial and Credit System

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Abstract: Purpose of the article is to determine the correlation and influence between the indicators of the development of blockchain-based technologies and the indicators of financial inclusion in countries with different levels of development. The research employed statistical methods, descriptive method, correlation analysis, and regression analysis. The constant transformation of the financial and credit system in the conditions of the rapid development of technologies requires finding ways to adapt to changes. Assessing the impact of blockchain on the development of the financial and credit system allows you to prepare for such changes and use them to your advantage. As a result of the conducted research, it was determined that by 2027 the blockchain market will grow 166 times (compared to 2017). The conducted analysis made it possible to establish that the main advantage of blockchain is to increase financial inclusion to improve access to at least basic financial services for users. It has been confirmed that the lower the level of financial inclusion in the country, the greater the share of the population turns to alternative options for access to credit funds using blockchain-based cryptocurrencies. In particular, it was found that more than 19% of the variation in the indicator of the share of cryptocurrency owners can be explained by the change in the percentage of the population without access to banking services. It was confirmed that the lower the level of financial inclusion in the country, the greater the share of the population turns to alternative options for access to credit funds using blockchain-based cryptocurrencies. It was also found that more than 19% of the variation in the indicator of the share of cryptocurrency owners can be explained by the change in the percentage of the unbanked population. What is new in the research is the formation of its own approach to assessing the impact of blockchain technology on financial inclusion in countries with different levels of development.

Keywords: finance; potential and financial space; digital space; blockchain; financial inclusion.

JEL Classification: G15; G21; G30.

Introduction

Digitalization has penetrated all spheres of human economy (Lazor *et al.* 2024), but it has a particularly noticeable impact on the financial and credit system (Brandl and Hornuf 2020; Kohtamäki *et al.* 2020; Tay *et al.* 2022). The trend towards the integration of financial and digital spaces is expanding every year, which causes both great hopes for the future development of the system (Lin and Ma 2022) and significant concerns (Alzoubi *et al.* 2022). Researchers wonder how the outlines of the financial and credit system will change in the near future under the influence of rapidly developing new technologies designed to create increasingly new financial instruments and services.

Blockchain is one of the technologies potentially able to significantly transform the modern financial and credit system (Wang *et al.* 2020; Yadav and Bajpai 2020; Choi 2022). This technology is applied in various directions — from optimizing financial services in banks (Chowdhury *et al.* 2021; Dicuonzo *et al.* 2021; Zhang *et al.* 2021) to increasing financial inclusion (Ozili 2022) bypassing the banking system. Some researchers even ask the question, will the need for the traditional financial and credit system exist in the future if it retains the form, it exists today? Will the need for central banks as financial intermediaries disappear due to the emergence of cheaper and more convenient ways of accessing funds?

The aim of this study is to determine the correlation and influence between indicators of blockchain-based technology development and indicators of financial inclusion in countries with different levels of development. In the author's opinion, blockchain technology has the potential to increase financial inclusion that can have the greatest impact on future changes in the financial and credit system as a whole. The aim involved the fulfilment of the following research objectives:

- Conducting a statistical review of blockchain technology development trends;
- Summarizing the benefits and prospects of blockchain implementation in the financial and credit system;
- Identifying the strength, direction of relationship, and influence between the indicators of the development of blockchain-based technologies and the indicators of financial inclusion in countries with different levels of development.

The proposed work contributes to research on the impact of blockchain on the financial and credit system through the formation of its own approach to assessing the impact of blockchain on financial inclusion in countries with different levels of development. A feature of the proposed approach is the ability to quantitatively calculate the extent to which the population's propensity to use cryptocurrencies depends on the general level of financial inclusion.

1. Literature Review

Many researchers dealt with the role of blockchain in the financial and credit system. Some studies expressed doubts about the significant impact of blockchain on financial and credit relations. However, others admit that the role of blockchain can be significant — right up to the replacement of national banks. Panikar (2017) notes that the financial and credit system is based on two assumptions — the state's monopoly on the issuance of money and keeping the majority of money in the banking system. If none of the assumptions are met, the national bank cannot perform its monetary functions. According to the researcher, blockchain-based virtual currencies and decentralized finance may eventually replace national money and question the need for a banking system. Chumak (2021) also mentions the trend towards decentralization in his research. The researcher noted that decentralized applications for financing, or DeFi, continue to be actively developed. Cryptocurrencies are the means in the DeFi system — programmable and unregulated digital money that is accepted by members of the blockchain community. DeFi transforms traditional financial services into disintermediate ones using blockchain-based smart contracts. Chmeruk (2020) characterizes smart contracts as one of the most effective blockchain tools. The conclusion of such contracts is automated and takes place without the participation of intermediaries, which minimizes the possibility of conflicts, risk, increases transparency and control. Regarding the blockchain, the work notes that it can become both a significant threat and an opportunity for financial institutions (intermediaries). It depends on whether such institutions will be able to adapt to the new conditions.

A number of studies revealed the ways in which blockchain can optimize the financial and credit system. Wang *et al.* (2019) are one of the first to analyse the role of blockchain technology and smart contracts in changing the traditional credit system. Scientists propose their own credit model built into the blockchain. The researchers note that the proposed approach can reduce information asymmetry and solve credit rationing problems. Zheng *et al.* (2022) propose to improve the financial lending system by implementing blockchain data exchange and tracking through the improvement of consensus mechanisms. These mechanisms are currently characterized by an insufficient level of security and significant resource consumption. Chang (2020) believes that blockchain can be used to design a credit system. The researcher determined that the implementation of this technology will contribute to solving problems with trust and security thanks to decentralization and autonomy. Mhlanga (2023) believes that blockchain has the potential to not only optimize but also replace the infrastructure that underpins global transfers and payments. In particular, blockchain can be used in financial transactions, to save money, provide credit and insurance.

The researchers paid special attention to blockchain capabilities for increasing financial inclusion. Hoffmann (2021) concludes that blockchain is the best available solution to enable more retail customers to access credit. The use of the blockchain-based microcredit platform proposed in the work will enable investors to receive higher returns thanks to higher interest rates than using traditional savings accounts. Cunha *et al.* (2021) note the importance of new cryptocurrency-based services that allow for the optimization of remittances for expatriates and provide better access to fundraising (initial coin offerings, crowdsourcing, DeFi). Many of these services play a leading role in increasing financial inclusion. The researcher notes that traditional financial systems, exclude the participation of a large part of the population because of the inability to maintain a minimum balance or provide official documents that satisfy the Know Your Client standards.

However, not all works consider blockchain as a technology capable of radically changing the financial and credit system. Vorobets (2020) belongs to the category of researchers who do not consider blockchain technology as a panacea for solving all existing problems. The researcher believes that blockchain is only one of the technologies on which the financial services system will be based in the future. The author identifies several shortcomings related to the implementation of the blockchain, noting that in the future this technology has the potential to increase the efficiency of the financial system. As in many other studies, Abdulhakeem and Hu (2021) recognizes the benefits of using blockchain in the financial system in terms of increasing financial accessibility and transparency. However, the researcher suggests that the blockchain will not necessarily completely change the traditional financial system but will only complement it. This addition will contribute to the financial inclusion of the 1.7 billion unbanked people.

The conducted literature review gives grounds to conclude that the blockchain has a wide potential for optimizing the financial and credit system. Potentially, there is a possibility that this technology can change the structure of the financial and credit system – even replacing national banks. However, researchers do not reach a conclusion about the scale of the future impact of blockchain. Therefore, it is important to assess how blockchain development trends are related to modern trends in the financial and credit system, especially how it affects financial inclusion in countries with different levels of development. Unlike previous studies, the approach proposed in the work considers the influence of the Share of unbanked population indicator on the Share of crypto owners and Crypto adoption index, as well as the influence of the Account ownership at a financial institution or with a mobile-money-service provider indicator on the Share of crypto owners. This allows us to determine how the population's propensity to use cryptocurrencies is related to the overall level of financial inclusion. In other words, the study allows us to assess the ability of blockchain to serve as an alternative source of credit funds for the population that has remained outside of banking services.

2. Methodology

2.1. Research Design

The research design includes three stages. The first stage reveals the scope of blockchain development in the modern world, identifying the main statistical indicators related to this technology. The purpose of this phase is to demonstrate trends in technology development and coverage. The second stage involves summarizing the potential advantages and prospects of blockchain implementation. This deepens understanding of the ways in which technology can optimize/change the traditional financial and credit system. The third stage provided for determining mutual relations and influences between blockchain development and individual financial and credit indicators, in particular, indicators of the level of financial inclusion.

2.2. Sample

Statistical analysis provided for analysing secondary indicators that are publicly available (Statista 2021; Why are Banks Adopting Blockchain Technology 2023; Shewale 2024):

Blockchain market size, billion USD;
Distribution of blockchain market value by sector;
Blockchain technology use cases in organizations worldwide;
Bank initial use cases for blockchain;
Number of blockchain wallet users, million;
Number of daily transactions on the blockchain of bitcoin.

Table 1. Indicators of Financial Inclusion and Adoption of Cryptocurrencies

	Share of unbanked population	Crypto adoption index	Account ownership at a financial institution or with a mobile-money-service provider, %	Share of crypto owners
Morocco	0.71	0.1	44.37	0.16
Vietnam	0.69	1	56.27	0.27
Egypt	0.67	0.05	27.44	0.19
Philippines	0.66	-	-	0.29
Mexico	0.63	0.06	48.97	0.13
Nigeria	0.6	0.26	45.32	0.47
Peru	0.57	0.11	57.5	0.14
Colombia	0.54	0.19	59.72	0.16
Indonesia	0.51	0.1	51.76	0.29
Argentina	0.51	0.19	71.63	0.26
Kenya	0.44	0.28	79.2	0.19
Romania	0.42	0.04	69.12	0.14
Kazakhstan	0.41	0.02	81.11	-
Ukraine	0.37	0.29	83.56	-
Uruguay	0.36	0.02	74.13	-
South Africa	0.31	0.14	85.38	0.22
Turkey	0.31	0.01	74.09	0.47
Brazil	0.3	0.16	84.04	0.28
Bulgaria	0.28	0.09	83.97	-
Chile	0.26	0.06	87.06	0.15
Russia	0.24	0.14	89.72	0.14
India	0.2	0.37	77.53	0.27
Greece	0.15	0.03	94.88	0.18
Poland	0.13	0.07	95.72	0.14
USA	0.07	0.22	94.95	0.16
Spain	0.06	0.06	98.3	0.15
France	0.06	0.08	99.24	0.11
Italy	0.06	0.03	97.29	0.11
South Korea	0.05	0.07	85.38	0.20
UK	0.04	0.13	99.76	0.12
Austria	0.02	0.02	99.95	0.14
Japan	0.02	0.03	98.49	0.06
Germany	0.01	0.06	99.98	0.12
Australia	0	0.07	99.32	0.17
Canada	0	0.09	99.63	0.13
Denmark	0	-	-	0.13
Norway	0	0.03	99.48	0.17

The sample for the study consists of countries with the highest shares of the unbanked population, as well as a number of developed countries where the share of the unbanked population is insignificant (World of Statistics 2023). This composition of countries makes it possible to reveal how the need for blockchain application differs in countries with different levels of development. For the same purpose, the study includes such indicators as Account ownership at a financial institution or with a mobile-money-service provider, %, Crypto adoption index, Share of crypto owners. Table 1 presents countries and indicator values for the study.

2.3. Methods

The research employed the method of statistical analysis for identifying trends in the development of blockchain technology and the scale of its implementation. The descriptive method was applied in order to describe the advantages and outline prospects of blockchain implementation in the financial and credit system. The method of correlation analysis was used to identify the correlation between the adoption rates and the number of owners of blockchain-based cryptocurrencies and financial inclusion rates in countries with different levels of development. The method of regression analysis was applied to establish the influence of financial inclusion indicators on increasing public interest in alternative sources of blockchain-based credit.

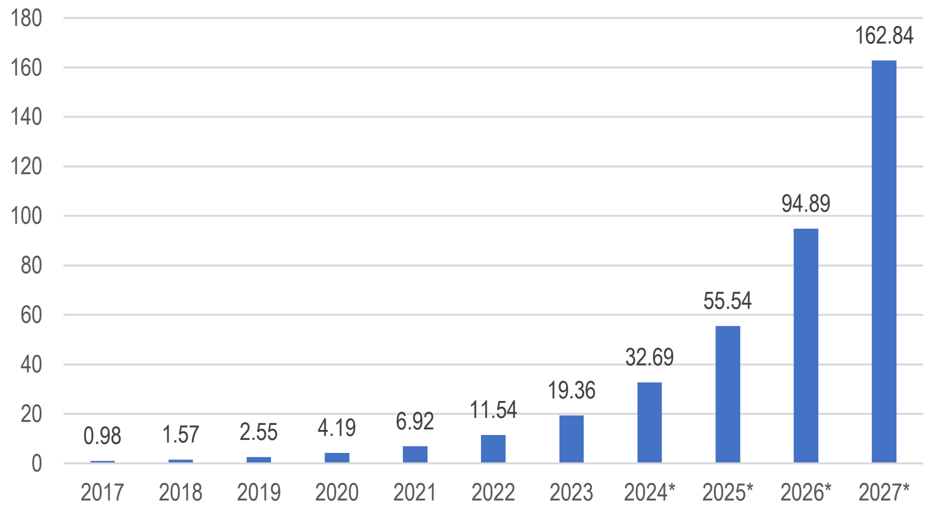
The selected research methodology makes it possible to calculate the degree of influence of financial inclusion indicators on increasing demand for blockchain. The importance of these aspects is emphasized in the works of a number of authors (Abdulhakeem, 2021; Chumak, 2021; Cunha *et al.* 2021) and makes the chosen methodology optimal for data analysis in the study.

3. Results

3.1. Statistical Analysis of Indicators Related to Blockchain Development

To assess the role of blockchain technology in changing the structure of the financial and credit system, it is necessary to have an idea of the current scale of blockchain development. It can be noted that between 2017 and 2023, the size of the blockchain market increased almost 20 times, reaching $19.36 billion. At the same time, it is predicted that the blockchain market will grow 166 times by 2027 compared to 2017 (Figure 1).

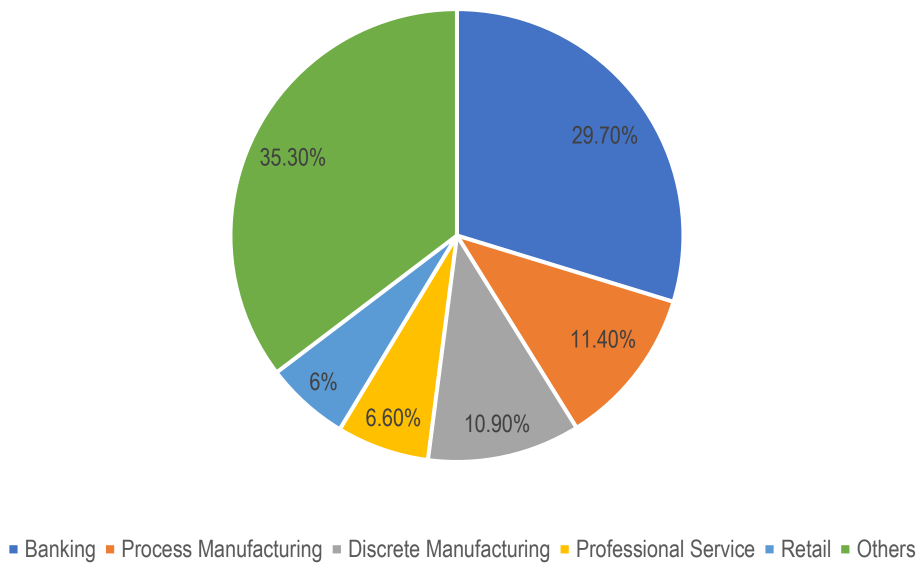
Figure 1. Blockchain Market Size, billion USD



Source: graphed by the author based on Shewale (2024)

Considering the distribution of the blockchain market value by sectors of the economy, it can be noted that the largest share belongs to the banking sector (Figure 2). Some studies have found that more than 90% of US and European banks have launched blockchain-related projects (Shewale 2024).

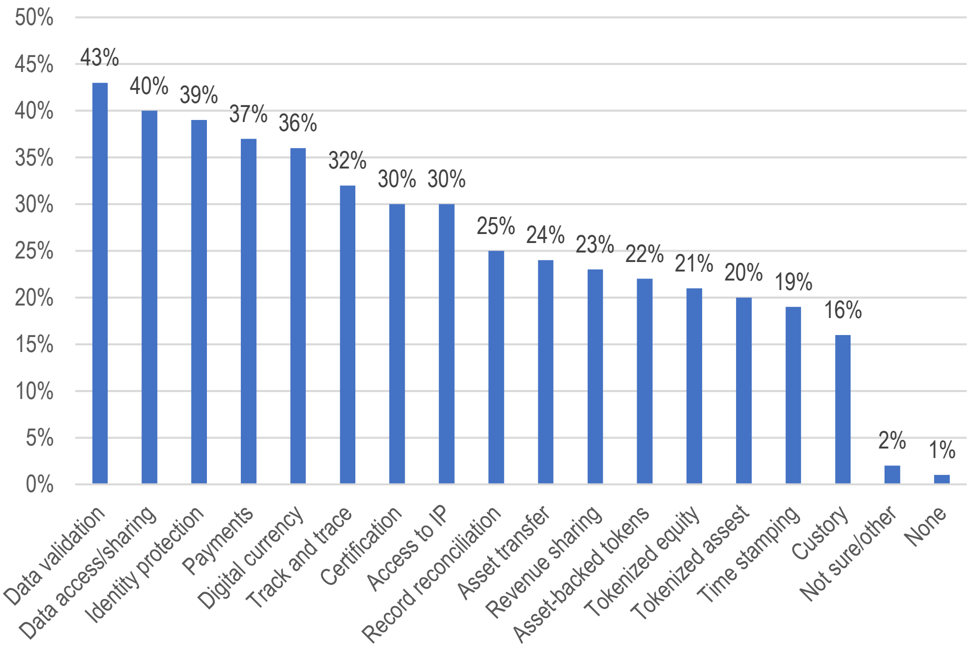
Figure 2. Distribution of Blockchain Market Value by Sector



Source: graphed by the author based on Shewale (2024)

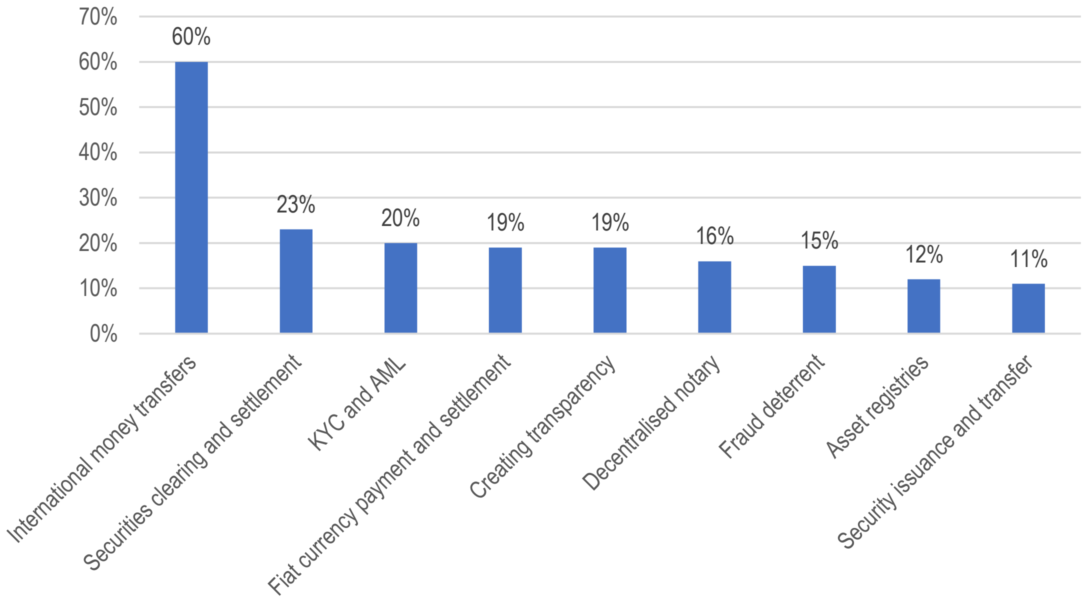
Besides, it is important to understand which areas of blockchain use are the most common today. Figure 3 illustrates the most common areas of blockchain use by organizations, and Figure 4 illustrates areas of application by banks.

Figure 3. Blockchain Technology Use Cases in Organizations Worldwide



Source: graphed by the author based on Statista (2021)

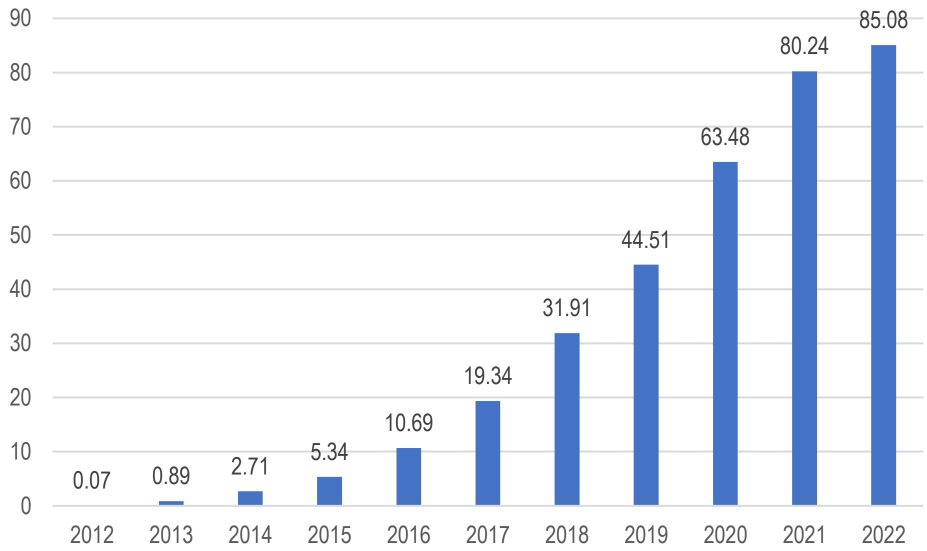
Figure 4. Bank Initial Use Cases for Blockchain



Source: graphed by the author based on Why are Banks Adopting Blockchain Technology (2023)

The information in Figure 3 shows that there are many areas of blockchain use in organizations, the most popular of which are data verification, data access/exchange, identity protection, payments, digital currency, and others. Blockchain is most often used by banking institutions (Figure 4) for international money transfers. The population most often uses blockchain when investing in cryptocurrency, for money transfers, and also when using digital wallets. The number of users of digital wallets increased significantly between 2012 and 2022, and as of 2022 exceeded 85 million (Figure 5).

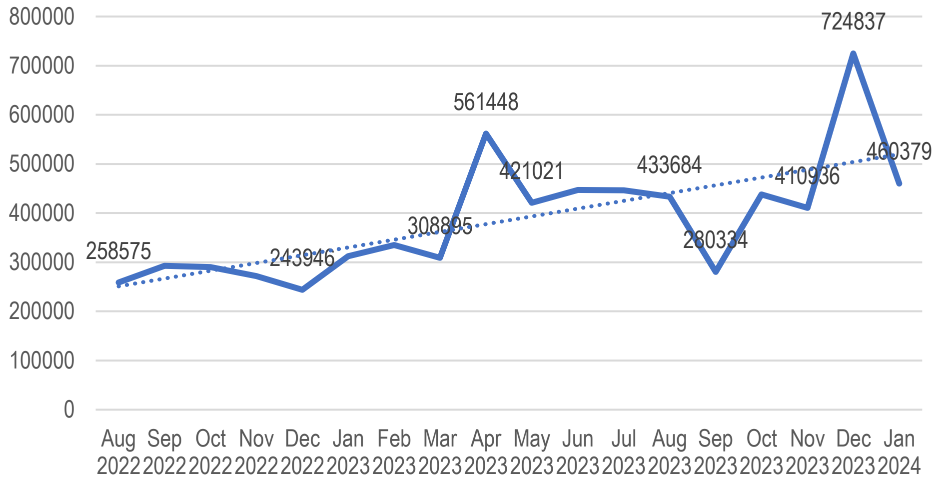
Figure 5. Number of Blockchain Wallet Users, Million



Source: graphed by the author based on Shewale (2024)

The number of transactions using bitcoin undergoes noticeable fluctuations (Figure 6). However, the general trend indicates its increase.

Figure 6. Number of Daily Transactions on the Blockchain of Bitcoin



Source: prepared by the author based on Shewale (2024)

The conducted statistical analysis gives grounds to conclude that the blockchain market is actively developing, and according to forecast data, this trend will only increase. Blockchain is especially important for the financial sector, in particular, for the banking industry. Blockchain is mainly used in the banking industry to optimize various processes. At the same time, its use by such participants of the financial and credit system as blockchain lenders, decentralized credit platforms based on the blockchain, cryptocredit companies leads to more significant transformations of the financial and credit system. These transformations can have a significant impact on banking, because they create competition for traditional financial institutions. Decentralized financing is able to provide financial services outside the banking sphere. Such services may be available to that category of the population that does not have access to traditional banking services due to insufficient collateral, lack of credit history, legal restrictions, etc.

3.2. Prospects and Advantages of Blockchain Implementation in the Financial and Credit System

The generalized approaches to determining the possibilities of blockchain implementation were tabled, outlining its prospects and advantages (Figure 7). The Figure contains both advantages and prospects for banking institutions and for other subjects of the system.

The observed prospects can significantly transform the financial and credit system by shifting the focus to decentralization. At the same time, they can prevent creating an excessive load on intermediaries. In order to adapt to the changes, banks should pay more attention to the introduction of blockchain to optimize their own services, as well as focus on cooperation with providers of decentralized services. For example, they can participate in the financing of startups, integrate separate solutions of decentralized payment systems into their activities, create joint projects to provide new services, etc.

In this context, an example of the Grassroots Economics project is worth noting. Such projects can help to reduce the credit deficit, especially in regions with a low level of development. The organization specializes in microfinance for community development, empowering people to improve their economic future. At the same time, the community can take a loan supported by various real goods or services that can be offered by the community. For example, if funds are not returned on time, the organization has the right to claim part of the harvest. In the context of potential cooperation with banks, such projects can provide banks with access to their technology and infrastructure.

Another project that illustrates the great potential of decentralized finance is the Ajna project. Ajna is based on Ethereum and offers a Web3 interface for lending and borrowing cryptocurrency (Balmer 2024). A feature of Ajna is high accessibility and inclusiveness for a wide category of users who do not have access to traditional banking services, through the use of the permissionless lending pools approach. Ajna's potential to work with banks may also include providing banks with technology solutions, facilitating the development of blockchain-based digital assets, and providing credit risk assessment tools.

So, as noted above, it is important for banks to adapt to the development of blockchain technology. The given examples illustrate only some of the opportunities for banking institutions that will allow them not to lose their competitive advantage along with the development of blockchain-based decentralized finance. The process of implementing blockchain should be balanced, which is to eliminate the excessive burden on banking institutions, not to eliminate the need for them. In the author's opinion, such a balance can be established with the state intervention, which must establish appropriate regulatory rules.

Figure 7. Prospects and Advantages of Blockchain for the Transformation of the Financial and Credit System

Prospects and advantages of blockchain for the transformation of the financial and credit system	increasing simplicity and efficiency thanks to the creation of a new infrastructure of financial services;
	speed and security of transactions, especially in dangerous or remote regions;
	increasing transparency, in particular, through smart contracts, which also help reduce risk and improve control over payment terms;
	ensuring complete confidentiality;
	stimulating access to finance;
	minimization of the influence of intermediaries;
	reduction of a number of risks of various origins;
	reducing the risk of dishonest behaviour - for example, when unreasonable loans are issued;
	the ability to monitor the emission of virtual money, if the borrower is a state financial institution;
	reduction of operating costs for business entities;
	implementation of a payment system on an international scale;
	a large number of areas of application, each of which has its own advantages

Source: generalized by the author based on Panikar (2017); Vorobets (2020); Chmeruk (2020); Chumak (2021)

3.3. Increasing Financial Inclusion. Correlation Analysis

One of the most important advantages of the blockchain was noted to be the increase in financial inclusion, that is, the availability of at least basic financial services to a wider category of the population. However, it is important to determine to what extent financial inclusion is related to the popularity of blockchain usage. Therefore, it is proposed to conduct an analysis of how financial inclusion indicators are related to the perception of blockchain-based cryptocurrency (Table 1). This will reveal how the use of blockchain technologies differs depending on the level of financial availability in countries. Table 2 presents the conclusions based on the results of the correlation analysis.

Table 2. The results of the Correlation Analysis

	Crypto adoption index	Share of crypto owners
Share of unbanked population	0.396755	0.396717
Account ownership at a financial institution or with a mobile-money-service provider, %	-0.279793	-0.426153

Source: calculated by the author

The results of the correlation analysis give grounds to state that the Share of unbanked population is directly related to the Crypto adoption index, as well as to the Share of cryptocurrency owners. The strength of the correlation is moderate. It follows that with the growth of the population that does not have access to banking services, the number of cryptocurrency owners of and the perception of cryptocurrencies in general also increases.

Moreover, the correlation analysis revealed an inverse correlation with noticeable strength for the Account ownership at a financial institution or with a mobile-money-service provider and the Share of crypto owners. So, the higher the number of people who have an account in a financial institution or a mobile money service, the smaller the number of cryptocurrency owners and vice versa.

The regression analysis makes it possible to determine how much one indicator will change when another changes. Table 3 presents the results of the regression analysis, in which the Share of unbanked population was the independent variable, and the Share of crypto owners – the dependent variable.

Table 3. The Results of the Regression Analysis between the Share of Unbanked Population and the Share of Crypto Owners

	BETA	Standard error	B	Standard error	t(32)	p-value
Constant term			0.014116	0.156580	0.090154	0.928727
Share of unbanked population	0.438791	0.158850	0.417382	0.151099	2.762304	0.009431

Source: calculated by the author

There is a statistically significant correlation between the studied indicators of Share of unbanked population and Share of crypto owners in view of t(32) = 2.762304, $p < 0.01$. R2 is 0.19253747, which means that more than 19% of the variation in the Share of crypto owners indicator can be explained by the change in the percentage of the unbanked population. The BETA coefficient shows that if the percentage of the unbanked population increases by one unit, the share of cryptocurrency owners will increase by 0.438791. Tables 4 and 5 contain the results of correlation analysis for other pairs of indicators, between which a statistically significant correlation was found.

Table 4. The Results of Regression Analysis between the Share of Unbanked Population and the Crypto Adoption Index

	BETA	Standard error	B	Standard error	t(33)	p-value
Constant term			0.003854	0.158983	0.024239	0.980808
Share of unbanked population	0.376124	0.161295	0.386724	0.165841	2.331900	0.025957

Source: calculated by the author

Table 4. The Results of Regression Analysis between the Account Ownership at a Financial Institution or with a Mobile-Money-Service Provider, % and the Share of Crypto Owners

	Standard error	B	Standard error	t(29)	p-value	Standard error
Constant term			-0.015373	0.166392	-0.09239	0.927024
Account ownership at a financial institution or with a mobile-money-service provider, %	-0.426153	0.167989	-0.404036	0.159271	-2.53679	0.016827

Source: calculated by the author

The results of the regression analysis, presented in Tables 4 and 5, also demonstrate a statistically significant relationship between the Share of unbanked population and the Crypto adoption index (Table 4), as well as between the Account ownership at a financial institution or with a mobile-money- service provider, % and the Share of crypto owners (Table 5).

About 14% of the variation in the Crypto adoption index can be explained by changes in the Share of unbanked population. When the Share of unbanked population percentage increases by one unit, the Crypto adoption index will increase by 0.376124.

More than 18% of the variation in the Share of crypto owners can be explained by changes in the Account ownership at a financial institution or with a mobile-money-service provider, %. In this case, there is an inverse correlation between the indicators, so when Account ownership at a financial institution or with a mobile-money-service provider decreases by 1%, the share of cryptocurrency owners increases by 0.426153.

The identified correlation and influences confirm previous assumptions that the lower the level of financial inclusion in the country, the greater the share of the population seeking alternative ways of accessing credit funds, in particular, using cryptocurrencies. A large share of the unbanked population is observed mostly in developing countries. For example, in Vietnam, the share of the population without access to banking services is 69%, which may also cause a high share of cryptocurrency owners - 27%.

4. Discussion

The conducted quantitative analysis proves that the lower the level of financial inclusion in the country, the higher is the rate of adoption and the number of cryptocurrency owners. This gives grounds to conclude that cryptocurrencies can be an effective tool for expanding access to financing. Cryptocurrencies are especially widespread in developing countries, where there is an objective need for the population to access financing in the absence of access to banking services (Hrytsai 2023). In this case, there is no question of eliminating the need for banking services, but it is possible to note the expansion of the population's capabilities, which, with the use of blockchain technologies, gained access to financial services outside the banking sphere. Such conclusions are somewhat contrary to the results of a study by Panikar (2017), who suggests that blockchain-based virtual money may significantly reduce the demand for central bank resources in the future. In turn, this affects the monetary policy of banks and its effectiveness. The researcher notes that the outlines of the financial and credit system are undergoing a significant transformation due to globalization and the development of blockchain-based technologies, in particular, cryptocurrencies. This leads to structural changes in the financial and credit system: decentralization takes place and the role of the state and financial intermediaries changes, the financial relations become truly global going beyond national boundaries. The researcher insists on the need for state participation in the above processes and believes that a new form of cooperation should be based on public-private partnership.

The conclusions made in the author's work are consistent with the results of a number of studies on the financial inclusion. Chumak (2021) notes that lending, borrowing, exchange, and deposits are the main services in DeFi systems. Money deposited on special platforms can be used to finance borrowers without significant restrictions. So, one of the main advantages of DeFi is the expansion of access to basic financial services enabled though the blockchain use. Abdulhakeem and Hu (2021) believe that decentralization of the financial and credit system using blockchain has high potential. The functions of services within DeFi, in particular, borrowing, lending, exchange, etc., are the same as in the usual financial system. The most important benefit of DeFi is the financial inclusion of a large population that is currently unbanked. Cunha *et al.* (2021) identify distinct advantages of blockchain as a way to increase financial inclusion. For example, women cannot have an official bank account in some countries, and blockchain can help to overcome this discrimination. In other countries, people do not trust the official financial system, preferring blockchain. In particular, in Nigeria, cryptocurrency is used as an investment tool to insure against inflation and devaluation of the national currency.

Furthermore, cryptocurrencies help to bypass currency restrictions existing in the country. Mhlanga (2023) states that financial inclusion contributes to at least 8 sustainable development goals. At the same time, the researcher established that the increase in financial availability depends significantly on the successful implementation of the blockchain. Therefore, it is concluded that governments in developing countries should pay special attention to investment in this technology.

The correctness of the author's conclusions regarding different blockchain needs for countries with different levels of development was also confirmed in the work of Hoffmann (2021). The researcher notes that there are several ways of accessing consumer loans in developed countries. These include credit card debt, which is the most popular method, but has high interest rates. The second method is a payday loan, which has extremely high fees, and additional fees may be charged if you do not return on the specified date. The third way, identified in the study as optimal, is to create a blockchain-based microcredit platform. For borrowers, the advantage is lower interest rates and easier access to funds, for investors — higher profits from short-term unsecured loans. Timely repayment improves the clients' credit history.

In his work, Chmeruk (2020) confirms the significant impact of blockchain on financial and credit relations. According to the researcher, the main consequences of the development of the blockchain are the increase in controllability and transparency, the reduction of costs, the elimination of intermediaries, the reduction of the number of employees of financial institutions due to digitalization, the reduction of risk, as well as the opportunities provided by the blockchain for the implementation of payment systems on an international scale. However, this list does not include one of the main advantages of blockchain implementation identified in the author's work - a positive impact on increasing financial inclusion.

In contrast to the author's work, where the possibilities of the blockchain are mainly disclosed, Vorobets (2020) also reveals the shortcomings of its implementation on a large scale: uncertainty of the legal aspects, the need to standardize requirements, the high cost of development and the lack of specialists with appropriate qualifications, mistrust of a part of the population in cryptocurrencies. The researcher notes that one of the main obstacles to blockchain development in many countries is the imbalance between market reality and the development of the legal framework.

A number of studies revealed additional opportunities from the introduction of blockchain for the financial and credit system, which were not revealed in the author's research. Wang *et al.* (2019) develop a blockchain-based model that will mitigate information asymmetry and solve credit rationing problems, while creating a risk pool for lending. Such a pool will allow the government, banks, and financial companies to jointly share risks. Furthermore, the researchers found that the model they proposed will contribute to the increase of inclusiveness of small and medium-sized businesses in the financing, even if such companies do not have sufficient collateral. Zheng *et al.* (2022) also propose their model on the blockchain. The purpose of this model is to implement access control and management of shared information about transactions in the supply chain. The researchers note that blockchain can be effective in optimizing credit reporting through increased integrity, transparency, reliability and security, as well as through decentralization. Chang (2020) states that the creation of a credit system faces a number of problems, in particular, in relation to data security and leakage of personal information. The researcher believes that the implementation of blockchain in the course of creating a credit system will contribute to solving these problems.

Conclusions

The studies on the impact of new technologies on financial and credit relations are of particular importance in view of accelerating digitalization in the financial and credit sector. Blockchain, as one of the technologies capable of making particularly noticeable changes in the traditional financial and credit system, is at the peak of relevance. The significant attention of researchers to this technology is determined by the possibilities of the blockchain for optimizing the financial and credit system, especially its possibilities for increasing financial inclusion.

The quantitative analysis carried out in the study confirms that the lower the level of financial inclusion in the state, the more often the population turns to alternative ways of accessing credit funds. In particular, through the use of blockchain-based cryptocurrencies, as evidenced by the high rates of cryptocurrency adoption and cryptocurrency ownership in countries with a low level of financial inclusion. So, cryptocurrencies can be an important tool for expanding access to finance in developing countries. These countries are often characterized by a high proportion of the population that does not have access to banking services. Therefore, in the author's opinion it is too early, at the current stage, to talk about the possibilities of the blockchain to completely eliminate the need for the traditional banking system. This technology has the potential to address financial inclusion in regions where it is most needed. However, the rapid progress of technologies does not exclude more significant effects from the introduction of blockchain. This determines the need for further research, one of the important directions of which should be the identification and assessment of the probability of realization of risks from the introduction of blockchain in the financial and credit system on a global and national scale. Also, further research should eliminate the main limitations of this study, primarily related to the limited sample of countries for analysis.

In general, the conclusions drawn are useful for financial relations actors in view of highlighting the possibilities of blockchain to increase financial inclusion, especially in developing countries. Also, these results can be applied by representatives of the banking industry in the process of developing their own financial and credit policy. This will provide advantages both for the population in view of wider opportunities of access to credit funds, and for banks in view of the need to adapt to the conditions of rapid technological development.

Credit Authorship Contribution Statement

The authors equally contributed to the present research, at all stages from the formulation of the problem to the final findings and solution.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Declaration of Use of Generative AI and AI-assisted Technologies

The authors declare that they have not used generative AI and AI-assisted technologies during the preparation of this work.

References

[1] Abdulhakeem, S. A., and Hu, Q. (2021). Powered by Blockchain technology, DeFi (Decentralized Finance) strives to increase financial inclusion of the unbanked by reshaping the world financial system. *Modern Economy 12*(01): 1. DOI: http://dx.doi.org/10.4236/me.2021.121001

[2] Alzoubi, H. M., *et al.* (2022). Cyber security threats on digital banking. Paper presented at *2022 1st International Conference on AI in Cybersecurity (ICAIC)*, May 2022 (pp. 1-4). IEEE. DOI:https://doi.org/10.1109/ICAIC53980.2022.9896966

[3] Balmer, M. (2024). Blockchain development use cases in industries. *Krusche and Company.* Available at: https://kruschecompany.com/blockchain-development-use-cases/#7_Finance

[4] Brandl, B., and Hornuf, L. (2020). Where did FinTechs come from, and where do they go? The transformation of the financial industry in Germany after digitalization. *Frontiers in Artificial Intelligence 3*: 8. DOI:https://doi.org/10.3389/frai.2020.00008

[5] Chang, Z. (2020). Application of blockchain technology-based credit system for personal financial information. Paper presented at *2020 Asia-Pacific Conference on Image Processing, Electronics and Computers (IPEC)*, April 2022 (pp. 431-433). IEEE. DOI: https://doi.org/10.1109/IPEC49694.2020.9115164

[6] Chmeruk, G. G. (2020). The impact of blockchain technology on the transformation of financial relations of business entities. *Problems of a Systematic Approach in the Economy* 2(76): 104-112. DOI:https://doi.org/10.32782/2520-2200/2020-2-16

[7] Choi, T. M. (2022). Achieving economic sustainability: Operations research for risk analysis and optimization problems in the blockchain era. *Annals of Operations Research* 1-26. DOI: https://doi.org/10.1007/s10479-021-04394-5

[8] Chowdhury, M. U., Suchana, K., Alam, S. M. E., and Khan, M. M. (2021). Blockchain application in banking system. *Journal of Software Engineering and Applications 14*(7): 298-311. DOI:https://doi.org/10.4236/jsea.2021.147018

[9] Chumak, N. (2021). Decentralized financial model for Ethereum-based lending. *Computer-Integrated Technologies: Education, Science, Production, 43:* 152-156. DOI: https://doi.org/10.36910/6775-2524-0560-2021-43-25

[10] Cunha, P. R. D., Soja, P., and Themistocleous, M. (2021). Blockchain for development: A guiding framework. *Information Technology for Development, 27*(3): 417-438. DOI:https://doi.org/10.1080/02681102.2021.1935453

[11] Dicuonzo, G., Donofrio, F., Fusco, A., and Dell'Atti, V. (2021). Blockchain technology: Opportunities and challenges for small and large banks during COVID-19. *International Journal of Innovation and Technology Management 18*(04): 2140001. DOI: https://doi.org/10.1142/S0219877021400010

[12] Hoffmann, H. C. (2021). Blockchain use cases revisited: Micro-lending solutions for retail banking and financial inclusion. *Journal of Systems Science and Information, 9*(1). DOI: 10.21078/JSSI-2021-001-15

[13] Hrytsai, S. (2023). Cryptocurrency in the declarations of government officials: A toolkit for money laundering (trends and experience of counteraction, by the example of Ukraine). *Access to Justice in Eastern Europe 6*(3): 1–27. DOI: https://doi.org/10.33327/AJEE-18-6.3-a000333

[14] Kohtamäki, M., Parida, V., Patel, P. C., and Gebauer, H. (2020). The relationship between digitalization and servitization: The role of servitization in capturing the financial potential of digitalization. *Technological Forecasting and Social Change 151*: 119804. DOI: https://doi.org/10.1016/j.techfore.2019.119804

[15] Lazor, O., Lazor, O., Zubar, I., Zabolotnyi, A., and Yunyk, I. (2024). The impact of digital technologies on ensuring transparency and minimising corruption risks among public authorities. *Pakistan Journal of Criminology, 16*(2): 357-374. DOI: https://doi.org/10.62271/pjc.16.2.357.374

[16] Lin, B., and Ma, R. (2022). How does digital finance influence green technology innovation in China? Evidence from the financing constraints perspective. *Journal of Environmental Management, 320*: 115833. DOI:https://doi.org/10.1016/j.jenvman.2022.115833

[17] Mhlanga, D. (2023). Block chain technology for digital financial inclusion in the industry 4.0, towards sustainable development? *Frontiers in Blockchain, 6*: 1-25. DOI: https://doi.org/10.3389/fbloc.2023.1035405

[18] Ozili, P. K. (2022). CBDC, Fintech and cryptocurrency for financial inclusion and financial stability. *Digital Policy, Regulation and Governance, 25*(1): 40-57. DOI: https://doi.org/10.1108/DPRG-04-2022-0033

[19] Panikar, G. Y. (2017). Transformation of international monetary, financial and credit relations in the context of the spread of blockchain technology and cryptocurrencies. Paper presented at *New Forms of Money and Financial Assets: Formation, Prospects, Risks,* (pp. 80–86). Vadym Hetman Kyiv National Economic University. https://kneu.edu.ua/userfiles/Credit_Economics_Department/news/zbir2018.pdf#page=80

[20] Shewale, R. (2024). Blockchain statistics of 2024 (Market size and users). *Demandsage*. Available at: https://www.demandsage.com/blockchain-statistics/

[21] Tay, L. Y., Tai, H. T., and Tan, G. S. (2022). Digital financial inclusion: A gateway to sustainable development. *Heliyon*, *8*(6). DOI: https://doi.org/10.1016/j.heliyon.2022.e09766

[22] Vorobets, V. (20200. Advantages of using blockchain technology in the conditions of digitization of financial instruments. *World of Finance* 2(63): 49-61. DOI: https://doi.org/10.35774/sf2020.02.049

[23] Wang, R., Lin, Z., and Luo, H. (2019). Blockchain, bank credit and SME financing. *Quality and Quantity 53*: 1127-1140. DOI: https://doi.org/10.1007/s11135-018-0806-6

[24] Wang, Y., Kim, D. K., and Jeong, D. (2020). A survey of the application of blockchain in multiple fields of financial services. *Journal of Information Processing Systems, 16*(4): 935-958. DOI: https://doi.org/10.3745/JIPS.04.0185

[25] Yadav, A. K., and Bajpai, R. K. (2020). KYC optimization using blockchain smart contract technology. *International Journal of Innovative Research in Applied Sciences and Engineering (IJIRASE), 4*(3): 669-674. DOI: https://doi.org/10.29027/IJIRASE.v4.i3.2020.669-674

[26] Zhang, J., Tian, R., Cao, Y., Yuan, X., Yu, Z., Yan, X., and Zhang, X. (2021). A hybrid model for central bank digital currency based on blockchain. *IEEE Access*, *9*: 53589-53601. DOI:https://doi.org/10.1109/ACCESS.2021.3071033

[27] Zheng, K., Zheng, L. J., Gauthier, J., Zhou, L., Xu, Y., Behl, A., and Zhang, J. Z. (2022). Blockchain technology for enterprise credit information sharing in supply chain finance. *Journal of Innovation and Knowledge, 7*(4): 1-15. DOI: https://doi.org/10.1016/j.jik.2022.100256

[28] Statista. (2021). Blockchain technology use cases in organizations worldwide as of 2021. Available at: https://www.statista.com/statistics/878732/worldwide-use-cases-blockchain-technology/

[29] Statista. (2023). Share of respondents who indicated they either owned or used cryptocurrencies in 56 countries and territories worldwide from 2019 to 2023. Available at: https://www.statista.com/statistics/1202468/global-cryptocurrency-ownership/

[30] The 2021 Global Crypto Adoption Index: Worldwide Adoption Jumps Over 880% With P2P Platforms Driving Cryptocurrency Usage in Emerging Markets. (2021). Available at: https://www.chainalysis.com/blog/2021-global-crypto-adoption-index/

[31] The World Bank. (2022). Account ownership at a financial institution or with a mobile-money-service provider (% of population ages 15+). Available at: https://data.worldbank.org/indicator/FX.OWN.TOTL.ZS

[32] Why are Banks Adopting Blockchain Technology? (2023). *Appinventiv*. Available at: https://appinventiv.com/blog/blockchain-in-banking/

[33] World of Statistics. (2023). World's most unbanked countries (adult unbanked population). Available at: https://twitter.com/stats_feed/status/1677026071785488386

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The Role of Investment in the Production Equipment Modernization and Its Effect on Productivity

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Abstract: Purpose: The aim of the study is to determine the role of investment in the production equipment modernization and to assess the impact of this investment on the company's productivity.

Methodology: The research employed calculation of the Weighted Average Cost of Capital (WACC), as well as the Net Present Value (NPV), Profitability Index (PI) as the methods. The final stage was the application of the correlation coefficient. For the company Builders FirstSource Inc used as an example the calculated WACC was 8.74%, for Hardie Industries plc. this figure was 9.31, for Boral — 4.3%, and for Grafton plc — 5.6%. The Profitability Index was 1.30 (Builders FirstSource Inc,), 2.34 (Hardie Industries plc), 1.51 and 1.46 for Boral and Grafton plc. The Net Present Value (NPV) amounted to $10,863 million and $128,173 million for Builders FirstSource Inc and Hardie Industries plc., respectively.

Findings: The study showed a close relationship between productivity and investment in equipment modernization, as the correlation coefficients are 0.991 (Builders FirstSource Inc,), 0.994 (Hardie Industries plc), 0.83 (Boral), and 0.97 (Grafton plc), indicating a close correlation. The obtained results can be successfully used by manufacturing companies to assess the feasibility of investment in modernization.

Originality: A possible direction of further research is the introduction of gradation of investments in modernization, with clarification of the types of modernization and the type of equipment that will be modernized.

Keywords: investment; equipment modernization; investment efficiency; weighted average cost of capital; net present value; profitability index.

JEL Classification: D24; D25.

Introduction

Relevance

The modern business world requires companies to constantly improve their competitiveness. Growing competition requires companies to be flexible, operational, and variable in their production processes. Modern technologies play a key role in this process, allowing businesses to innovate, reduce production costs, and meet diverse market needs. This is manifested through the need for constant modernization of the company's assets through the introduction of innovative production equipment, which, in turn, leads to changes in labour productivity. In this context, investments in the modernization of production equipment play a special role. Globalization of the world economy leads to increased competition, which forces companies to look for new ways to increase their production efficiency. The use of modern technologies enables companies to reduce costs, improve product quality, and the speed of innovation.

Productivity improvement is a key element of any company's business strategy. High productivity can significantly increase the company's profitability and strengthen its competitive position in the market. There are various strategies that can be used to achieve this goal, such as the introduction of the latest technologies, staff training, optimization of business processes and many others. It is important to choose the optimal approach that will consider the specifics of the company's activities and allow to achieve maximum results. Therefore, investing in modern technologies becomes a necessity for companies that strive to be leaders in the market. Only thanks to the use of advanced technologies, companies will be able to secure a stable place for themselves in the conditions of growing competition and meet the modern consumers' needs.

Unexplored Issues

In general, it should be noted that the greatest attention is paid to investment research at the level of the country, industry, and region. It is also appropriate to note that these studies are based on the attraction of investment for their implementation in the field of green energy, digitalization of business processes, implementation of effective distribution of resources and social responsibility. However, the issue of determining the role of investment in equipment modernization is almost not covered, so our research suggests shifting the focus to the methodology of studying the role investment in equipment modernization by developing a universal method for any company and any industry.

Aim

The aim of the study is to determine the role of investment in the modernization of production equipment and to assess the impact of such investment on the company's productivity.

Objectives

The aim was achieved through the fulfilment of the following research objectives:

1. Develop a universal methodology for determining the role of investment in equipment modernization and assessing the need for such investment.
2. Determine the economic effect of the implementation of the investment project for various companies producing building materials.
3. Study the relationship between investment in equipment modernization and productivity.

1. Literature Review

Growing competition in the modern world requires manufacturing companies to have greater flexibility, efficiency, and variability of production capacities. It is important to use modern technologies in order to compete as a first-class manufacturer. Globalization helps to reduce the price of technology, making it more affordable for consumers. Therefore, it is important to constantly update production processes in order to meet market requirements and ensure high product quality.

Investments are not only monetary investments, but also capital investments in any other forms of property, non-property assets, knowledge, experience, and rights. Some authors (Danylyshyn *et al.* 2023) point out that investments are important for the growth and development of regions. Involvement of local and foreign investors contributes to the economic prosperity of the region. Investing capital in various types of assets enables creating new opportunities for business development and increase its competitiveness. So, investment can become a key factor in the successful development of the country's economy (Vranovci and Maloku 2024).

Currently, there are many studies related to determining the role of direct and foreign investment. The authors (Wuchao Liang, Ying Wang, Li Hou, 2023) determine the relationship between private investment and the innovative strategy of the enterprise. Based on their research, it appears that direct investment can play a key role in stimulating corporate innovation. They have a significant impact on significant technological and product changes in companies. This confirms the importance of investment in research and development (RandD), which can contribute to the growth of the companies' competitiveness (Prokopenko *et al.* 2023). Direct investment is a necessary tool for stimulating innovative business development.

The importance of investment is emphasized by (Lüdeke-Freund 2020), who note that it plays a vital role in facilitating the transformation of the results of innovative activities and supporting the development of innovative projects. They are an important element of economic growth and stimulate the company's innovative activity. On the other hand, studies have focused on determining the role of investment specifically in the development of high-tech companies (Dmitry Livdan, Alexander Nezlobin 2021; Shuangshuang Liu 2024). In these studies, the researchers indicate that the distribution and redistribution of financial assets leads to an increase in investment in innovation of high-tech companies. The distribution of different types of financial assets is important for the development of investment in innovations. Short-term assets can limit the ability of high-tech companies to innovate, while long-term assets promote their development. This conclusion is confirmed by the results of tests in the study of (Shuangshuang Liu 2024) for endogeneity and stability. Therefore, it is important to take this aspect into account when making decisions about the distribution of financial resources. In this context, studies (Foglia *et al.* 2024) are of interest, which consider investments in digital assets to improve company performance.

On the other hand, there is a problem of the growing number of zombie companies in the world, which is becoming the matter of discussion in society (Meixu Ren, Jinxuan Zhao, Jingmei Zhao 2023). These companies, which operate thanks to loans or government subsidies, cause serious public outrage. Their low profits and inability to compete in the market create a negative impact on the economy. And more recently, some papers have documented that it also hindered Europe's economic recovery from the 2008-2009 financial crisis (Banerjee and Hofmann 2022), worsened the global debt problem, exacerbated China's overcapacity problem, and caused a global economic slowdown.

The researchers (Freiberg and Scholz 2015) point to such conclusions that when determining the feasibility of investments in modern production technologies, it is necessary to use the most effective evaluation procedures, as simplified calculations can lead to distortion of results. This can negatively affect the competitiveness and existence of the company. Discrete event modelling is a useful tool in making decisions about investment in advanced technologies, as it allows for accurate analysis and quantification of the impact of different options. In addition to economic calculations, it is important to consider other benefits such as productivity, quality, flexibility, and product delivery speed. The final decision must be well-founded and comprehensive to ensure the success of investment in production technologies.

The study by (Zhihao Shi, Libang Ma, Xiang Wang, Shanshan Wu, Jing Bai, Ziyan Li, Yuqing Zhang, 2023) is based on a systematic review of agricultural security issues and modern agricultural systems. So, there is no either a universal methodology or the use of existing models for assessing the role of investment in equipment modernization for companies producing building materials as an example. This is quite different from the approach that we proposed.

As for productivity in general, (Chen *et al.* 2021) well pointed out that improving productivity is a key element of any company's business strategy. High productivity can positively affect the company's profitability and strengthen its competitive position in the market compared to other participants. At the same time, they conclude that there are a variety of strategies that a company can use to improve productivity, and the choice of the most successful and viable strategy depends in part on market conditions and the industry in which the company operates.

2. Methods

2.1. Research Design

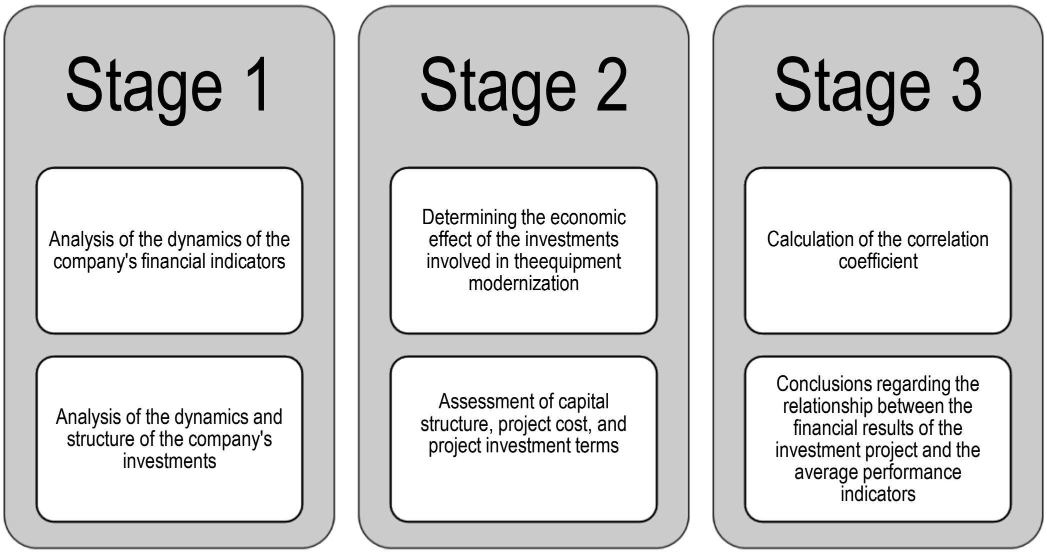
The research design involves three stages and consists in a detailed analysis of the company's investment activities (in the context of the production equipment modernization) and an assessment of the impact of investments on the company's productivity. This calculation is based on three stages (Figure 1):

1. Analysis of the company's investment opportunities;

2. Assessment of the investment project;

3. Regression and correlation analysis of the relationship between the financial results of the investment project implementation and averaged productivity indicators.

Figure 1. Research Design



2.2. Sampling

Builders FirstSource Inc. (https://www.bldr.com/), James Hardie Industries plc (https://www.jameshardie.com/), Boral (https://www.boral.com. au/about), Grafton plc. (https://www.graftonplc.com/) are selected as the basis for the research. These companies have significant amounts of production equipment and plan to modernize production equipment. Builders FirstSource Inc. (2022) is a manufacturer of windows, doors, mouldings and other carpentry, facade elements, stairs, panels, roofing, plasterboard, etc. The company is in Dallas, Texas, United States. Boral (Australia) is Australia's largest vertically integrated building materials company with a significant impact on the country's construction industry. The company has an impressive network that includes quarries, cement plants, processing plants, asphalt plants, and concrete plants. The Grafton plc Group is one of the leading companies in the field of production of all types of construction mortars in the markets of Great Britain, Ireland, and Belgium. Its main segment of activity is the supply of building and sanitary materials for the repair, maintenance and improvement of housing, as well as in the construction of new facilities. James Hardie Industries plc manufactures and markets fibre cement products and systems for interior and exterior construction, primarily in the United States, Canada, Australia, New Zealand, the Philippines, and Europe. James Hardie Industries plc is in Chicago, USA. The 2020-2022 period was chosen for the analysis, as these data are publicly disclosed by the company on the Builders FirstSource Inc (https://www.annualreports.com/).

2.3. Methods

The feasibility of investment in equipment modernization was assessed by calculating the capital structure based on the Weighted Average Cost of Capital WACC (Balážová and Luptáková 2016). WACC calculation formula:

$$WACC = (1 - T) \times r_d \times D/C + r_e \times E/C, \quad (1)$$

where T - income tax rate,

r_d - cost of loan capital (rate),

D - interest loan capital,

C - total costs,

r_e - cost of equity (rate),

E - equity.

The Weighted Average Cost of Capital (WACC) is an important metric for businesses because it determines how much a company should pay for its capital. This indicator takes into account both the cost of equity capital and the cost of debt capital, allowing for their relative weight in the company's capital structure. It helps to assess the company's total cost of capital and make decisions about investments and project financing.

The next step was the assessment of the Net Present Value (NPV), Profitability Index (PI). NPV, as defined by Arshad (2012), is a key indicator for evaluating the performance of an investment project. This indicator reflects the net present value, which is the result of adding up all future cash flows and discounting them at a specified rate. When calculating NPV, it is important to consider both inflows and outflows of funds, which enables getting the exact present value of the project, formula (2):

$$NPV = -CF_0 + \frac{CF_1}{(1+i)^1} + \frac{CF_2}{(1+i)^2} + \ldots + \frac{CF_n}{(1+i)^n}, \quad (2)$$

where $CF_{(t)}$ – cash flow in period t, $ thousand;
i – discount rate.

This approach gives grounds for making informed decisions about investing and determining its profitability. The formula for calculating the Profitability Index (Carlo Alberto Magni, 2015):

PI = Present Value of Future Cash Flows / Initial Value (3)

The last stage of the study involved an assessment of the presence and type of correlation between investment in equipment modernization and the sales volume carried out as a productivity increase determinant. The research uses the pair correlation method (4) (Li *et al.* 2022):

$$r = \frac{\overline{xy} - \bar{x} \times \bar{y}}{\sigma_x \times \sigma_y}, \quad (4)$$

where r – is the pairwise correlation coefficient;
σ_x — the mean square deviation of the factor feature;
σ_y — the mean square deviation of the resulting feature.

The interpretation of the equation consists in revealing the closeness of the connection between the quantities. The correlation coefficient can take values from [-1 to 1], where negative values indicate an inverse correlation, positive values — a direct correlation. If the values of the coefficient are less than ±0.3, it can be stated that there is no correlation. In case when the correlation coefficient is in the range [±0.3; ±0.5], the correlation is considered weak; the of range [±0.5; ±0.7] indicates a moderate correlation. If the coefficient falls into the range [±0.7; ±1], the correlation is considered close. The study of these correlations helps to better understand the behaviour of the studied values.

3. Results

The first stage of the calculation is the analysis of the dynamics of financial indicators of Builders FirstSource Inc. Table 1 shows the growth and dynamics of the sales volume.

Table 1. Growth in the Volume and Dynamics of the Sales Volume

Indicator	2020	2021	2022	Absolute change, $ thousand		Relative change, %	
				2021/2020	2022/ 2021	2021/2020	2022/ 2021
Builders FirstSource Inc							
Sales volume, $ thousand	17,484.2	19,531.2	21,578.2	2047	2047	112%	110%
Hardie Industries plc							
Sales volume, $ thousand	757,200	786,900	849,900	29,700	63,000	104%	108%
Boral							
Sales volume, $ thousand	2,792,300	2,924,100	2,955,900	131,800	31,800	105%	101%
Grafton plc							
Sales volume, $ million	453.3	544.3	618.3	91	74	120%	114%

The results of the assessment revealed and demonstrated a steady trend of growth in the sales volume in 2022 compared to 2021, which led to the need to modernize the equipment for further growth in the number of manufactured products. Such trends persist for all the studied companies. Special attention should be paid to the fact that according to the annual reports of Builders FirstSource Inc. (2022), Hardie Industries plc (2022), Boral, Grafton plc, the companies were seeking to attract investment to modernize equipment.

Table 2 shows a comparison of the total amount of financial resources, the total amount of investment resources and equity.

Table 2. Dynamics of the Total Amount of Financial Resources, the Total Amount of Investment Resources and Equity

Indicator	2020	2021	2022	Relative deviation, % 2021/ 2020	2022/ 2021	Absolute deviation, $ thousand 2021/ 2020	2022/ 2021
Builders FirstSource Inc							
The total amount of financial resources, $ million	104.1	107.5	117.1	103%	109%	3.4	9.6
Equity, $ million	19.8	22.6	24.7	114%	109%	2.8	2.1
The total amount of investment resources, $ thousand	24.8	5.2	5.0	21%	96%	-19.6	-0.2
Hardie Industries plc							
The total amount of financial resources, $ million	4,144.5	4,407.3	4,686.9	106.3%	105.9%	262.8	279.6
Equity, $ million	1,032	1,060.8	1,332.9	102.8%	125.7%	28.8	272.1
The total amount of investment resources, $ thousand	39.3	58.2	65	148.1%	111.7%	18.9	6.8
Boral							
The total amount of financial resources, $ million	2,104	5,346	3,908	254.1%	105.9%	3242.0	-1438.0
Equity, $ million	4,772.1	4,334.8	1,897.5	90.8%	43.8%	-437.3	-2437.3
The total amount of investment resources, $ thousand	38.5	15.0	32.5	39.0%	216.7%	-23.5	17.5
Grafton plc							
The total amount of financial resources, $ million	257.6	303.2	278.8	117.7%	105.9%	45.6	-24.4
Equity, $ million	1,393.7	1,291.1	1,086.6	92.6%	84.2%	-102.6	-204.5
The total amount of investment resources, $ thousand	45.0	54.9	71.3	122.0%	129.9%	9.9	16.4

Indicators in Table 2 show that the total amount of investment resources of Builders FirstSource Inc in 2022 fell by 4% (-$211 thousand) compared to 2021. At the same time, the total amount of financial resources increased by 9,605 thousand hryvnias (9%) in 2022 compared to 2021. These data indicate changes in the distribution of resources and possible trends in the financial sphere. For Hardie Industries plc, the analysis results indicate a rapid investment growth in 2021 compared to 2020, and a significant change in equity in 2022 compared to 2021 (125.7%). There are also significant changes in the financing structure in Boral and Grafton plc, as there is a trend towards a significant reduction in equity capital.

In the period from 2020 to 2022, companies use an aggressive financing model, which has its advantages and disadvantages. Such a model enables reducing the need for own capital in the implementation of operational activities, which helps to increase the company profitability. However, it can create problems with the current solvency and financial stability of the company.

The analysis shows that all periods are characterized by the predominance of current assets over non-current ones. This can be a positive signal, as it indicates that the company is investing in objects of labour rather than labour costs in its asset mix.

It is important to balance the use of an aggressive financing model with consideration of the current solvency and financial stability of the company. It is worth carefully studying all aspects of this strategy to ensure the company's successful operation in the future.

Before making a decision to invest in equipment modernization, the company should conduct a detailed analysis of its needs and capabilities. It is important to take into account not only the current state of the equipment, but also the prospects for business development to ensure maximum investment efficiency. As a result, investment in equipment modernization can become a key factor in the company success in the modern market environment. It is important to choose optimal investment strategies that will help the company to achieve its goals and ensure stable development.

The dynamics of investment activity is analysed for a detailed analysis of real investments (Table 3).

Table 3. Dynamics of Investment Activity in 2020-2022

Investment type	2020			2021			2022		
	$ million	Growth rate		$ million	Growth rate		$ million	Growth rate	
		$ million	%		$ million	%		$ million	%
Investment in equipment modernization (Builders FirstSource Inc)	2.534	-	-	4.15	1.616	164%	12.614	8.464	204%
Investment in equipment modernization (Hardie Industries plc)	6.2	-	-	14.1	7.9	227%	25.2	17.3	179%
Investment in equipment modernization (Boral)	5.2	-	-	3.9	-1.3	75%	4.4	0.5	113%
Investment in equipment modernization (Grafton plc)	5.0	-	-	6.0	1.1	122%	7.8	1.8	130%

The analysis of the data in Table 3 gives grounds to conclude that the amount of investment in both companies will increase in 2022, unlike 2021 (the data are calculated in Table 3). On the other hand, the company's investment in equipment modernization in 2020 amounted to $2,534,000, which is 66% less than in 2021 ($4,200,000). It should be noted that Boral increased investment in equipment modernization in 2022 compared to 2021. As for Grafton plc, in 2022 investment in modernization increased by 1.8 $million compared to 2021. Figure 2 illustrates the dynamics of investment for 2020-2022.

Figure 2. Dynamics of Investment Activity in 2020-2022

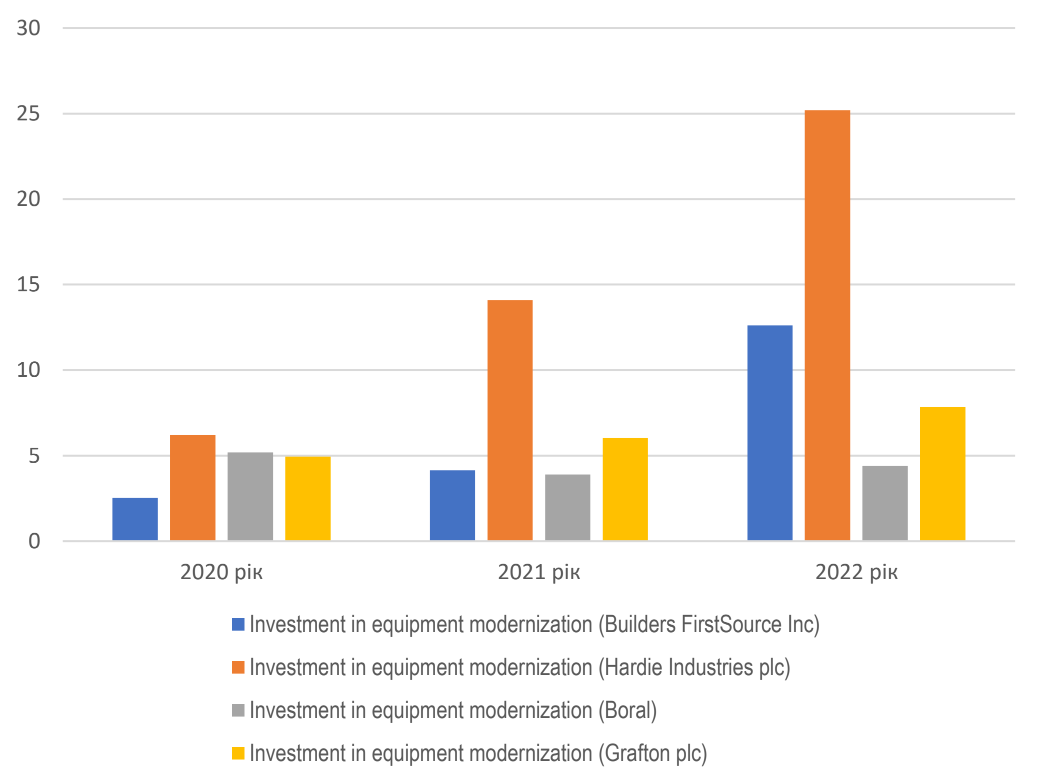


Table 4 shows a comparison of indicators of sold products and the volume of real investment.

In the financial statements, the real investment shown consist of the following elements: capital construction; acquisition (production) of fixed assets; acquisition (production) of other non-current material assets; acquisition (creation) of intangible assets; acquisition (cultivation) of long-term biological assets; others. According to companies' reports, there are only two components in the structure of real investments — acquisition of intangible assets and acquisition (production) of fixed assets.

Table 4. Dynamics of the Volume of Sold Products and Investment in Equipment Modernization in 2020-2022

Indicator	2020	2021	2022	Absolute change, $ thousand 2021/ 2020	2022/ 2021	Growth rates, % 2021/ 2020	2022/ 2021
Builders FirstSource Inc							
Sales volume, $ million	285.786	338.508	466.461	52.722	127.953	118%	138%
The volume of investments in equipment modernization, $ million	2.534	4.2	12.734	1.666	8.534	166%	303%
Hardie Industries plc							
Sales volume, $ million	757.2	786.9	849.9	29.7	63	104%	108%
The volume of investments in equipment modernization, $ million	6.2	14.1	25.2	7.9	11.1	227%	179%
Boral							
Sales volume, $ million	2792.3	2924.1	2955.9	131.80	31.80	105%	101%
The volume of investments in equipment modernization, $ million	5.2	3.9	4.4	-1.30	0.50	75%	113%
Grafton plc							
Sales volume, $ million	453.3	544.3	618.3	91.00	74.00	120%	114%
The volume of investments in equipment modernization, $ million	4.95	6.04	7.84	1.09	1.80	122%	130%

The features of companies that specialize in the production of building materials are characterized by the need for significant investment, and the management is tasked to develop effective mechanisms for interaction with various types of investors. Shareholders may be attracted as such investors, or investments may be realized at the expense of own funds or long-term liabilities.

Under the condition of reducing short-term liabilities, including at the expense of attracting investments by at least 12.92%, this will lead to an increase in the value of both companies, which is illustrated in Table 5. The reference year is 2020, because the debt-to-equity ratio is within the normative value and is 0.68 and 0.71 for Builders FirstSource Inc. and Hardie Industries plc, respectively.

Table 5. Economic Effect of Investment Attraction

Indicator	2020	2022		Economic effect
		Before implementing the recommendations	After implementing the recommendations	
Builders FirstSource Inc				
Company liabilities, $ million	76.9	550.7	632.4	-81.7
Company assets, $ million	278.5	1,009.3	893.8	115.5
Market value, $ million	201.6	458.6	261.4	197.2
Hardie Industries plc				
Company liabilities, $ million	32.7	234.27	269.03	-34.8
Company assets, $ million	2,089.6	7,573.19	6,706.69	866.5
Market value, $ million	1,555.2	3,537.48	2,016.49	1,521.0
Boral				
Company liabilities, $ million	3,274.5	2,3459.7	2,6940.4	-3,480.7
Company assets, $ million	7,609.3	27,577.9	24,422.5	3,155.4
Market value, $ million	197	448.1	255.4	192.7
Grafton plc				
Company liabilities, $ million	1,233.7	8,838.7	10,150.1	-1,311.4
Company assets, $ million	2,953.2	10,703.1	9,478.5	1,224.6
Market value, $ million	307.8	700.1	399.1	301.0

Analysing the data obtained in Table 5, we see that Builders FirstSource Inc has the potential to grow in value by $197.1 million if it receives investment. At the same time, Hardie Industries plc is even more favourable, as its market value could increase by $1,521.0 million after the investment. As for Boral, the market value of the company could increase by $192.7 million, and the market value of Grafton plc could increase by $301 million.

Table 6. List of Investment Costs at the Stage of Development and Construction, $ million

Types of costs	The amount of expenses by years of project implementation					Total
	0	1	2	3	4	
Design and construction works	6.7	7.9	217.1			231.7
Construction and installation work	-	-	1,056.7	1,408.9	1,056.7	3,522.4
Equipment			6,208.2	8,277.6	6,208.2	20,693.9
Project launch			264.2	352.2	264.2	880.6
Other			10,207.3	1,609.8	1,207.3	424.5
Total costs	6.7	7.9	8,953.5	11,648.5	8,736.4	29,353.1

Considering the companies' plans to modernize equipment and expand the production line, including the construction of a concrete production shop, the investment project looks like a justified step. We propose to calculate the effectiveness of the implementation of the same investment project in two different companies, as both companies are representatives of the same industry. The list of investment costs for this project is shown in Table 6.

According to preliminary calculations, the investor should allocate 85% of the total value of the investment proposal in the case of the investment for Builders FirstSource Inc and 72% of the total value of the investment proposal in the case of the investment for Hardie Industries plc. The rest of the project costs can be covered by the companies' own funds. Table 7 presents the capital structure, project cost and investment conditions.

When considering investment proposals for Builders FirstSource Inc and Hardie Industries plc, it is important to consider the capital structure and investment terms. The investor must have a clear idea of the cost of the project and the allocation of investment for each company to ensure the successful implementation of the project.

Table 7. Capital Structure, Project Cost, and Project Investment Terms

Indicator	Builders FirstSource Inc.	Hardie Industries plc.	Boral	Grafton plc
Equity, $ thousand	4,402.96	8,306.92	4,696.49	3,522.37
WACC, %	8.74	9.31	4.3	5.6
Borrowed capital	24,950.12	21,046.16	24,656.59	25,830.71
Loan term, years	15			
Grace period, years	5			
Discount rate, %	10			

According to the results of the calculations, it was found that the Weighted Average Cost of Capital (WACC) is 8.74% for Builders FirstSource Inc. and 9.31% for Hardie Industries plc, 4.3% for Boral, and 5.6% for Grafton plc. Analysing Table 7, the economic efficiency of the investment project was estimated using the NVP (according to formula 3) and PI (according to formula 2) indicators. For Builders FirstSource Inc., the NPV was $10,863 million, and PI was 1.3. The results of the NVP calculation for Hardie Industries plc. amounted to $128,173 million, and PI was 2.34. NVP for Boral amounted to $126,000 million, PI = 1.51. The calculation of NPV and PI for Grafton plc: $121,655 million and 1.46. These data indicate that an increase in WACC of the company by 8.74%, 9.31%, 4.3% and 5.6%, respectively, will lead to an increase in the value of the business due to the attraction of investments in equipment modernization.

Table 8. The Results of the Calculation of the Correlation Coefficient for Builders FirstSource Inc.

Volume of sold products (X)	The volume of investment in equipment modernization (Y)	X * Y	X2	Y2
Builders FirstSource Inc. ($ thousand)				
285,786	2,534	7.24E+08	8.17E+10	6421156
338,508	4,200	1.42E+09	1.15E+11	17640000
466,461	12,734	5.94E+09	2.18E+11	1.62E+08
1,090,755	19,468	8.09E+09	4.14E+11	1.86E+08
Hardie Industries plc.. ($ million)				
757.2	6.2	4,694.64	573,351.8	38.44
786.9	14.1	,.29	619,211.6	198.81
849.9	25.2	21,417.48	722,330	635.04
2394	45.5	10,8927	5,731,236	2,070.25
Boral				
2,792.3	5.2	14519.96	7,796,939	27.04
2,924.1	3.9	11403.99	8,550,361	15.21
2,955.9	4.4	13005.96	8,737,345	19.36
8,672.3	13.5	117076.1	75,208,787	182.25
Grafton plc				
453.3	4.95	2244.773	205,,480.9	24.523
544.3	6.04	3287.088	296262.5	36.47085
618.3	7.84	4849.327	382,294.9	61.51265
1,615.9	18.83418	30,434.15	2,611,133	354.7263

The correlation coefficient was calculated to determine the impact of investments in equipment modernization on the volume of sales, which was 0.991 for Builders FirstSource Inc. and 0.994 for Hardie Industries plc.; for Boral is 0.83, and for Grafton plc – 0.97 (Table 8). These indicators show a high degree of interrelationship between investments in equipment modernization and the volume of production, which can contribute to the further development of enterprises.

This indicates a significant impact of this type of investment on the sales volume, which testifies a relationship between productivity and investment in modernization. Such results confirm the importance of investing in equipment modernization to improve company productivity.

4. Discussion

The proposed evaluation method determines the expediency of investment in equipment modernization. This approach is universal, as it calculates the feasibility of investment, using information about the costs of upgrading equipment. Taking into account this method, it is possible to make a reasoned decision about the implementation of investments in the modernization of equipment. This decision was made based on a significant number of studies that focus on a certain specific field only. Assessing the feasibility of investment in equipment modernization is an important stage for the company. It determines whether the investment in modernization will be profitable in financial terms. The proposed methodology takes into account all the necessary aspects and parameters affecting the evaluation results. For example, (Xiaoyi Mu, 2024) examines the role of internal and external investment among oil companies. The scientist comes to the conclusion that investments in foreign assets of oil companies are costlier than the same investments in assets of Chinese oil companies. Similarly, the authors (Zhihao Shi, Libang Ma, Xiang Wang, Shanshan Wu, Jing Bai, Ziyan Li, Yuqing Zhang, 2023; Y.F. Chen *et al.* 2021; B.L. Gong 2020) analyse the modernization of agricultural equipment, in contrast to our approach.

The authors (Niyozova and Azimov 2021; Mukhtorovna 2021) note that investment funds play an important role in industrial production, influencing its results. Such funds make it possible to modernize the equipment. The role of these funds depends on various factors, such as the conditions of circulation, the impact on social production and the relationship with other distributive categories. Despite the variety of results obtained from the use of investment funds, they constantly affect social production processes. In this context, this study partially correlates with our results regarding the relationship between investment in equipment modernization and productivity (Kwilinski *et al.* 2022).

The assumption that there are independent investment in immovable and movable property may or may not be appropriate (Meilin Ma 2023; X. Wang *et al.* 2020). The authors argue that the investment of large farms in infrastructure plays a key role in determining their choice of movable assets, especially when public investment in infrastructure is limited. Even without credit constraints, the conceptual model shows that large farms tend to underinvest in fixed assets and overinvest in low-performing mobile assets that face insecure land rights. And these studies are also quite different from the studies that we proposed.

However, we agree with the authors' research (Chipangamate *et al.* 2023; Blesia *et al.* 2023) regarding the need to modernize equipment to a state where equipment becomes 'smart'. The emphasis is placed on investments in digitization of equipment. In the current business environment, the competition to attract and develop exceptional talent and leadership is becoming a key success factor for any company. According to (Dodoo *et al.* 2023), an important condition for organizational prosperity is the ability to meet society's demands for environmental, social, and managerial responsibility. In this context, cooperation with various stakeholders (Blesia *et al.* 2023) and integration of their interests into the company's development strategy becomes important. Fulfilment of these tasks requires an organization not only to attract talent and develop leaders, but also to implement current approaches to management and interaction with stakeholders. The studies (Kemp *et al.* 2023; Le Roux 2021) emphasize the need to carefully develop a modernization strategy aimed at obtaining a social operation license.

Conclusions

Modernization of the company's assets through the introduction of innovative production equipment leads to changes in labour productivity. Investment in the modernization of production equipment play an important role in this process. Modern technologies play a key role in the companies' development. Their implementation enables companies to innovate, reduces the cost of production, and meets the market needs. The conducted research demonstrates a real example of how the proposed method will allow calculating the necessity and feasibility of investment in modernization using the example of the studied companies Builders FirstSource Inc., Hardie Industries plc., Boral and Grafton plc. The feasibility of investment in equipment modernization is illustrated by the WACC indicator - 8.74; 9, 31; 5.6 (respectively) and the Profitability Index - 1.30; 2.34; 1.51; 1.46, respectively. A close correlation between productivity (which is expressed in the dynamics of sales volume) and investment in equipment modernization is proven, because the correlation coefficients are 0.991 for Builders FirstSource Inc and 0.994 and for Hardie Industries plc., for Boral and Grafton plc - 0.83 and 0.97. They all fell into the range [±0.7; ±1]. Such results should be used in manufacturing companies to assess the feasibility of investment in modernization. Of course, the research has certain limitations related to the time of its implementation - 2020-2022, the period of the COVID-19 pandemic. The methodology was tested on the US companies, and it needs to be tested on the companies from other countries. This can be a prospect of further research. It is also appropriate to implement the gradation of investments in modernization, noting exactly the type of equipment modernization.

Credit Authorship Contribution Statement

The authors equally contributed to the present research, at all stages from the formulation of the problem to the final findings and solution.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Declaration of Use of Generative AI and AI-assisted Technologies

The authors declare that they have not used generative AI and AI-assisted technologies during the preparation of this work.

References

[1] Arshad, A. (2012). Net present value is better than internal rate of return. *Interdisciplinary Journal of Contemporary Research in Business, 4*(8): 211-219. Available at: https://docplayer.net/13798152-Net-present-value-is-better-than-internal-rate-of-return.html

[2] Balážová, E., and Luptáková, J. (2016). Application of the economic value-added index in the performance evaluation of forest enterprise. *Journal of Forest Science, 62*(5): 191-197. DOI:http://dx.doi.org/10.17221/48/2015-JFS

[3] Banerjee, R., and Hofmann, B. (2022). Corporate zombies: Anatomy and life cycle. *Economic Policy, 37*(112): 757–803. DOI: https://doi.org/10.1093/epolic/eiac027

[4] Blesia, J.U., Dixon, K., and Lord, B.R. (2023). Indigenous experiences and perspectives on a mining corporation's community relations and development activities. *Resources. Policy, 80:* 103202. DOI:https://doi.org/10.1016/j.resourpol.2022.103202

[5] Chen, Y.F., Miao, J, and Zhu, Zh. (2021). Measuring green total factor productivity of China's agricultural sector: a three-stage SBM-DEA model with non-point source pollution and CO2 emissions. *Journal of Cleaner Production, 318*. DOI: https://doi.org/10.1016/j.jclepro.2021.128543

[6] Chipangamate, N. S., Nwaila, G. T., Bourdeau, J. E., and Zhang, S. E. (2023). Integration of stakeholder engagement practices in pursuit of social licence to operate in a modernising mining industry. *Resources Policy 85*, Part B: 103851. DOI: https://doi.org/10.1016/j.resourpol.2023.103851

[7] Danylyshyn, B., *et al.* (2023). Marketing tools to increase regional investment attractiveness. *Review of Economics and Finance, 21*: 1101–1108. Available at: https://refpress.org/wp-content/uploads/2023/08/Radkevych_REF.pdf

[8] Dodoo, J.E., Surienty, L., and Al-Samarraie, H. (2023). The influence of learning-oriented leadership for promoting future-directed workplace safety in the mining industry. *Safety Science, 159:* 106010. DOi:https://doi.org/10.1016/j.ssci.2022.106010

[9] Foglia, M., Maci, G., and Pacelli, V. (2024). FinTech and fan tokens: Understanding the risks spillover of digital asset investment. *Research in International Business and Finance, 68*: 102190. DOI:https://doi.org/10.1016/j.ribaf.2023.102190

[10] Freiberg, F., and Scholz, P. (2015). Evaluation of investment in modern manufacturing equipment using discrete event simulation. *Business Economics and Management, 34*: 217-224. DOI:https://doi.org/10.1016/S2212-5671(15)01622-6

[11] Gong, B.L. (2020). Agricultural productivity convergence in China. *China Economic. Review, 60.* DOI:https://doi.org/10.1016/j.chieco.2020.101423

[12] Kemp, D., Kochan, K., and Burton J. (2023). Critical reflections on the Juukan Gorge parliamentary inquiry and prospects for industry change. Journal of Energy and Natural Resourses Law, *41*(4): 379-42. DOI:https://doi.org/10.1080/02646811.2022.2156202

[13] Kwilinski, A., Hnatyshyn, L., Prokopyshyn, O., and Trushkina, N. (2022). Managing the logistic activities of agricultural enterprises under conditions of digital economy. *Virtual Economics, 5*(2): 43–70. DOI:https://doi.org/10.34021/ve.2022.05.02(3)

[14] Le Roux, J. (2021). Modernisation in mining-A people-centric approach. *CSIR Science Scope 18*(1): 60-61. Available at: https://scholar.google.com/scholar_lookup?title=Modernisation%20in%20mining-A%20people-centric%20approachandpublication_year=2021andauthor=J.%20Le%20Roux

[15] Li, Y., Lu T., and Zhao, J. (2022). Comprehensive evaluation method of correlation index between meteorological conditions and load based on random matrix theory. *Energy Reports, 8*(13): 1311-1319. DOI:https://doi.org/10.1016/j.egyr.2022.08.023

[16] Liang, W., Wang, Y., and Hou, L. (2023). Does private equity investment influence enterprise innovation strategy? *Finance Research Letters, 58*, Part D: 104593. DOI: https://doi.org/10.1016/j.frl.2023.104593

[17] Liu, Sh. (2024). The influence of financial asset allocation on the innovation and investment of high-tech enterprises. *Finance Research Letters 62*, Part A: 105138. DOI: https://doi.org/10.1016/j.frl.2024.105138

[18] Livdan, D., and Nezlobin, A. (2021). Investment, capital stock, and replacement cost of assets when economic depreciation is non-geometric. *Journal of Financial Economics, 142*(3): 1444-1469. DOI:https://doi.org/10.1016/j.jfineco.2021.05.021

[19] Lüdeke-Freund, F. (2020). Sustainable entrepreneurship, innovation, and business models: Integrative framework and propositions for future research. *Business Strategy and the Environment, 29*: 665–681. DOI:https://doi.org/10.1002/bse.2396

[20] Ma, M. (2023). Interdependent investments in attached and movable assets under insecure land rights. *China Economic Review, 77:* 101909. DOI: https://doi.org/10.1016/j.chieco.2022.101909

[21] Magni, C. A. (2015). ROI and Profitability Index: A Note on Managerial Performance. *SSRN Electronic Journal*. DOI: https://dx.doi.org/10.2139/ssrn.2546917

[22] Mu, X. (2024). Have the Chinese national oil companies paid too much in overseas asset acquisitions? *International Review of Financial Analysis, 92*: 103074. DOI: https://doi.org/10.1016/j.irfa.2024.103074

[23] Mukhtorovna, N. D. (2021). Importance of foreign investments in the development of the digital economy. *ResearchJet Journal of Analysis and Inventions,* 2(04): 219-224. DOI:https://doi.org/10.33763/npndfi2022.03.109

[24] Niyozova, I. N., and Azimov, O. O. (2021). The Role of Investment and Modernization in the Development of the Uzbek Economy. *ResearchJet Journal of Analysis and Inventions,* 2(06): 140–145. DOI:https://doi.org/10.17605/OSF.IO/FJ6KY

[25] Prokopenko, O. *et al.* (2023). Impact of investments and RandD costs in renewable energy technologies on companies' profitability indicators: Assessment and forecast. *Energies, 16*(3): 1021. DOI:https://doi.org/10.3390/en16031021

[26] Ren, M., Zhao, J., and Zhao, J. (2023). The crowding-out effect of zombie companies on fixed asset investment: Evidence from China. *Research in International Business and Finance, 65*: 101979. DOI:https://doi.org/10.1016/j.ribaf.2023.101979

[27] Shi, Zh., *et al.* (2023). Efficiency of agricultural modernization in China: Systematic analysis in the new framework of multidimensional security. *Journal of Cleaner Production, 432*: 139611. DOI:https://doi.org/10.1016/j.jclepro.2023.139611

[28] Tianle, S. (2022). A literature review on the net present value (NPV) valuation method. In *Proceedings of the 2022 2nd International Conference on Enterprise Management and Economic Development (ICEMED 2022)* Advances in Economics, Business and Management Research. *(*pp. 826-830). Atlantis Press International B.V. Available at: https://www.atlantis-press.com/article/125975449.pdf

[29] Vranovci, Sh., and Maloku, A. (2024). An analysis of the banking sectors: The effect of ecosystem performance on financial stability. *Pakistan Journal of Criminology, 16*(2): 761-782. DOI:https://doi.org/10.62271/pjc.16.2.761.782

[30] Wang, X., Yamauchi, F., Huang, J., and Rozelle, S. (2020). What constrains mechanization in Chinese agriculture? Role of farm size and fragmentation. *China Economic Review, 62.* DOI:https://doi.org/10.1016/j.chieco.2018.09.002

[31] Annual Reports (2022). https://www.annualreports.com/

[32] Builders FirstSource Inc. (2022). Available at: https://www.bldr.com/

[33] Hardie Industries plc. (2022). Available at: https://www.jameshardie.com/

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The Impact of Political Instability on Financial Development, Economic Growth, Economic Growth Volatility and Financial Stability in Developing Countries

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Abstract: Political instability is usually attributed to the disruption of policy continuity following regime changes. Moreover, it is not solely the tangible effect but also the perceived risk among investors and other stakeholders that will result in policy alterations. Furthermore, the frequency and the manner in which regime changes occur play a crucial role in shaping the economic repercussions. This study fills in the gap in the literature by exploring the impact of political stability (PS) on financial development (FD), economic growth (EG), economic growth volatility (EGV) and financial stability (FS). This study uses the PCSE estimation method with a robustness check of GMM on data for 33 developing countries from 1980-2020. Results are useful for macro-prudential and macroeconomic policymakers. First, the relationship of PS with FD is linear for both financial institutions and financial markets. However, financial market efficiency (FME) reduces with increased PS. Therefore, policymakers need to focus on regulating FME related practices in politically stable environments. Second, PS positively affects EG in developing countries. Third, PS reduces EGV in developed countries, yet it increases economic growth volatility for developing countries. The policymakers in developing countries should not only be focused on financialization but they must also ensure that the reforms in enabling environment are also keeping pace with the growth of financialization. Fourth, PS increases FS for developing countries. Hence, economic growth volatility and financial stability cannot be used synonymously as these are measured differently and FS is a sub-set of economic stability. Therefore, the policy makers need to formulate the policies related to each of them according to the market and institutional realities pertaining to each of them.

Keywords: finance; political stability; economic growth volatility; financial stability; financial development; financial access; financial efficiency.

JEL Classification: G15; G28; G32; G51; D80; C01.

1. Introduction

Political instability is a propensity of a regime collapse either because of rampant competition among political parties or political conflicts amongst them (Hussain 2014). There has been growing evidence of regime changes impacting the financial development and economic growth. One of the reasons that pinned up to this phenomenon is the impact of regime change on policy continuity. It's not only the actual impact but also the perception amongst the investors and other stakeholders that regime change shall lead to policy changes. Added to this is the frequency and method of regime change. In countries with frequent regime changes, one hardly identifies sustained economic growth but the high economic growth volatility. Today's Pakistan is a glaring example of how frequent regime changes through unconstitutional means can lead to unprecedented economic collapse. On the other hand, there are autocratic regimes like Vietnam or in other Asian countries where political stability is high but that is not translated into high economic growth. As a result, there are dichotomous research findings on the impact of political stability on economic growth and volatility in various developing and low-income countries. Some recent researchers have also pointed out this dichotomy. Effect of political stability over economic growth is controversial not only in theory but also in empirical work (Ayessa and Hakizimana 2021).

The concept of political stability has gained growing interest in economic growth literature due to its potentially profound financial and economic consequences. Both policy makers and academic scholars have shown keen interest in exploring various aspects of economic growth in recent times. Although there are numerous research studies on exploring the relationship between political stability and economic growth, yet the impact of political instability on financial development has hardly been explored in the literature. Added to that, are the efforts to explore the relationship between political instability, financial stability and economic growth volatility, as these are also scanty. The rank of financial development as an established channel of transmission for economic growth and economic growth volatility makes it crucial to look into this neglected area of exploration. Though there are some papers observing the relationship of political instability with stock exchange returns and prices yet there are no research efforts towards exploring the relationship with financial development at component level in a systematic manner. Therefore, this study explores the impact of political instability on financial institutions development and financial markets development on three dimensions of financial depth, financial access, and financial efficiency of both financial institution's development and financial markets development.

Previous studies on the relationship between political stability (PS) and economic growth (EG) have not focused on economic growth volatility (EGV) and financial stability (FS). The relationship between PS, EGV and FS is a crucial one, in order to determine what kind of impact is exerted by political instability to EGV and FS. Studying this relationship is also important from the standpoint of future research, that is to explore the contribution of financial development and political stability towards the introduction of growth volatility in the economic system. The previous works in existing literature is either single country based or for specific regions. Previous research have largely focused on OECD countries where institutional systems are in a relatively highly stable shape. However, in the case of developing countries, the institutional systems are relatively less structured and in a state of evolution. Therefore, the potential effect of political stability on financial development and economic growth for developing countries is still posing an empirical paradox.

2. Literature Review

Political stability is one of the major factors that can explain volatility in economic growth (Ndokang and Tsambou 2019). This phenomenon also has the potential for reasonably frequent disruptions in political regimes, thereby leading to inconsistencies of macroeconomic policies. Adding to this malaise is the scale of pervasiveness of political instability which makes it rather more important to explore various dimensions of its relationship with economic growth and its volatility. Findings by Souffargi and Boubaker (2024) indicate that, in Tunisia, political confrontations have a greater detrimental impact compared to terrorist acts. Further, the democratic transition has a beneficial impact on the stock market. Nevertheless, this reaction is not particularly noticeable. The events pertaining to the creation of the constitution have exerted a substantial and beneficial impact. Although there may not be a notable immediate response, the declaration of the election outcomes typically results in a favourable market reaction. The successful conclusion of this political process has delivered encouraging and favourable indications, reinstating the trust of both domestic and international investors by offering them improved clarity on market and national performance. They also suggest that investors must take into account political events to manage the influence on capital flows, international trade, and the overall economy. Huntington (1965) shows if social modernization is not synchronized with institutional modernization, then it leads to disorder and chaos. This is the phenomenon defined by him as 'Political Decay'. Therefore, political stability in the context of economic growth generally points out the political stability characterized by rule of law, efficient bureaucracy, strengthened institutions instead of strengthened personalities, lower corruption, and investment friendly business climate.

On the other hand, there are a number of arguments in political economy literature that suggest political stability should boost economic growth. Pioneering works of Levine (2005) have emphasized the need to look at the relationship between economic growth and political forces to determine the impact of later forces on the former variable. The functionality determinants of financial system and economic development leads to the need for evaluation of regulatory, legal, political and miscellaneous policy determinants of financial growth (Levine, 2005). Levine (2005) treats political, regulatory, legal and other determinants of policy in perfunctory mannerism. In the United States of America, the firms' corporate structure has heavily been influenced by political forces and hence not purely an outcome related to market forces. Moreover, almost everywhere, these are the political forces which have been shaping the financial systems' operations and financial-sector policies (Levine, 2005).

Hussain (2014) observes that political stability and economic growth are interconnected as the latter is impacted negatively in the case of higher uncertainty surrounding political situation. The reasons attributed by him are the investors becoming cautious and holding their investment in an economy which has political uncertainty thereby decreasing or slowing down the economic growth. Aisen and Veiga (2013) observed negative lower GDP growth rates on higher levels of political volatility. It affects through transmission of lowered productivity growth rate. They also explored that ethnic homogeneity and economic freedom are positively related to economic growth. They observed higher levels of economic growth volatility at political instability of higher degrees. Ben and Chaibi (2022) observe that political risk adds to volatility in developed markets more than in developing markets.

Białkowski *et al.* (2008) explored the relationship of policy level uncertainty in financial markets and concluded that less experienced capital markets are greatly impacted by such volatility as compared to the economies having greater capital market experience. Devereux and Wen (1998) show that government spending as proportion of GDP is higher in unstable political environments. This may be because in such environments, investor's confidence is eroded and the governments tend to use the fiscal policy to stimulate the economy. Fatas and Mihov (2013) also observe that political volatility consistently brings negative effects for financial investment and economic growth. Attila (2022) explores that political instability leads to enhanced instability of bank deposits. Siddiqui *et al.* (2022) show that a negative relationship exists between political unpredictability and financial markets *i.e.*, foreign exchange, interbank, and capital market.

Talbi *et al.* (2021) analyzes the impact of financial crises and political instability on stock prices volatility in MENA countries. They show that the negative impact of political events on stock market volatility is more significant than financial crises. Lukasz (2021) summarized the conclusions of empirical and theoretical research work on political stability-induced economic implications. This extensive review affirms the detrimental impact of political instability on investment, inflation, public debt, fiscal deficits, and financial markets. The temptation to embezzle funds from state funds, fail to fulfil state contracts, or reject debts when a leader's time is limited is real (Przeworski *et al.* 2000). Economic dealings with the public sector may contract as a result of a loss of faith in the state's capacity to fulfil its promises due to instability. Canes-Wrone and Park (2012, 2014) and others have argued that when there is a likelihood of leadership succession, some industries may delay making permanent investments. This is because the performance of these investments is highly dependent on government policies, which could be altered by the incoming administration. Companies in crony capitalist systems often use their political ties to get special treatment from the government and shield themselves from the economic rivalry that threatens to cut into their profits. When there's a good chance the incumbent will stay in office, these companies tend to cut back on investments.

Existing research on the topic has provided ample evidence that political instability has a negative effect on macroeconomic growth. Recent work by Rathnayake (2022) establishes a link between political instability and both long- and short-term economic growth. Results show that political instability has a little impact on economic growth in South Asian nations in the latter term. On the other hand, the nations demonstrate a strong inverse correlation between political unrest and long-term economic expansion. It is also shown that civil liberties and regulatory quality being the moderating variables in this relationship. Abaidoo and Agyapong (2021) observe a negative association between political instability and macro-level economic policies. They show that the rule of law is a significant moderator for the negative effect of macroeconomic volatility on political atmosphere. Irshad (2017) explored that political volatility negatively affects stock prices. She also observed that although enhanced exports and industrial growth relate positively with prices of stock yet increase in inflation is negatively associated with prices of stocks. Political stability impacts the investor confidence as the long-term planning can be made and risk premium is on lower side, and this would positively impact the economic growth by letting the stock markets grow.

2.1. Political Uncertainty Leads to Negative Financial Market

The channels through which political uncertainty leads to negative financial market outcomes thereby dampening economic growth have been a constant focus of many studies. There are two such distinct, yet interconnected channels identified through which the effects of political volatility are transmitted towards financial development and economic growth. These channels are the monetary policy volatility impacting the capital markets and the channel of overall policy and regime related volatility. There is an ever-growing literature referring to monetary policy, which can be changed according to the political policy preferences, as one of the major transmission channels through which political circles impact the economic growth volatility or stock market returns (Rigobon and Sack 2003; Thorbecke1997). The monetary policy volatility channel of transmission of volatility in stock returns (Bernanke and Gertler 2012; Rigobon and Sack 2003) and asset returns (Thorbecke 1997) has relatively been a greater focus in literature. Hsing and Hsieh (2012) observe growth in M2 component of money supply directly contributing to stock exchange volatility.

Papadamou *et al.* (2014) explored the way political instability causes the lack of level of independence of central banks which in turn leads to the stock exchange volatility. In Poland, growth of M2 directly contributed to stock returns' volatility (Hsing and Hsieh, 2012). The literature has extended itself towards finding out the relationship of drivers leading to monetary policy related volatility. Aisen and Vega (2013) observing that there is significant relationship between inflation volatility and political volatility. Political instability is observed to impact the independence of monetary policy authorities or central banks as the fragile polity may want such steps from the central banks which in turn leads to higher inflationary pressures (Carmignani 2003). Compromise of independence of monetary authorities/central banks impacts the stock returns'/markets' volatility (Papadamou *et al.* 2014).

The second channel of transmission is overall policy and regime related volatility. Hartwell (2018) observes that it is formal political instability generated by volatility in formal political institutions that causes higher level of financial volatility. This volatility is higher even than the one caused by monetary policy changes. The work of political scientists has largely been revolving around the second channel of transmission of volatility and that are political news and regime changes (Beaulieu *et al.* 2005). Election week has been attributed to major variability in index returns which possibly can be doubled in such a week. Białkowski *et al.* (2008) and Goodell and Vähämaa (2013) show election events as a driver of equity related variance around the date of election event. They presume that public and market expectation of probable future macroeconomic policy direction of specific election winner drives this election surrounding political volatility. Not only the expected election results but also an unexpected election outcome also increases the uncertainty (Castells and Trillas 2013) or even an influential politician switching parties may exert significant abnormal impact on economic/financial volatility (Jayachandran 2006).

Dutt and Mitra (2008) observe that political sector unrest generates frequent policy switches which negatively affect economic outcomes. McKibbin and Fernando (2020) show that frequent political changes lead to sub-optimal economic decisions due to lack of sufficient deliberations amongst the stakeholders before finalizing such policies. Lack of parliamentary regime autonomy, characterized by influentially dominant economic classes, leads to lack of will to reform the economy (Prasad 2012). Naqvi *et al.* (2017) in a country level study of Pakistan observe that political instability has a significant negative impact on FD. Khisa (2015) shows two parts or categories of political instability viz elite and communal political instabilities. While elite political instability is caused by the circumstances where an individual from elite holding on to the national leadership if removed by force, communal political instability is a regime change operation carried out by a coalition with a foreign country's help. Pakistan has recently witnessed such communal political instability in which the regime change operation has impacted the economy in worst ways (GDP growth rate falling from around 6% to 1% and inflation turned into hyperinflation from 12% to 47%) in a period of only one year from April 2022 to April 2023.

Murad and Alshyab (2019) observe a negative relationship between internal political instability on economic growth while a positive relationship between external political instability in border countries. Pasha (2020) has however, observed an insignificant relationship between riots, terrorism, or political associations with real GDP growth. He, however, observed a significant positive effect on real GDP rates of growth with change of Head of State. Baklouti and Boujelbene (2020) observe that political instability negatively affects productive activity and also increases the transaction costs thereby hampering the economic growth of a country. Gurgul and Lach (2013) observe that policy volatility aspect of the political instability caused by regime fragilities lead to dampening the economic growth. A relatively more direct channel through which the political volatility impacts the economic growth and economic growth volatility is the uncertainties surrounding the continuity of economic policies. Certain things like terrorism or disruption of economic policies perceived for multiyear plans is more volatile for the countries having less developed capital markets (Białkowski *et al.* 2008). An imminent change in political regime negatively impacts the investments by harming property rights' formation. Constitutional changes, the variable used as a measure of political volatility, are negatively related with growth (Brunetti 1997).

While studying the impact of legal and policy institutions' instability in rich and low-income countries, Berggren *et al.* (2012) observed that volatility in social institutions negatively affects the economic growth both in rich and low-income countries. Brunetti (1997) conducted a comprehensive survey summarizing the major political variables impacting the economic growth. He concluded that policy instability as a subjective political perception is the most exploratory variable while democracy is less successful in explaining this relationship. However, on the other hand many researches have empirically observed a significant relationship between the form of governance and economic performance (Ghardallou and Sridi 2020; Yu and Jong-A-Pin 2020, among others). Alesina and Perotti (1996) found that periods in which propensity of the collapse of government is high are characterized by significantly lower economic growth. Chen and Feng (1996) observe a negative relationship of political polarization, government repression, and instable regimes with economic growth. Jong-A-Pin (2009) evaluates the association of various (25 in number) political indicators with economic growth. The most critical impact noticed by him is of political regime instability of higher degrees on economic growth. Alesina and Perotti (1996) show a negative impact of socio-political instability with private investment. They, however, observe a positive association between socio-political instability and macro-economic risks. Weaker judicial systems and political instability are also inimical to the growth of investment (Anyanwu2017; Papaioannou 2009; Wanjiru and Prime 2020).

Dirks and Schmidt (2023) show that political instability leads to post-shock reduction of 4-7% in GDP of developed countries after 5 years. According to their conclusion, the negative effect is channelized through decrease in consumption and investment. Hasan *et al.* (2023) observe positive relationship between political variables like democracy and economic growth for developing countries. They, however, find a negative relationship between economic freedom and economic growth.

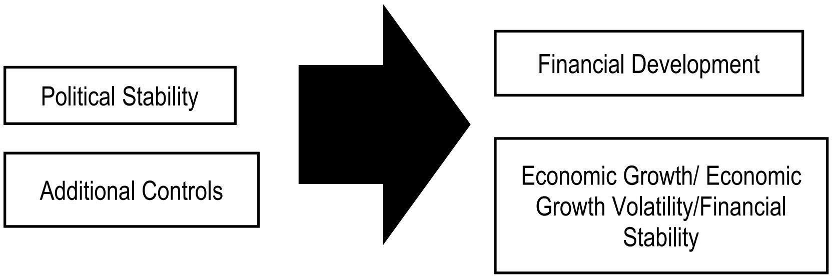
Schumpeter (1911) stressed that economic growth is crucial for financial development, and this has been supported by Miller (1998). This can be seen through the channels of risk reduction, lowering of financial transactions' cost, mobilization of household funds, subsequent allocation of these funds towards productive sectors of the economy, and reduction in external financing cost (Muhammad *et al.* 2014; Rajan and Zingales 1998). Financial development positively impacts agriculture and services sectors of the economy (Ustarz and Fanta 2021) and fosters economic growth (Ewubare and Ogbuagul 2017; Tang and Abosedra 2020). Financial development also reduces financial and economic volatility (Kapingura *et al.* 2022).

A wide range of related macroeconomic variables which have been explored by various researchers as dependent variables in this relationship include private investment, GDP growth per capita, private investment, public expenditures, public investment, taxation, inflation, and debt. However, there is hardly any literature available systematically exploring the relationship between political instability and financial development on component level analysis.

2.2. Theoretical Framework and Hypothesis

This study focuses on observing the impact of political instability on financial development and economic growth by approximating political stability with index provided by World Governance Index. Financial development (FD) is approximated through two composite indices *i.e.*, financial markets development (FM) and financial institutions development (FI). Three sub-measures for each of the index are financial depth, financial access, and financial efficiency. Nine measures identifying the different aspects of financial markets and institutions are used in this study. Figure 1 provides the hypothesized model.

Figure 1. Theoretical Model



2.2.1 Hypotheses

Based on the literature review, the hypotheses for this study are:

H1: Political stability has a positive relationship with financial development in developing countries.

H2: Political stability has a positive relationship with economic growth in developing countries.

H3: Political stability has a positive relationship with economic stability in developing countries.

H4: Political stability has a positive relationship with financial stability in developing countries.

3. Materials and Methods

3.1. Data Sources

The research relies on panel data for 33 developing nations covering the years 1980–2020. The data was sourced from Global Economy.com, Worldwide Governance Indicators, and the World Bank's World Development Indicators (GDI). The panel data was analyzed using Stata SE 15.

3.2. Measurement of Variables

The independent variable for this study is political stability (PS). The study of its impact on dependent variables; financial development (FD), economic growth (EG), economic growth volatility (EGV) and financial stability (FS) is amongst the objectives of this research. The study employs an index of political stability from Worldwide Governance Indicators (WGI) to explore this effect. These governance indicators are compiled on six governance dimensions. Political stability index is one of the dimensions of WGI. These aggregates are compiled from 30 different data sources of variety of think tanks, survey institutes, NGOs, and international organizations. Representative factors taken by sources to form the Political Stability Index include government stability, internal conflict, ethnic tensions, external conflict, social unrest, intensity of social conflicts (excluding the conflicts of land), intensity of internal conflicts, underground political organizations, intensity of social conflicts (excluding the conflicts of land), non-state armed conflict, military strikes to change the governments.

FD is our main dependent variable. The measurement for FD has long been and is still being debated especially in academia as pointed out by Edwards (1996) and Levine (2021). As a proxy for financial development, most of the earlier studies used private sector lending as percentage of the GDP for banking sector financial development (Al-Jarrah *et al.* 2012; Hussain and Chakraborty, 2012; Hassan *et al.* 2011; Inoubli and Khallouli, 2011; King and Levine, 1993). For measuring the financial development caused by financial markets, stock (market capitalizations) to GDP ratio has been used as proxy by various studies (Masoud and Hardaker, 2012; and Sahoo and Sethi, 2013). However, later literature suggests that financial development is a multidimensional phenomenon, and hence requires a move from the usage of single indicator proxies to measure it (Čihák *et al.* 2012; Aizenman *et al.* 2015).

Table 1. Assessment of financial depth, access and efficiency

	Depth	Access	Efficiency
Financial Institutions	Private Sector Credit (% of GDP)	Branches (Commercial Banks) per 100,000 adults	Net Interest Margin
	Pension Fund Assets (% of GDP)	ATMs per 100,000 adults	Lending-Deposits Spread
	Mutual Fund Assets (% of GDP)		None-Interest Income to Total Income
	Insurance Premiums (% of GDP)		Return on Assets Return on Equity
Financial Markets	Stock Market Capitalization to GDP	Percent of market capitalization outside of top 10 largest companies	Stock market turnover ratio (stocks traded/capitalization)
	Stock Traded to GDP	Total number of issuers of debt (domestic and external, nonfinancial corporations, and financial corporations	
	International Debt Securities (% of GDP)		
	Total Debt Securities of Nonfinancial Corporations (% of GDP)		
	Total Debt Securities of Financial Corporations (% of GDP)		

Adopted from: Sahay *et al.* (2015)

Our study shall provide policy makers with such inputs which are based on the systematic and detailed analysis of various facets of financial development viz-a-viz its relationship with economic growth, economic growth volatility, financial volatility, political stability by employing both financial markets and financial institutions aspects of financial sector on three dimensions of financial access, financial depth, and financial efficiency. In this backdrop, this study relates to that of Sahay *et al.* (2015), Svirydzenka (2016), Fernández *et al.* (2016), and Jiang *et al.* (2020) who used extensive indices for measurement of FD.

The expansion and improvement of financial markets and financial institutions are both part of the financial sector's development. Therefore, the development of financial markets and institutions should both be included in an index that measures financial development. There are three main criteria used to assess financial markets and institutions: depth, accessibility, and efficiency. Using the criteria presented in Table 1, we assess the three dimensions of financial depth, financial access, and financial efficiency.

As a first step in building the indices, 6 sub-indices Financial Institutions Depth (FID), Financial Institutions Access (FIA), Financial Institutions Efficiency (FIE), Financial Markets Depth (FMD), Financial Markets Access (FMA) and Financial Markets Efficiency (FME) are built. Each sub-index involves specific variables, e.g., Financial Institutions Depth (FID), a composite indicator, includes pension fund assets, private sector credit, insurance premiums (life and non-life) and mutual fund assets. A principal component analysis (PCA) is held to determine the weight for each variable of composite index. On second step, indices FI and FM get constructed through PCA on the basis of those sub-indices. In the final stage, FI and FM are used to build FD index.

The standard deviation of GDP growth is used to measure EGV. The banking Z-score at country level is used to measure FS, while for EG, the average of GDP per capita growth is used (Arcand *et al.* 2015; Beck and Levine 2004, among others). Following the work of Beck and Levine (2004) and Sahay *et al.* (2015), this study incorporates a number of variables at the national level to account for panel heterogeneity. Investments from outside the country (FDI), inflation (Inf), education level (Edu), public consumption (Consum), trade openness (TO), and gross capital inflow are all used as control variables (GCF).

3.3 Data Analysis

Heteroscedasticity, autocorrelation, and cross-sectional dependence were all factors that prompted us to choose a Panel Corrected Standard Error (PCSE) regression model, supplemented with GMM testing to ensure the results are robust.

3.3.1. Panel Corrected Standard Error (PCSE)

The presence of cross-sectional dependence may lead to invalid inferences or inefficient estimation in case standard techniques of estimation are used. Beck and Katz (1995) were the pioneers to suggest that in cases when the data exhibits heteroscedasticity, cross-sectional dependence (CSD), and autocorrelation, the Panel Corrected Standard Error (PCSE) estimate technique outperforms its alternatives. It's an enhanced version of inefficient OLS with two steps. One noteworthy benefit of PCSE is that it addresses serial correlation, contemporaneous correlation, and heteroscedasticity all at once (Sundjo and Aziseh 2018). PCSE estimator is observed to give efficient and robust outcomes.

PCSE estimator is not supported by some researchers to be that accurate in estimation when cross-sectional aspect of N is larger than time period T as it estimates complete N X N cross-section covariance matrix. However, Hoechle (2007) believes that PCSE works particularly well for large N and small T. Since we have cross-section of 33 developing countries tested for 40 years data from1980-2020, the issue of N being larger than time period T does not come into play. The characteristics of PCSE estimation technique described above and the issues of heteroscedasticity, autocorrelation, and cross-sectional interdependence related to our data leads us to use PCSE model of regression instead of random, common, or fixed effect models. Some recent studies have considered the use of PCSE estimator due to it providing good fit for the data characterized by issues like autocorrelation and heteroscedasticity (Pais-Magalhaes *et al.* 2022). According to Anton and Nucu (2020), 'panels corrected standard errors model' is beneficial to decrease the existence of autocorrelation, cross sectional dependence and heteroskedastic in the panel data. The study has run a technique of PCSE model to overcome all of these problems and for the accuracy of the final results (Haralayya and Aithal, 2021).

3.3.2. Additional Testing-GMM

The GMM estimator developed by Arellano and Bover (1995), building on the work of Levine *et al.* (2000), has gained popularity in finance-growth literature for its ability to tackle problems related to endogeneity and bias caused by omitted variables. According to Levine *et al.* (2000), the external part of the development of financial intermediaries has a significant and favourable effect on economic growth. Beck and Levine (2004) also validated this finding. According to Roodman (2006), the GMM difference estimator put out by Arellano and Bond (1991) and the GMM system estimator put out by Arellano and Bover (1995) and Blundell and Bond (1998) perform better when the number of nations is more than the time period. The two estimators mentioned are specifically designed for analysing micro-panel datasets (Eberhardt 2012). A diverse body of recent studies has utilised these methods to analyse macro-panel data for examining the connections between financial development (FD) and economic growth (EG) (Beck and Levine 2004; Arcand *et al.* 2012; Sahay *et al.* 2015; Abdul Bahri *et al.* 2018). Conducting GMM testing will enable us to address the potential problem of endogeneity. The 2-step Generalised Method of Moments (GMM) approach can effectively address the issue of temporal correlation in errors. Additionally, it has the ability to regulate heteroscedasticity among different countries. We employ the xtabond2 command to implement a 2-step generalised method of moments (GMM) system, as described by Roodman (2009).

3.3.3. Empirical Model

$$\mathrm{FD\ or\ EGV\ or\ FS\ or\ EG_{j,t}} = \gamma_0 + \gamma_1 \mathrm{PS_{j,t}} + \delta_m \sum_{m=1}^{n} X_{m,j,t} + \epsilon_{j,t} \qquad (1)$$

where, financial development (FD), economic growth (EG), economic growth volatility (EGV) and financial stability (FS) are dependent variables for country 'j' at time 't', political stability (PS) is independent variable for country 'j' at time 't'. Other symbols are interpreted as follows: γ_0 is the country fixed effect, γ_1 is the coefficient on relevant political stability indicators, δ is control of X variable country 'j' at time 't' and ε is the error term of the model. Equation (1) estimates the role of political stability on financial development, economic growth volatility, financial stability and economic growth (hypothesis 1 - 4). A positive coefficient (γ_1) on PS will signify an encouraging role of political stability on financial development and economic growth. Owing to panel structure of data, the choice of econometric model has been made based on diagnostic testing through BPLM test, the Hausman test, and the test for cross-sectional interdependence. Since the diagnostic testing shows multicollinearity, cross-sectional dependence and heteroscedasticity, we use Panel Corrected Standard Error model with additional testing of GMM as a check for robustness and to deal with possible endogeneity.

4. Results and Discussions

4.1 Political Stability and Financial Development

Table 2. Results for Political Stability and Financial Development

Variables	FD	FI	FM	FID	FIA	FIE	FMD	FMA	FME
PS	0.0560***	0.0415***	-0.0301***	0.0918***	0.0221***	0.0419***	0.0111***	0.0717***	-0.0307***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Inf	-0.3255***	-0.4012***	-0.2511***	-0.0664***	-0.0517***	-0.1930***	-0.1615***	-0.1112***	-0.0568***
	(0.000)	(0.004)	(0.000)	(0.000)	(0.000)	(0.000)	0.005	(0.000)	0.002
GCF	0.0081**	0.0107	-0.0025	-0.0101	0.0154**	-0.1642***	-0.0157	0.0096	0.0187
	(0.031)	(0.085)	(0.142)	(0.111)	(0.022)	(0.000)	(0.169)	(0.051)	(0.178)
FDI	-0.0116**	-0.0022***	0.0149	0.1475	0.0514	-0.0243**	0.0555***	-0.0082***	-0.0312***
	(0.020)	(0.002)	(0.112)	(0.147)	(0.089)	(0.035)	(0.001)	(0.005)	(0.000)
Edu	-0.1012***	-0.1352***	-0.0504***	-0.2121***	-0.0901***	0.0741***	-0.2179***	-0.0986***	-0.2175***
	(0.000)	(0.006)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Consum	-0.0869***	0.0567***	-0.3557***	0.0333***	0.0413***	-0.4176***	-0.5249***	-0.1814***	-0.4411***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	0.005	0.006	(0.000)	(0.000)
TO	0.0835***	0.0361***	0.0103***	0.1162***	0.0934***	0.0191***	0.0222***	0.9105***	-0.7156***
	(0.000)	(0.000)	(0.000)	0.001	(0.000)	(0.000)	(0.000)	0.010	(0.000)
Cons	0.4528***	0.4122***	0.1675***	0.0809***	0.1247***	0.2142***	0.8680***	0.0644***	0.0734**
	(0.000)	0.005	0.001	0.001	(0.000)	(0.000)	(0.000)	(0.000)	0.026
No. of Groups	33	33	33	33	33	33	33	33	33
No. of Obs	764	764	764	764	764	764	764	764	764
R^2	0.1614	0.1216	0.2215	0.2678	0.2570	0.1725	0.1198	0.2626	0.1946

Note: ***, **, * represent the 1%, 5%., and 10% significance level respectively.

Table 2 shows the results between these two variables for 33 developing countries. It also shows that an increase in political stability increases financial development. The result is significant with p-value of 0.000. It reflects that in the case of increase in political stability, financial development will also increase. The results are in line with Khan *et al.* (2022). There is a positive significant relationship on component level with financial institutions depth, financial institutions access, and financial institutions efficiency. It also holds good for the development of financial markets. There is a positive significant relationship on component level with financial markets depth and financial markets access. The results are consistent with Kacho and Dahmardeh (2017). Lalvani (2003) also concludes the same. However, he does not have pointed out any components of financial development impacted by political instability. An increase in political stability leads to an increase in financial development. Component level figures show that financial institutions' development increases with increased political stability. This necessarily means that bank-led financial development is positively correlated with political stability. A further probe reveals that all the sub-components of financial institutions' development *i.e.* financial institutions depth, access, and efficiency have a positive relationship with political stability. This means that increased political stability positively affects the financial institutions' depth, access, and efficiency. However, for financial markets efficiency, we observe a negative impact of political stability. This finding is also in line with Fagbemi and Omowumi (2020) for Nigeria who observe insignificant impact of institutional factors on FD. However, their overall conclusion deviates from what our results suggest. This is possible that their results are limited in applicability because of just focusing on efficiency and scale of credit as a measure of FD. The financial market development and its dimensions of access and efficiency are totally ignored by them. The only dimension they cater is the financial depth. Our approach to measure FD is based on much elaborate and advanced indices suggested by Sahay *et al.* (2015).

4.2 Political Stability and Economic Growth

Table 3. Results for Political Stability and Economic Growth

Economic Growth	Coefficient	P-value
PS	0.0240***	0.005
Inf	0.09473***	0.000
Gcf	-0.0348***	0.000
Fdi	0.0267***	0.000
Edu	0.0969***	0.000
Con	-0.0209***	0.000
TO	-0.0926***	0.000
Cons	0.0337***	0.000
No of Groups	33	
No. of observations	632	
R-squared	0.0845	

Note: ***, **, * represent the 1%, 5%., and 10% significance level respectively.

The results of significant and positive relationship between PS and EG also holds for 33 developing countries with p-value 0.05 (Table 3). Robustness check of GMM estimation also corroborates this result (Table 4). These results are in line with previous studies by Khan *et al.* (2022), Hussain (2014), Fatas and Mihov (2013), Gür and Akbulut (2012) and Siddiqui *et al.* (2022). Arslan *et al.* (2013) also shows the same relationship for country-level study in Turkey.

Table 4. GMM Results: Political Stability and Economic Growth

Economic Growth	Coefficient	P-value
PS	.0469***	.010
Inf	-.1365***	.019
Gcf	.2667***	.005
Fdi	.0423***	.011
Edu	.0717***	.027
Con	-.1122***	.007
TO	-.0188***	.001
Cons	.1067***	.006
No of Groups	33	
No. of observations	1476	

Note: ***, **, * represent the 1%, 5%., and 10% significance level respectively.

There a are number of researchers who show that poor institutional infrastructure has contributed towards low economic growth in low- and medium-income countries (Aluko and Ibrahim, 2020; Bordo and Rousseau, 2006; Harper and McNulty, 2008; Kutan *et al.* 2017). There is a significant positive relationship between PS and EG in the long run (Rathnayake, 2022; and Abaidoo and Agyapong (2021). Many plausible explanations are there for this relationship. Baklouti and Boujelbene (2020) observe that lack of PS negatively affects productive activity thereby decreasing EG. One of the plausible explanations for the negative relationship between political instability and EG is frequent policy changes (Dutt and Mitra, 2008; Berggren *et al.* 2012, Brunetti, 1997).

However, some researchers also provide the explanation that only political instability caused by regime changes impacts EG for example Pasha (2020) and Radu (2015). Another reason is that stability and smooth functionality of the financial sector is vital for economic growth. Such stability and smoothness of functionality is possible in a politically stable environment. Many researchers like Ehigiamusoe and Samsurijan (2020) have concluded their discussions in the same line of argument. Some researchers have reasoned that corruption leads to restraining the flow of FDI (Javorcik and Wei, 2009) and human capital development. Another reason for such results is that higher government spending in instable political environments impede the private sector development as also observed by Devereux and Wen (1998) and Utomo (2021). In such an environment, investor's confidence is eroded, and the governments tend to use the fiscal policy to stimulate the economy. The private sectors, therefore, may face crowding out effect in developing countries more than what they may see in the developed countries. The policy makers should investigate this aspect and try to create a more balanced approach for government and private spending to stimulate economic growth in developing countries.

4.3 Political Stability and Economic Growth Volatility

Table 5. Results for Political Stability and Economic Growth Volatility

Economic Growth Volatility	Coefficient	P-value
PS	0.0228***	0.001
Inflation	0.0137***	0.000
Gcf	-0.0322***	0.000
Fdi	0.0244**	0.012
Edu	0.0087***	0.000
Con	-0.0215***	0.000
TO	-0.0086***	0.000
Cons	0.0346***	0.000
No of Groups	33	
No. of observations	669	
R-squared	0.0812	

Note: ***, **, * represent the 1%, 5%., and 10% significance level respectively.

Table 5 shows a significant positive relationship between political stability and economic growth volatility. This means that political stability at higher levels leads to increase in economic growth volatility. This result seems to be surprising. However, there is a plausible explanation for the result of this study. Political stability may lead to rapid financial development by creating a conducive macroeconomic environment.

Table 6. Result of GMM: Political Stability and Economic Growth Volatility

Economic Growth Volatility	Coefficient	P-value
PS	-0.0247***	0.0013
Inflation	0.0547***	0.0150
Gcf	-0.0481***	0.0045
Fdi	0.0832***	0.0121
Edu	0.0248***	0.0017
Con	0.0852	0.0930
TO	-0.0555***	0.0029
Cons	0.03387	0.0970
No of Groups	33	
No. of observations	1476	

Note: ***, **, * represent the 1%, 5%., and 10% significance level respectively.

This may lead to rapid financial development. This rapid FD effect introduces economic growth volatility in developing countries. These countries have less developed institutional and regulatory infrastructure. We have already seen in our results of the relationship between FD and EV that at higher levels of FD there is an increase in EV. Pasha (2020) has also observed an insignificant relationship between riots, terrorism, or political associations with real GDP growth. Table 6 shows the results of our additional GMM testing for robustness. The results corroborate with PCSE estimation of relationship.

4.4 Political Stability and Financial Stability

Table 7. Results for Political Stability and Financial Stability

Financial Stability	Coefficient	P-value
PS	0.013**	0.028
Inflation	-0.056*	0.065
Gcf	0.0042	0.942
Fdi	-0.111**	0.025
Edu	0.246***	0.000
Con	-0.4399***	0.000
TO	-0.2039***	0.000
Cons	1.3227***	0.000
No of Groups	33	
No. of observations	669	
R-squared	0.1102	

Note: ***, **, * represent the 1%, 5%., and 10% significance level respectively.

Table 7 shows the results between political stability and financial stability for 33 developing countries. It shows that an increase in political stability increases financial stability. The result is significant with a p-value of 0.05. Our additional testing through GMM also confirms the positive association between political stability and financial stability (Table 8). Hartwell (2018) also observes that formal political stability reduces financial volatility.

Table 8. GMM Results: Political Stability and Financial Stability

Financial Stability	Coefficient	P-value
PS	0.0673***	0.000
Inflation	-0.1456***	0.002
Gcf	0.0116	0.831
Fdi	-0.4040***	0.001
Edu	0.0549***	0.000
Con	-0.1425***	0.019
TO	-0.0648***	0.000
Cons	0.0256***	0.000
No of Groups	33	
No. of observations	1474	

Note: ***, **, * represent the 1%, 5%., and 10% significance level respectively.

Conclusions and Recommendations

Political stability and financial development for developing countries is linear in relationship and this also holds for both financial institutions development and financial markets development. Also, all the dimensions of depth, access and efficiency are also showing the positive impact of political stability on financial development except for financial markets efficiency. Financial markets efficiency is reduced with the increase in political stability. Therefore, policy makers for developing countries need to focus on regulating the financial markets efficiency related practices in politically stable environments.

Our analysis for developing countries concludes that political stability positively impacts economic growth. The macro level policy makers need to understand that it is regime-change based political instability that leads to negative impact on economic growth (Pasha, 2020). Political instability caused by certain happenings like terrorist acts bears no statistically significant impact on economic growth from previous findings. It is therefore, recommended that in socio-economic environments characterized by regime-changed based political instability, the policy makers need to work on the perception of uncertainty and specifically the fear of macroeconomic policy changes in the wake of possible regime change. This would allow the consumption expenditure to normally move; both at capital goods and consumer goods level. Pakistan these days present a good case study for such regime change led political instability impacting the economy in a big way. Even IMF while negotiating for the bail-out package has asked for guarantee of policy continuity from former Prime Minister Imran Khan and his political party (Pakistan Tehreek-e-Insaf) because in case of nearer to free elections, there is every possibility that this party shall again come to power only after few years.

Our empirical results for developing countries indicate that there is a positive relationship between political stability and economic growth volatility. The result is not that surprising when we see that even in the presence of well-functioning financial systems, the rapid growth may lead to an increase in volatility. We, therefore, recommend that the policy makers in the developing countries should not only be focused on financialization but they must also ensure that the reforms in enabling environment are also keeping pace with the growth of financialization. Also, 33 developing countries conclude that on all three levels political stability positively affects financial stability. This refers to political instability which negatively impacts financial stability. This is interesting to see that in the previous section we see that political stability increases economic growth volatility for developing countries. Whereas for this section we have reached the conclusion that political stability positively affects financial stability for developing countries. This leads us to the important conclusion that the terms economic growth volatility and financial stability cannot be used synonymously as these are measured differently and one *i.e.* financial stability is a sub-set of the other *i.e.* economic stability. Therefore, the policy makers need to formulate the policies related to each of them according to the market and institutional realities pertaining to each of them. First, issues of synchronization between institutional modernization and social modernization leads to political disorder and chaos. This possibly may be the reason for differences in results developed and developing countries. This study has not taken this factor in to account and further investigation is therefore, required in this direction. Second, this study employed panel data however, disaggregation to economic sector level data may provide the insights for sector-specific national policy making.

Limitations of the Study

There are two limitations that we would highlight in this study. First, the issues of synchronization between institutional modernization and social modernization leads to political disorder and chaos. This possibly may be the reason for differences in results for developed and developing countries. This study has not taken this factor into account and further investigation is therefore required in this direction. Secondly, panel data was used in this investigation. Nevertheless, national policymakers may gain useful insights for sector-specific initiatives by also investigating the economic sector level data.

Credit Authorship Contribution Statement

Wasim Ullah: Conceptualization, Methodology, Software, Formal analysis, Writing – original draft, Data curation.
Ahmad Shauqi Mohamad Zubir: Investigation, Methodology, Supervision, Validation, Writing – review and editing, Funding.
Akmalia Mohamad Ariff: Conceptualization, Project administration, Data curation, Validation, Writing – review and editing, Visualization.

Declaration of Competing Interest

The authors declare that there are no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Declaration of Use of Generative AI and AI-assisted Technologies

The authors declare that they have not used generative AI and AI-assisted technologies during the preparation of this work.

References

[1] Abaidoo, Rexford, and Elvis Kwame Agyapong (2022). Financial Development and Institutional Quality among Emerging Economies. *Journal of Economics and Development*, 24(3): 198-216. DOI:https://doi.org/10.1108/JED-08-2021-0135

[2] Abdul Bahri, *et al.* (2018). Nonlinear Relationship between Financial Development and Economic Growth: Evidence from Post Global Financial Crisis Panel Data. *Jurnal Ekonomi Malaysia* 52(1): 13–29. DOI:https://doi.org/10.17576/JEM-2018-5201-02.

[3] Aisen, Ari, and Francisco J. Veiga (2013). How Does Political Instability Affect Economic Growth? *European Journal of Political Economy*, 29: 151-167. DOI: https://doi.org/10.1016/j.ejpoleco.2012.11.001

[4] Aizenman, Joshua, Yothin Jinjarak, and Donghyun Park (2015). Financial Development and Output Growth in Developing Asia and Latin America: A Comparative Sectoral Analysis. NBER Working Paper No. 20917. National Bureau of Economic Research. DOI: https://doi.org/10.3386/w20917

[5] Alesina, Alberto, and Roberto Perotti (1996). Income Distribution, Political Instability, and Investment. *European Economic Review*, 40(6): 1203-1228. DOI: https://doi.org/10.1016/0014-2921(95)00030-5

[6] Al-Jarrah, Idries Mohammed, M. F. Zu'bi, Osama Omar Jaara, and Muhammad Alshurideh (2012). Evaluating the Impact of Financial Development on Economic Growth in Jordan. *International Research Journal of Finance and Economics*, 94: 123-139.

[7] Aluko, Olufemi A., and Muazu Ibrahim (2020). Institutions and the Financial Development–Economic Growth Nexus in Sub-Saharan Africa. *Economic Notes*, 49(3): e12163. DOI: https://doi.org/10.1111/ecno.12163.

[8] Anton, Sorin Gabriel, and Anca Elena Afloarei Nucu (2020). Enterprise Risk Management: A Literature Review and Agenda for Future Research. *Journal of Risk and Financial Management* 13(11): 281. DOI:https://doi.org/10.3390/jrfm13110281

[9] Anyanwu, John C. (2017). Foreign Direct Investment. In *Handbook of Globalisation and Development*, 131-152. Edward Elgar Publishing. DOI: http://dx.doi.org/10.4337/9781783478651.00015

[10] Arcand, Jean Louis, Enrico Berkes, and Ugo Panizza (2015). Too Much Finance? *Journal of Economic Growth*, 20: 105-148. DOI: https://doi.org/10.1007/s10887-015-9115-2

[11] Arcand, Jean-Louis, Enrico Berkes, and Ugo Panizza (2012). Too Much Finance? IMF Working Paper 12/161. International Monetary Fund. https://www.imf.org/external/pubs/ft/wp/2012/wp12161.pdf

[12] Arellano, Manuel, and Olympia Bover (1995). Another Look at the Instrumental-Variable Estimation of Error-Components Models. *Journal of Econometrics*, 68. DOI: https://doi.org/10.1016/0304-4076(94)01642-D

[13] Arellano, Manuel, and Stephen Bond (1991). Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations. *Review of Economic Studies*, 58: 277-297. DOI:https://doi.org/10.2307/2297968

[14] Arslan, Ahmad, Najid Ahmad, and Sharafat Ali (2013). Exchange Rate and Economic Growth in Pakistan (1975-2011). *Journal of Basic and Applied Scientific Research*, 3(8): 740-746

[15] Attila, Joseph G. (2022). Does Bank Deposits Volatility React to Political Instability in Developing Countries? *Finance Research Letters,* 49: 103126. DOI: https://doi.org/10.1016/j.frl.2022.103126

[16] Bakaboukila Ayessa, Emerentienne, and Jacques Hakizimana (2021). Effects of Political Instability on Economic Growth in the Republic of Congo. *Modern Economy* 12(12): 1896–912. DOI:https://doi.org/10.4236/me.2021.1212099

[17] Baklouti, Nedra, and Younes Boujelbene (2020). An Econometric Study of the Role of the PoPoliticallity on the Relationship between Democracy and Economic Growth. *Panoeconomicus,* 67(2): 187–206. DOI:https://doi.org/10.2298/PAN170308015B

[18] Beaulieu, M. C., J. C. Cosset, and N. Essaddam (2005). The impact of political risk on the volatility of stock returns: the case of Canada. *Journal of International Business Studies,* 36: 701–18.

[19] Beck, Nathaniel, and Jonathan N. Katz (1995). What to Do (and Not to Do) with Time-Series Cross-Section Data. *American Political Science Review,* 89(3): 634–47. DOI: https://doi.org/10.2307/2082979

[20] Beck, Thorsten, and Ross Levine (2004). Stock Markets. Stock Markets, Banks, and Growth: Panel Evidence. *Journal of Banking and Finance,* 28(3). DOI: https://doi.org/10.1016/S0378-4266(02)00408-9

[21] Ben Ghozzi, Bechir, and Hasna Chaibi (2022). Political Risks and Financial Markets: Emerging vs Developed Economies. *EuroMed Journal of Business,* 17(4): 677–97. DOI: https://doi.org/10.1108/EMJB-11-2020-0123

[22] Berggren, Niclas, Andreas Bergh, and Christian Bjørnskov (2012). The Growth Effects of Institutional Instability. *Journal of Institutional Economics,* 8(2): 187–224. DOI:https://doi.org/10.1017/S1744137411000488

[23] Bernanke, Ben S., and Mark Gertler (2012). Monetary Policy and Asset Price Volatility. In *New Perspectives on Asset Price Bubbles*, 173–210. Oxford, New York.

[24] Białkowski, Jędrzej, Katrin Gottschalk, and Tomasz Piotr Wisniewski (2008). Stock Market Volatility around National Elections. *Journal of Banking and Finance,* 32(9): 1941–53. DOI:https://doi.org/10.1016/j.jbankfin.2007.12.021

[25] Blundell, Richard, and Stephen Bond (1998). Initial Conditions and Moment Restrictions in Dynamic Panel Data Models. *Journal of Econometrics,* 87: 115-43. DOI: https://doi.org/10.1016/S0304-4076(98)00009-8

[26] Bordo, Michael D., and Peter L. Rousseau (2006). Legal-Political Factors and the Historical Evolution of the Finance-Growth Link. *European Review of Economic History* 10(3): 421–44. DOI:https://doi.org/10.1017/S136149160600181X

[27] Brunetti, Aymo (1997). Political Variables in Cross-Country Growth Analysis. *Journal of Economic Surveys* 11, no. 2: 163–90. https://doi.org/10.1111/1467-6419.00029.

[28] Canes-Wrone, Brandice, and Jee-Kwang Park (2012). Electoral Business Cycles in OECD Countries. *American Political Science Review* 106, no. 1: 103–22. https://doi.org/10.1017/S0003055411000529.

[29] Canes-Wrone, Brandice, and Jee-Kwang Park (2014). 'Elections, Uncertainty and Irreversible Investment.' *British Journal of Political Science* 44, no. 1: 83–106. https://doi.org/10.1017/S000712341200049X.

[30] Carmignani, Fabrizio (2003). Political Instability, Uncertainty and Economics. *Journal of Economic Surveys* 17, no. 1: 1–54. DOI: https://doi.org/10.1111/1467-6419.00187.

[31] Castells, Pau, and Francesc Trillas (2013). The effects of surprise political events on quoted firms: the March 2004 election in Spain, *Series*, Vol. 4, no. 1: 83–112.

[32] Chen, Baizhu, and Yi Feng (1996). Some Political Determinants of Economic Growth: Theory and Empirical Implications. *European Journal of Political Economy* 12, no. 4: 609–27. https://doi.org/10.1016/S0176-2680(96)00019-5.

[33] Čihák, Martin, Aslı Demirgüç-Kunt, Erik Feyen, and Ross Levine (2012). Benchmarking Financial Development Around the World. *World Bank Policy Research Working Paper* . DOI:https://doi.org/10.12691/ijefm-7-1-1

[34] Devereux, Michael B., and Jean-François Wen (1998). Political Instability, Capital Taxation, and Growth. *European Economic Review* 42, no. 9: 1635–51. https://doi.org/10.1016/S0014-2921(97)00100-1.

[35] Dirks, Maximilian, and Torsten Schmidt (2023). The Relationship Between Political Instability and Economic Growth in Advanced Economies: Empirical Evidence from a Panel VAR and a Dynamic Panel FE-IV Analysis. *Ruhr Economic Papers*, no. 1000. https://doi.org/10.4419/96973166

[36] Dutt, Pushan, and Devashish Mitra (2008). Inequality and the Instability of Polity and Policy. *Economic Journal* 118, no. 531: 1285–314. DOI: https://doi.org/10.1111/j.1468-0297.2008.02170.x.

[37] Eberhardt, Markus (2012). Estimating Panel Time-Series Models with Heterogeneous Slopes. *STATA Journal: Promoting Communications on Statistics and Stata* 12, no. 1: 61–71. DOI:https://doi.org/10.1177/1536867X1201200105.

[38] Edwards, Sebastian (1996). Exchange Rates and the Political Economy of Macroeconomic Discipline, *The American Economic Review* 86, no. 2: 159-163. DOI: https://doi.org/10.3386/w7228

[39] Effiong, Ekpeno (2015). Financial Development, Institutions and Economic Growth: Evidence from Sub-Saharan Africa, MPRA Paper 66085, University Library of Munich, Germany. https://doi.org/10.1002/ijfe.1967

[40] Ehigiamusoe, Kizito Uyi, and Mohamad Shaharudin Samsurijan (2021). What Matters for Finance-Growth Nexus? A Critical Survey of Macroeconomic Stability, Institutions, Financial and Economic Development. *International Journal of Finance and Economics* 26, no. 4: 5302-5320. DOI: https://doi.org/10.1002/ijfe.2066

[41] Fagbemi, Fisayo, and Grace Omowumi Adeoye (2020). Nigerian Governance Challenge: Exploring the Role of Natural Resource Rents. *Global Journal of Emerging Market Economies* 12, no. 3: 335–58. DOI:https://doi.org/10.1177/0974910120919001.

[42] Fatás, Antonio, and Ilian Mihov (2003). The Case for Restricting Fiscal Policy Discretion, *Quarterly Journal of Economics* 118, no. 4: 1419–47. DOI: https://doi.org/10.1162/003355303322552838.

[43] Fernández, Andrés, Michael W. Klein, Alessandro Rebucci, Martin Schindler, and Martin Uribe (2015). Capital Control Measures: A New Dataset, NBER Working Paper No. w20970. DOI:https://doi.org/10.3386/w20970

[44] Ghardallou, Wafa, and Dorsaf Sridi (2020). Democracy and Economic Growth: A Literature Review, *Journal of the Knowledge Economy* 11, no. 3: 982–1002. DOI: https://doi.org/10.1007/s13132-019-00594-4.

[45] Goodell, John W., and Sami Vähämaa (2013). US Presidential Elections and Implied Volatility: The Role of Political Uncertainty. *Journal of Banking and Finance* 37(3): 1108–17. DOI:https://doi.org/10.1016/j.jbankfin.2012.12.001

[46] Gür, Timur Han, and Hale Akbulut (2012). Gelişmekte Olan Ülkelerde Politik İstikrarın Ekonomik Büyüme Üzerine Etkisi. *Sosyoekonomi*, 17(17). DOI: https://doi.org/10.17233/se.65402

[47] Gurgul, Henryk, and Łukasz Lach (2013). Political Instability and Economic Growth: Evidence from Two Decades of Transition in CEE. *Communist and Post-Communist Studies,* 46(2): 189–202. DOI:https://doi.org/10.1016/j.postcomstud.2013.03.008.

[48] Haralayya, Bhadrappa, and P. S. Aithal (2021). Factors Determining the Efficiency in Indian Banking Sector: A Tobit Regression Analysis. *International Journal of Science and Engineering Development Research,* 6(6): 1-6. DOI: https://doi.org/10.4236/ojmsi.2021.93018

[49] Harper, Joel T., and James E. McNulty (2008). Financial System Size in Transition Economies: The Effect of Legal Origin. *Journal of Money, Credit and Banking,* 40(6). DOI: 10.1111/j.1538-4616.2008.00156.x

[50] Hartwell, Christopher A. (2018). The Impact of Institutional Volatility on Financial Volatility in Transition Economies. *Journal of Comparative Economics* 46(2): 598–615. DOI:https://doi.org/10.1016/j.jce.2017.11.002

[51] Hasan, Mahmood, Nawazish Ameer Haider, and Saif Ullah (2023). Democracy, Political Stability and Economic Growth: A Panel Data Analysis of Selected Asian Countries. *Journal of Economic Impact,* 5(1): 92–9. DOI: https://doi.org/10.52223/jei5012311

[52] Hassan, M. Kabir, Benito Sanchez, and Jung-Suk Yu (2011). Financial Development and Economic Growth: New Evidence from Panel Data. *Quarterly Review of Economics and Finance,* 51(1): 88–104. DOI:https://doi.org/10.1016/j.qref.2010.09.001

[53] Hoechle, Daniel (2007). Robust Standard Errors for Panel Regressions with Cross-Sectional Dependence, *Journal: Promoting Communications on Statistics and Stata,* 7(3): 281–312. DOI:https://doi.org/10.1177/1536867X0700700301.

[54] Hsing, Yu, and Wen-jen Hsieh (2012). Impacts of Macroeconomic Variables on the Stock Market Index in Poland: New Evidence. *Journal of Business Economics and Management,* 13(2): 334-343. DOI:https://doi.org/10.3846/16111699.2011.620133

[55] Huntington, Samuel P. (1965). Political Development and Political Decay. *World Politics,* 17(3): 386–430. DOI: https://doi.org/10.2307/2009286. S2CID 154009538

[56] Hussain, Farah, and Deb Kumar Chakraborty (2012). Causality between Financial Development and Economic Growth: Evidence from an Indian State. *Romanian Economic Journal,* 15(35): 27–48. DOI:https://doi.org/10.17233/se.65402

[57] Hussain, Z., and June T.Z. (2014). Can Political Stability Hurt Economic Growth?, World Bank Blogs. Available at: https://blogs.worldbank.org/endpovertyinsouthasia/can-political-stability-hurteconomic-growth

[58] Inoubli, Chokri, and Wajih Khallouli (2011). Does Financial Development Impact on Growth? Empirical Evidence with Threshold Effect in the MENA Region, In *ERF 17th Annual Conference Paper*.

[59] Irshad, Hira (2017). Relationship among Political Instability, Stock Market Returns and Stock Market Volatility. *Studies in Business and Economics*, 12(2): 70–99. DOI: https://doi.org/10.1515/sbe-2017-0023

[60] Javorcik, Beata S., and Shang-Jin Wei (2009). Corruption and Cross-Border Investment in Emerging Markets: Firm-Level Evidence. *Journal of International Money and Finance,* 28(4): 605–24. DOI:https://doi.org/10.1016/j.jimonfin.2009.01.003

[61] Jayachandran, Seema (2006). The Jeffords Effect. *Journal of Law and Economics,* 49(2): 397–425. DOI:https://doi.org/10.1086/501091

[62] Jiang, Julie, Emily Chen, Shen Yan, Kristina Lerman, and Emilio Ferrara (2020). Political Polarization Drives Online Conversations About COVID-19 in the United States. *Human Behavior and Emerging Technologies* 2(3): 200–11. DOI: https://doi.org/10.1002/hbe2.202

[63] Jong-A-Pin, R. (2009). On the Measurement of Political Instability and Its Impact on Economic Growth. *European Journal of Political Economy,* 25(1): 15-29. DOI: https://doi.org/10.1016/j.ejpoleco.2008.09.010

[64] Kacho, Ali Ahmadpour, and Nazar Dahmardeh (2017). The Effects of Financial Development and Institutional Quality on Economic Growth with the Dynamic Panel Data Generalized Moment Method Method: Evidence from the Organization for Economical Cooperatio. *International Journal of Economics and Financial Issues,* 7(3): 461-467. DOI: https://doi.org/10.17233/se.65402

[65] Kapingura, Forget Mingiri, Nwabisa Mkosana, and Suhal Kusairi (2022). Financial Sector Development and Macroeconomic Volatility: Case of the Southern African Development Community Region. *Cogent Economics and Finance,* 10(1): 2038861-203. DOI: https://doi.org/10.1080/23322039.2022.2038861

[66] Khan, Hayat, Sher Khan, and Fan Zuojun (2022). Institutional Quality and Financial Development: Evidence from Developing and Emerging Economies. *Global Business Review,* 23(4): 971–83. DOI:https://doi.org/10.1177/0972150919892366

[67] Khisa, Moses (2015). Political Uncertainty and its Impact on Social Service Delivery in Uganda. *Africa Development,* 40(4): 159-188.

[68] King, Robert, and Ross Levine (1993). Finance and Growth: Schumpeter Might Be Right. *The Quarterly Journal of Economics*, 108 (3): 717–37. DOI: https://doi.org/10.2307/2118406

[69] Kutan, Ali M., Nahla Samargandi, and Kazi Sohag (2017). Does Institutional Quality Matter for Financial Development and Growth? Further Evidence from MENA Countries. *Australian Economic Papers,* 56(3): 228-248. DOI: https://doi.org/10.1111/1467-8454.12097

[70] Lalvani, Mala (2003). Sounding the Alarm: Impact of Political Instability on Growth and Fiscal Health of the Indian Economy. *Economics of Governance,* 4: 103-114. DOI: https://doi.org/10.1007/s101010200047

[71] Levine, Ross, Norman Loayza, and Thorsten Beck (2000). Finance and the Sources of Growth. *Journal of Financial Economics*, 58 (1/2): 261–300. DOI: https://doi.org/10.1016/S0304-405X(00)00072-6

[72] Levine, Ross (2005). Finance and Growth: Theory and Evidence. In Handbook of Economic Growth, Vol. 1, Chapter 12, 865–934. Elsevier. DOI: https://doi.org/10.3386/w10766

[73] Levine, Ross (2021). Finance, Growth, and Inequality. IMF Working Paper No. 2021/164. DOI:https://doi.org/10.5089/9781616356521.001

[74] Łukasz, Jannils (2021). The Concept of Political Instability in Economic Research. *International Journal of Management and Economics* 57(3): 268-284. DOI: https://doi.org/10.2478/ijme-2021-0016

[75] Masoud, Najeb, Hardaker, Glenn (2012). Do Financial Market Lead to Economic Growth? A Causality Test in Jordan. *Journal of Investment and Management,* 2(5): 87-103. DOI: https://doi.org/10.11648/j.jim.20130205.11

[76] McKibbin, J. Warwick, and Fernando, Roshen (2020). Global Macroeconomic Scenarios of the COVID-19 Pandemic. *CAMA Working Paper* No. 62/20. DOI: http://dx.doi.org/10.2139/ssrn.3635103

[77] Miller, H. Merton (1998). Financial Markets and Economic Growth. *Journal of Applied Corporate Finance* 11(3): 8-14. DOI: https://doi.org/10.1111/j.1745-6622.1998.tb00498.x

[78] Murad M. Samih., and Alshyab, Nooh (2019). Political instability and its impact on economic growth: the case of Jordan. *International Journal of Development Issues* 18(3): 366-380. DOI: 10.1108/IJDI-02-2019-0036

[79] Naqvi, Takreem, Abdul Waheed, Hamid Mahmood, and Muhammad Rafique (2017). Impact of Political Instability on Financial Development of Pakistan. *International Journal of Management Sciences and Business Research* 6(4). Available at SSRN: https://ssrn.com/abstract=2964181

[80] Ndokang, L., and Tsambou (2019). Instabilite politique en Republique centrafricaine (RCA) et performance de croissance de l'economie camerounaise. *Les Cahiers du CEDIMES,* 13: 9-28. DOI:https://doi.org/10.19044/esj.2019.v15n13p9

[81] Ogbuagu, Anuli Regina, and Dennis Brown Ewubare (2017). Financial Deepening Implications for Volatility and EG in Nigeria: A Multivariate Approach. *International Journal of Economics, Finance and Management Sciences,* 5(1): 66–80. DOI: https://doi.org/10.11648/j.ijefm.20170501.16

[82] Pais-Magalhães, Vera, Victor Moutinho, and Margarita Robaina (2022). Is an ageing population impacting energy use in the European Union? Drivers, lifestyles, and consumption patterns of elderly households. *Energy Research and Social Science,* 85: 102443. DOI: https://doi.org/10.1016/j.erss.2021.102443

[83] Papadamou, Stepsons, Moise Sidiropoulos, and Eleftherios Spyromitros (2014). Does central bank transparency affect stock market volatility? *Journal of International Financial Markets, Institutions and Money,* 31: 362-377. DOI: https://doi.org/10.1016/j.intfin.2014.04.003

[84] Papaioannou, Elias (2009). What drives international financial flows? Politics, institutions and other determinants. *Journal of Development Economics*, 88(2): 269-281. DOI:https://doi.org/10.1016/j.jdeveco.2008.07.001

[85] Pasha, Sukrishnalall (2020). The impact of political instability on economic growth: the case of Guyana. *International Journal of Management Sciences and Business Research*. Available at SSRN:https://ssrn.com/abstract=103145

[86] Prasad, S. Pathak (2012). Political Instability in Nepal: Examining the Roles of the Parties and Monarchy in the Second Democratic Period (1990-2002). *The Journal of Social Science,* 73: 149-170. DOI:https://doi.org/10.1016/j.soscij.2012.03.008

[87] Przeworski, A. Alvarez, Cheibub A. Jose, and Limongi, Fernando (2000). Democracy and Development: Political Institutions and Well-Being in the World, 1950–1990. *Cambridge University Press*. DOI:https://doi.org/10.1017/CBO9780511804946

[88] Radu. Madalina (2015). Political Stability-a Condition for Sustainable Growth in Romania? *Procedia Economics and Finance,* 30: 751–757. DOI: https://doi.org/10.1016/S2212-5671(15)01324-6

[89] Rajan, Raghuram G., and Luigi Zingales (1996). Financial Dependence and Growth. *American Economic Review* 88(3): 559-86. DOI: https://doi.org/10.3386/w5758

[90] Rathnayake, Ananda (2022). Is Political Instability an Obstacle to Economic growth? Evidence from South Asia. *Vidyodaya Journal of Management*, 8 no. II:185 – 207. DOI: https://doi.org/10.31357/vjm.v8iII.6095

[91] Rigobon, Roberto, and Brian Sack (2003). Measuring the Reaction of Monetary Policy to the Stock Market. *The Quarterly Journal of Economics,* 118(2): 639-669. DOI: https://doi.org/10.1162/003355303321675473

[92] Roodman, David (2009). How to do xtabond2: An introduction to difference and system GMM in Stata. *The Stata Journal,* 9(1): 86-136. DOI: https://doi.org/10.1177/1536867X0900900106

[93] Sahay, Ratna, Martin Čihák, Papa N'Diaye, and Adolfo Barajas (2015). Rethinking financial deepening: Stability and growth in emerging markets. *Revista de Economía Institucional,* 17(33): 73-107. DOI:https://doi.org/10.18601/01245996.v17n33.04

[94] Sahoo, Kalpana, and Narayan Sethi (2013). Impact of foreign aid on economic growth and economic development in India, *The Asian Economic Review: Journal of the Indian Institute of Economics,* 55(1): 61-86. DOI: https://doi.org/10.1177/0972150917692198

[95] Schumpeter, Joseph A. (2008). The Theory of Economic Development. *Journal of Business Research,* 12: 45-70. DOI: https://doi.org/10.1007/0-306-48082-4_3

[96] Shahbaz, Muhammad, Ijaz Ur Rehman, and Ahmed Taneem Muzaffar (2015). Re-Visiting Financial Development and Economic Growth Nexus: The Role of Capitalization in Bangladesh. *South African Journal of Economics,* 83(3): 452-471. DOI: https://doi.org/10.1111/saje.12053

[97] Siddiqui. M. Begum, Shaikh Maria, Lolai, M. Bakhsh, and Keerio, N. Noresh (2022). Impact of An Uncertain Political System on The Volatility of The Financial Markets in The Fiscal Year 2021–2022. Evidences From Pakistan. *International Research Journal of Management and Social Sciences* 3(1): 222–232. DOI:https://doi.org/10.53575/irjmss.v3.1(22)22.222-232

[98] Souffargi, Wafa, and Adel Boubaker (2024). Impact of political uncertainty on stock market returns: the case of post-revolution Tunisia. *Cogent Social Sciences,* 10(1): 2324525. DOI:https://doi.org/10.1080/23311886.2024.2324525

[99] Sundjo, Fabien, and Fozoh Aziseh (2018). An empirical investigation into the key drivers of economic performance in the CEMAC zone: A panel corrected standard errors approach. *International Journal of Business, Economics and Management*, 5(6): 189-200. DOI:https://doi.org/10.18488/journal.62.2018.56.189.200

[100] Svirydzenka, Katsiaryna (2016). Introducing a New Broad-Based Index of Financial Development. *IMF Working Paper* no. 16/5. DOI: https://doi.org/10.5089/9781513583709.001

[101] Talbi, Dorra, Hasna Chaibi, and Aymen Maoueti (2022). Political uncertainty, financial crises, and stock market volatility: Evidence from MENA region. *Journal of Public Affairs,* 22: e2783. DOI:https://doi.org/10.1002/pa.2783

[102] Tang, Chor Foon, and Salah Abosedra (2020). Does financial development moderate the effects on growth volatility? The experience of Malaysia. *Margin: The Journal of Applied Economic Research,* 14(4): 361-381. DOI: https://doi.org/10.1177/0973801020953400

[103] Thorbecke, Willem (1997). On Stock Market Returns and Monetary Policy. *Journal of Finance,* 52(2): 635-54. DOI: https://doi.org/10.1111/j.1540-6261.1997.tb04816.x

[104] Ustarz, Yazidu, and Ashenafi Beyene Fanta (2021). Financial development and economic growth in sub-Saharan Africa: A sectoral perspective. *Cogent Economics and Finance*, 9(1): 1-21. DOI:https://doi.org/10.1080/23322039.2021.1934976

[105] Utomo, Budi, *et al.* (2021). The impact of family planning on maternal mortality in Indonesia: what future contribution can be expected? *Population Health Metrics*, 19(2): 1-13. DOI: https://doi.org/10.1186/s12963-020-00245-w

[106] Wanjiru, Roseline, and Karla Simone Prime (2020). Institutional capacity, trade and investment in African economies. In *The Handbook of Global Trade Policy*: 418-438. DOI:https://doi.org/10.1002/9781119167402.ch16

[107] Yu, Shu, and Richard Jong-A-Pin (2020_. Rich or alive? Political (in) stability, political leader selection and economic growth. *Journal of Comparative Economics*, 48(3): 561-577. DOI:https://doi.org/10.1016/j.jce.2019.11.004

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The Impact of Digital Ecosystems on the Financial Management Efficiency in State Institutions

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Abstract: Purpose: Digital ecosystems are a key driver of development at the current stage, in particular, in state institutions. Increasing efficiency of financial management through digitalization in the public sector is one of the key directions. The aim of the study is to determine the impact of digital ecosystems on the results of financial management in Ukrainian and Azerbaijani public institutions.

Methodology: The research employed the methodological tools of regression and correlation analysis, as well as descriptive statistics to determine the impact of digitalization on the effectiveness of financial management of institutions. The application of the least squares method revealed a statistically significant positive effect of digital technology spending ($\beta 1 = 0.0528$, $p = 0.010$) on management efficiency, while other variables showed insignificant or negative effects. The model explains 43.6% of the variation in the dependent variable, with R-squared = 0.436 and Adjusted R-squared = 0.285.

Findings: Correlation analysis confirmed a strong positive relationship ($r=0.58$) between digitization costs and management efficiency. The article provides practical recommendations for optimizing the implementation of digital technologies in the management of public finances, including the development of electronic services and increasing the level of digital literacy.

Originality: Further research in the chosen direction will be focused on the formation and implementation of a system of key indicators of the effectiveness of digital ecosystems from the perspective of the efficiency of financial management in public institutions of Ukraine and Azerbaijan.

Keywords: financial management; digital strategies; digital ecosystems; investment in digitization; state institutions.
JEL Classification: G20; G28; G30.

Introduction

The speed of technological development is constantly increasing in the modern world require state institutions to adapt to new challenges. One of the main directions of such adaptation is the digitalization of financial management of state institutions, which includes the integration of digital ecosystems. These systems have the potential to significantly increase the efficiency of the management processes of institutions by optimizing the work with data, increasing transparency, and simplifying the interaction between different departments and institutions. The government's digital services are central to the fulfilment of its mission. For example, the US government (The White House, 2023) recorded 2 billion visits to federal websites every month, representing about 80 million hours of interaction with the public. Meanwhile, 45% of federal websites are not mobile-friendly, and 60% of federal websites have potential accessibility issues. Given the importance of these aspects, the relevance of researching the impact of digital ecosystems on financial management is becoming increasingly urgent.

Accordingly, an important task is the analysis of the effectiveness of the implementation of digital ecosystems in the financial management of state institutions, the identification of the main advantages and possible risks that may arise in this process. The existing studies are often reduced to evaluating the technical aspects of the implementation of digital systems and leave aside the important issues of organizational changes, cultural resistance, and the impact on human resource (HR) management policies. Besides, insufficient attention is paid to the analysis of the long-term impact of digitalization on the sustainability of financial management and goals in this area for public institutions. In this regard, it is important to rely on the experience of implementing digital technologies in different countries, analyse examples of successful practices and point out problematic aspects that require additional research. The main challenges arising from the integration of digital ecosystems in state institutions include complications with data standardization, information security, and compatibility of various platforms. At the same time, digital ecosystems offer ample opportunities to automate many processes of public institutions that traditionally require significant time and resources. Accordingly, research should focus on assessing the impact of the implementation of digital technologies not only on increasing the efficiency of financial operations, but also on ensuring greater responsibility and transparency of state institutions.

The aim of the article is to determine the impact of digital ecosystems on the effectiveness of financial management in state institutions in order to identify the possibilities of digitalization in Ukraine and Azerbaijan. The aim involves the fulfilment of the following research objectives:

1. Analyse modern financial management practices in state institutions under the influence of digitalization;
2. Assess the relationship between digital ecosystems and the effectiveness of financial management in state institutions of Ukraine and Azerbaijan;
3. Develop strategies for the optimal implementation of digital solutions in financial management for increasing the efficiency of state institutions.

1. Literature Review

Many studies deal with the problems of using digital systems in various organizations, including the state system, and their impact on financial efficiency. Zhuk (2022) examines how digital technologies are transforming public financial management. The work analyses new challenges and opportunities that arise in connection with the introduction of digital tools, and also indicates changes in decision-making processes and their transparency. Agyapong (2021) examines how digitization is affecting institutions in Ghana. The study determines the impact of digital innovation on efficiency and financial inclusion. It is emphasized separately that the digital economy can have both positive and negative factors of influence on the state of society. Ekīnci (2021) analyses how digitalization affects the efficiency of financial services. The work considers digitization as a key factor that improves service and reduces the cost of providing it. Tian *et al.* (2022) examine how the development of the digital economy contributes to the efficiency of public sector investment. The results show that digitalization can significantly increase the efficiency of investment in environmental projects. Volosovych and Baraniuk (2019) examine the impact of digitization on public financial control. The researchers cover the changes in control and audit mechanisms that occur due to the introduction of digital technologies, separately focusing on increasing the efficiency and transparency of public finances. Bisht *et al.* (2022) emphasize that digitalization increases the transparency, efficiency, and adaptability of financial processes of institutions.

Wang *et al.* (2022) indicate that digitalization in finance contributes to the growth of efficiency, innovation, and competitiveness of organizations. Mavļutova *et al.* (2022) see digitization as a key element for sustainable development through improved financial inclusion and operational efficiency. Melnik and Antipova (2019) analyse how managerial aspects affect the implementation of digital technologies and indicate the need to adapt organizational structures. Taka and Bayarçelik (2023) emphasize that the sustainable implementation of digital technologies requires not only technological changes, but also organizational, cultural, and strategic innovations. Wang *et al.* (2020) analyse how digitalization affects the efficiency of financial management. The study shows that the implementation of digital technologies helps to optimize processes, reduce costs and increase the overall efficiency of the organization. Hontar (2021) examines how fintech solutions integrate into the wider financial ecosystem. The work emphasizes the advantages provided by digital platforms for controlling and managing finances and points to the importance of smart technologies in this process. Konovalova *et al.* (2019) analyse how digitalization is changing fundamental aspects of the monetary system. In this context, they study how digital currencies and new forms of payment systems affect the traditional understanding of money, its functions, and role in society.

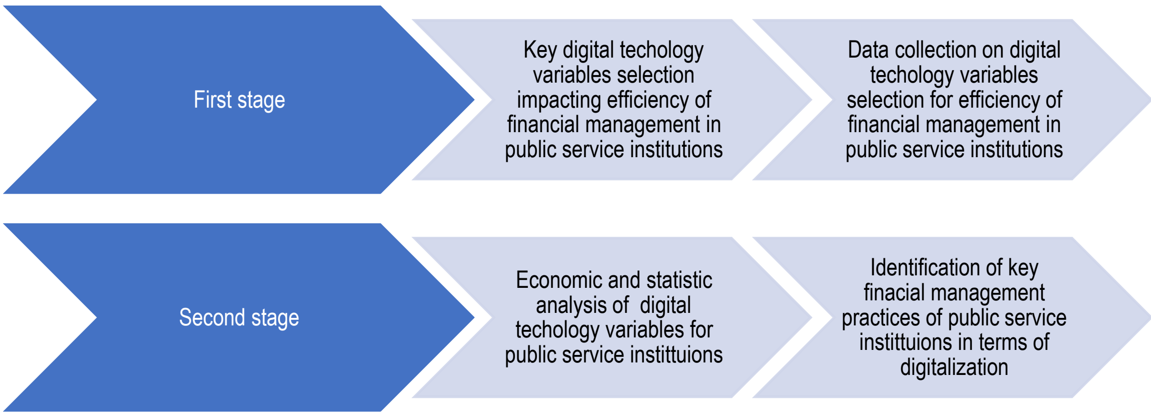
Muharsito and Muharam (2023) analyse the impact of digital financial inclusion on the performance of public banks. Digital inclusion enables state banks to optimize their resources and improve quantitative performance indicators. Moşteanu (2020) focuses on the impact of digitalization of financial services on the labour market. The author analyses how technological changes require new skills and cause changes in the employment structure. Digitization contributes to increased efficiency, but also requires retraining of employees and adaptation to new working conditions. Syrtseva *et al.* (2021) investigate the application of digital technologies in financial accounting and control over tax obligations of budget institutions. The researcher indicates an improvement in the accuracy and transparency of financial reporting using modern digital tools, which allows for more effective management of public resources. Burlacu *et al.* (2021) considers digital finance as a catalyst for development in the new economy. Researchers note that the integration of digital technologies opens new opportunities for growth and innovation, promotes sustainable development. Serah *et al.* (2024) examines the role of digital services in law enforcement from the perspective of the financial efficiency of the institution. Krasnykov *et al.* (2024) examine the impact of e-governance on the quality of public services and municipal property management. The work identifies the advantages and challenges associated with the implementation of electronic management, and also provides examples of best practices in this area. However, the issue of the influence of digital ecosystems on the effectiveness of financial management in state institutions of a number of developing countries (primarily, Ukraine and Azerbaijan) has not been sufficiently studied and requires more detailed consideration.

2. Methods

2.1. Research Design

The first stage of this study is the collection of data on digital ecosystems in public institutions and key factors influencing the state of financial management for their further analysis within the framework of the study. The next stage of the research is the study of the impact of selected factors on the effectiveness of financial management of state institutions in the context of digital ecosystems.

Figure 1. Research Scheme



Source: developed by the author

The methods of economic and statistical analysis (regression analysis, correlation analysis, analysis of descriptive statistics) were used to investigate the relationship between digital ecosystems and the efficiency of financial management of state institutions. As a result, the influence of the key digitalization factors on the effectiveness of financial management in the public sector was determined. The final stage of the research involved providing recommendations on the practical application of the obtained results. Research conclusions were drawn, and research prospects were outlined (Figure 1).

2.2. Sample

The studied sample includes 20 state institutions in Ukraine and Azerbaijan. The studied state institutions belong to the central authorities and are located in Kyiv and Baku, respectively. The research period covers 2020-2024. The indicators of the efficiency of financial management in state institutions (the level of budget utilization efficiency, the level of financial discipline), the intensity of the use of digital technologies in state institutions (spending on digital initiatives, the number of electronic services), the level technology availability (access to the Internet and other infrastructure resources), the level of digital literacy of managers and employees of public institutions. This methodological approach to sampling was chosen on the basis of a number of the above-mentioned earlier professional studies, namely Wang *et al.* (2020), Agyapong (2021), Eki̇nci (2021), Kwilinski *et al.* (2022), Zhuk (2022), McKinsey and Co (2022), Taka and Bayarçelik (2023), OECD (2023), European Commission (2023), UN (2023), PwC (2023), World Bank (2020), US Department of State (2023), Government Transformation Magazine (2023), President of the Republic of Azerbaijan (2021), Verkhovna Rada of Ukraine (2021).

2.3. Methods

The proposed methodological approach implies:

Regression analysis to find out how different management strategies affect the efficiency of financial management in public institutions. The regression analysis identified the strength and direction of the influence of the digital ecosystem on the effectiveness of financial management in state institutions. This gives grounds for recommendations for improving digital ecosystems in the financial management in the public sector;

Correlational analysis that enables the identification of how digital ecosystems affect the efficiency of financial management in the public sector. Accordingly, this contributes to the development of more effective digital ecosystems for better financial management in public institutions.

The variables for the model are presented in Table 1. The studied variables are selected on the basis of earlier studies Wang *et al.* (2020), Agyapong (2021), Eki̇nci (2021), Zhuk (2022), McKinsey and Co (2022), Taka and Bayarçelik (2023), OECD (2023), European Commission (2023), UN (2023), PwC (2023), World Bank (2020), US Department of State (2023), Government Transformation Magazine (2023), President of the Republic of Azerbaijan (2021), Verkhovna Rada of Ukraine (2021).

Table 1. Regression Model Variables

Variable	Calculation	Comment
Efficiency of financial management (Y)	Measured as % for Budget Utilization as the ratio of actual spending to the allocated budget	This variable measures how effectively public institutions manage their finances in the context of digital technology adoption.
Spending on digital technologies (X1)	Quantifiable measure in USD of total spending on digital initiatives and investments in digital infrastructure of public service institutions	This variable helps to determine how actively public institutions invest in digital technologies.
Number of digital services available in the state institution (X2)	Quantity of digital services, including electronic filing platforms, electronic voting, public engagement services, etc	This variable measures the number of electronic services available in each institution
Level of availability of digital technologies (X3)	Score from 1 to 10, 1 being the lowest and 10 being the highest, for availability of technology enabled by digital for public service institution	This variable measures availability of technologies based on digital platforms
Level of digital literacy of employees (X4)	Score from 1 to 10, 1 being the lowest and 10 being the highest, for Internet proficiency and software specialization skills of public service institution's employees	This variable measures the employees' competence in the use of digital technologies

Source: developed by the author

This study used software tools namely Google Sheets, Excel, and R to analyse the collected sample information. The research identified limitations related to the possibility of the model not taking into account certain factors affecting the efficiency of financial management of state institutions in the context of digitalization. These limitations were overcome by regularly checking and updating the data, which provides a reflection of the current state of financial management practices.

3. Results

We present the results of regression analysis by coefficients (Table 2). According to the constant, β0 is -1.0738 (p = 0.929). According to the variable Spending on Digital Technologies (X1), the β1 coefficient is 0.0528 (p = 0.010), which indicates a positive relationship between spending on digital initiatives and the efficiency of financial management of a public institution. In terms of the number of electronic services (X2), β2 was 0.1249 (p = 0.155), which indicates a positive effect of the number of electronic services on the efficiency of the financial management of the state institution. As for the technology availability (X3), the β3 coefficient is -0.0054 (p = 0.960), which identifies a slight negative effect of technology availability based on the network of digital ecosystems. In conclusion, the results of the regression analysis on the level of digital literacy (X4) of β4 at the level of -0.0283 (p = 0.570) indicate a weak negative effect of the digital literacy of employees on the effectiveness of financial management of a public institution.

Table 2. Regression Analysis Results

Variable	Coefficient	p-value	Effect Description
Constant (β0)	-1.0738	0.929	Insignificant, baseline level of efficiency
X1: Spending on digital technologies	0.0528	0.010	Positive relationship, significant
X2: Number of digital services available in the state institution	0.1249	0.155	Positive relationship, but not significant
X3: Level of availability of digital technologies	-0.0054	0.960	Insignificant negative impact
X4: Level of digital literacy of employees	-0.0283	0.570	Weak negative impact, not significant

Source: calculated by the author

The obtained results are interpreted below. Spending on digital initiatives has a statistically significant positive effect on the efficiency of financial management. The number of electronic services also shows a positive trend, but the effect is not statistically significant. The availability of technology and the level of digital literacy do not have a statistically significant effect on the efficiency of management according to the results of this model. These results provide a basis for understanding the key factors that influence the effectiveness of financial management in the context of the use of digital technologies.

The obtained results were confirmed through a statistical analysis of the developed model. The R-squared indicator is 0.436 - accordingly, the model explains about 43.6% of the variation of the dependent variable. The Adjusted R-squared indicator is 0.285. The F-test is 2.896 with a p-value of 0.0584, indicating that the model is statistically significant.

The results of the correlation analysis presented in the correlation matrix are shown in Table 3.

Spending on digital initiatives has a strong positive correlation (r = 0.58) with the effectiveness of financial management, confirming the regression results about the important impact of these investments. The number of digital services has a weak positive correlation (r=0.20) with efficiency indicating a potential, but not very strong effect on the efficiency of financial management in public institutions. Negative correlations of technology availability and digital literacy level with efficiency (r=-0.18 and r=-0.15, respectively) may indicate possible indirect relationships or the influence of other variables outside the scope of the studied model.

The analysis of the results of descriptive statistics by variables determined that spending on digital initiatives shows a significant level of investment in digital technologies among the studied state institutions (Average at the level of 191.44 units). A standard deviation of 48.00 shows high variability in spending levels, which may indicate different strategies or levels of involvement in digitization. The minimum and maximum show a spread of 104.34 to 278.96 units, confirming the large range of costs that occurs between the least and most invested institutions. In terms of the number of digital solutions, the Average of 4.34 shows that the average public institution has about 4 digital solutions. The standard deviation of 9.68 indicates moderate variability in the number of services, which may be related to the specifics or size of the state institution. In terms of technology availability, the Average of 79.73% shows a high overall level of technology availability. A standard deviation of 8.21% indicates a relatively homogeneous availability of technology among institutions. In terms of Minimum and Maximum, 62.37% to 90.57% shows that although most public institutions have high technology availability, some still need more technology availability.

Table 3. Correlation Matrix Results

Variables	Spending on digital technologies	Number of digital services available in the state institution	Level of availability of digital technologies	Level of digital literacy of employees	Efficiency of financial management
Spending on digital technologies	1.00	-0.16	-0.36	-0.03	0.58
Number of digital services available in the state institution	-0.16	1.00	0.11	-0.06	0.20
Level of availability of digital technologies	-0.36	0.11	1.00	-0.18	-0.18
Level of digital literacy of employees	-0.03	-0.06	-0.18	1.00	-0.15
Efficiency of financial management	0.58	0.20	-0.18	-0.15	1.00

Source: calculated by the author

Based on the results of the regression and correlation analysis, several recommendations can be made for improving financial management in public institutions through the implementation of digital ecosystems. The recommended directions for improving the digital ecosystems of state institutions are provided below on the basis of the previously performed analysis taking into account the goals of increasing the efficiency of financial management:

1. Investments in digital technologies: the results of the regression analysis showed that investments in digital technologies have a statistically significant positive effect on the efficiency of financial management. Digitization can increase the transparency of financial transactions, reduce costs through automation, and improve control over the use of budget funds. It is recommended to set clear targets for investments and define key performance indicators to regularly measure the impact of digitization.

2. Development and integration of electronic services: a positive correlation between the quality and quantity of electronic services and the efficiency of management indicates the potential for the development of these services. Wider implementation of electronic services can contribute to more efficient and convenient access of citizens to public services, which, in turn, can reduce the administrative burden on institutions. It is important to implement universal security and privacy standards to ensure trust and protect data.

3. Ensuring the availability of digital technologies: the negative correlation between the availability of technologies and efficiency may be caused by inefficient use of available resources. It is necessary to focus on the effective integration of available technologies into management processes, as well as on optimizing the use of resources to achieve the maximum return on investment in technology.

4. Increasing digital literacy: Increasing the level of digital literacy among government employees is critical. Considering the negative impact on short-term efficiency, long-term investment in education and training will contribute to increasing the employee competence and the effective use of digital tools. Developing specialized training programmes and regularly updating courses according to the latest trends in technology can significantly improve management outcomes.

Successful implementation of these initiatives requires a coordinated approach at all levels of governance, including stakeholder engagement, regular review of strategies, and adaptation of approaches to changing circumstances. It is also necessary to create an effective monitoring system to track progress and identify potential problems in the early stages of their development.

The development of digital ecosystems can significantly increase the efficiency of financial management in public institutions, promote their transparency and accountability. The basis of such development is the standardization of data and processes, which will ensure easy integration of new technologies and promote unity between different departments. Central to this is the integration of advanced technologies such as artificial intelligence and blockchain, which will automate the collection and analysis of financial data and ensure its security.

Increasing the level of digital literacy of employees through specialized training will be the key to the effective use of these innovations. At the same time, it is important to ensure a high level of data protection and privacy through the implementation of the most modern cyber security standards. Cooperation with the private sector will allow implementing best practices and technological solutions, thus increasing the overall efficiency and reliability of digital financial systems. The creation of open platforms for the integration of various digital services and tools plays a strategic role in this process. In particular, it promotes the exchange of experience and best practices between institutions, which ensures sustainable growth and adaptation to changing conditions of public finance management.

4. Discussion

This study determined the influence of digital ecosystems on the efficiency of financial management of state institutions in Ukraine and Azerbaijan. The leading role of an integrated approach to the development of digital ecosystems, taking into account the needs of effective financial management of state institutions, is emphasized. Emphasis is placed on the importance of supporting these efforts by increasing the digital literacy of the employees of state institutions (Paryzkyi *et al.* 2023). A separate focus is the need to make regular investment in digitization to achieve the appropriate result in terms of management efficiency in the public sector. These theses are supported by the earlier work of Zhuk (2022), which indicates the possibilities of transformation of public financial management with the help of digital technologies. In this regard, Zhuk (2022) separately emphasizes the factor of transparency of decision-making processes in state institutions due to digitalization. These findings are supported by earlier study of Agyapong (2021), which examines the impact of digitalization on institutions in Ghana with a focus on the impact of digital innovation on financial performance and inclusion. Additional confirmation of these results is provided by Ekīnci (2021), which studies the impact of digitalization on the efficiency of financial services. In this regard, Ekīnci (2021) points to the key importance of digitalization in improving service and reducing the cost of services. The proposed theses are supported by Tian *et al.* (2022) in terms of the development of the digital economy as a factor of increasing the efficiency of public investments.

Additional confirmation of the results is an earlier study by Volosovych and Baraniuk (2019) on the changes in the mechanisms of state financial control due to digitalization. In this regard, Volosovych and Baraniuk (2019) separately focus on increasing efficiency and transparency. In addition, these results are supported by the earlier work of Bisht *et al.* (2022) in terms of the fact that digitalization contributes to increasing the transparency and adaptability of financial processes in institutions. An earlier study by Wang *et al.* (2022) deals with the role of digitalization in increasing the efficiency of organizations. The work by Taka and Bayarçelik (2023) emphasizes the importance of sustainable adoption of digital technologies, which requires changes in technological, organizational, cultural, and strategic areas. Wang *et al.* (2020) demonstrate that digitalization contributes to process optimization and cost reduction, increasing organizational efficiency. These theses are confirmed in the earlier work of Syrtseva *et al.* (2021) regarding the use of digital technologies in the financial accounting of state institutions in the area of improving the accuracy and transparency of financial reporting. These results are supported by Serah *et al.* (2024) in terms of the impact of digital services on the financial efficiency of law enforcement agencies.

This thesis is confirmed by a previous study by Krasnykov *et al.* (2024) in terms of increasing the quality of financial management of municipal property due to digitalization. However, the proposed study, in contrast to the existing generality of already existing works, focuses on the importance of a systemic approach to the introduction of digitalization in public institutions. This approach should include consideration not only of the convenience of the digital service and cyber security, but also the task of internal management of the institution, namely the efficiency of financial management. This is reflected in a set of potential directions for the development of digital ecosystems, covering their integration and accessibility, as well as the critical importance of efforts to strengthen the digital literacy of the staff of public institutions.

Conclusions

The study revealed the importance of the integration of digital technologies into the financial management processes of state institutions in Ukraine and Azerbaijan. Investment in digital initiatives (X1) with a mean value of 191.44 units (standard deviation 48.00) provides a statistically significant positive effect on management performance, with a coefficient of $\beta 1 = 0.0528$ ($p = 0.010$) and a correlation of $r = 0.58$. This shows the importance of further investment in digitization to increase transparency and efficiency of operations. The number of e-services (X2), which averages 4.34 with a standard deviation of 9.68, shows a trending positive effect on financial management efficiency with a coefficient of $\beta 2 = 0.1249$ ($p = 0.155$) and a correlation of $r = 0.20$. This indicates the potential for development and optimization of digital services in state institutions.

Technology availability (X3) with a mean of 79.73% and a relatively homogeneous standard deviation of 8.21% shows a slight negative effect on efficiency, with a coefficient of $\beta3$ = -0.0054 (p = 0.960) and a correlation of r = -0.18. This may indicate the need for more effective integration and use of existing technologies. Digital literacy (X4) with minimum and maximum values of 62.37% and 90.57%, respectively, shows a weak negative effect on performance with coefficient $\beta4$ = -0.0283 (p = 0.570) and correlation r = -0.15. This emphasizes the importance of increasing the level of education and training in digital skills. The model's R-squared is 0.436, indicating that the model explains approximately 43.6% of the variation in financial management performance. The Adjusted R-squared is 0.285 and the F-test is 2.896 with a p-value of 0.0584, indicating the statistical significance of the model as a whole. The directions for the development of digital ecosystems of state institutions were outlined based on the results of the study. First, it is an increase in investments in digital technologies, with the aim of ensuring high transparency and management efficiency. Second, it is optimization of the quantity and quality of electronic services to increase their impact on efficiency. Third, it is the effective integration and use of technology, ensuring its accessibility, and increasing the employees' digital literacy. The approach to implementation should include coordinated work at all levels of management, regular monitoring of implemented changes, and flexible adaptation of digital strategies in accordance with changing conditions and requirements.

The novelty of the research concerns the formulation of a concept that summarizes approaches to the implementation of digitalization in state institutions, combining the task of ensuring the convenience and security of digital systems with increasing the efficiency of financial management. This was realized by formulating a unique set of indicators and applying analysis methods that allowed us to cover all key aspects of the investigated problem, namely, the effectiveness of financial management, spending on digital technologies, the number of available digital services, the availability of digital technologies and the level of digital literacy of workers. As a result, the influence of the main factors of digitalization on the effectiveness of financial management in the public sector was revealed, which is the basis for optimizing the implementation of digital technologies. An important conclusion of the work is the confirmation of the connection between investments in digitalization and the efficiency of financial services, as well as the quantity and quality of digital services, which allows considering investments and expanding the range of services as the main determinants of optimization.

Credit Authorship Contribution Statement

The authors equally contributed to the present research, at all stages from the formulation of the problem to the final findings and solution.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Declaration of Use of Generative AI and AI-assisted Technologies

The authors declare that they have not used generative AI and AI-assisted technologies during the preparation of this work.

References

[1] Agyapong, D. (2021). Implications of digital economy for financial institutions in Ghana: An exploratory inquiry. *Transnational Corporations Review 13*(1): 51–61. DOI:https://doi.org/10.1080/19186444.2020.1787304

[2] Bisht, D. *et al*. (2022). Imperative role of integrating digitalization in the firm's finance: A technological perspective. *Electronics 11*(19): 3252. DOI: https://doi.org/10.3390/electronics11193252

[3] Burlacu, S., Ciobanu, G., Troacă, V. A., and Gombos, C. C. (2021). The digital finance – opportunity of development in the new economy. *Proceedings of the International Conference on Business Excellence 15*(1): 392–405. DOI: https://doi.org/10.2478/picbe-2021-0036

[4] Ekĭnci, R. (2021). The impact on digitalization on financial sector performance. In S. B. Kahyaoğlu (Ed.) *Accounting, Ainance, Sustainability, Governance and Fraud* (pp. 99–119). Springer. DOI:https://doi.org/10.1007/978-981-33-6811-8_6

[5] Hontar, L. (2021). Smart approaches in the digital financial ecosystem: Fintech in the context of the use of digital platforms and smart control. *E-Management 4*(2): 44–50. DOI: https://doi.org/10.26425/2658-3445-2021-4-2-44-50

[6] Konovalova, M. E., Kuzmina, O. Y., and Salomatina, S. Y. (2019). Transformation of the institution of money in the digital epoch. Paper presented at *Advances in Intelligent Systems and Computing,* February 2019 (pp. 315–328). Springer. DOI: https://doi.org/10.1007/978-3-030-11367-4_31

[7] Krasnykov, Y., Boobos, O., Lavrinets, I., Khabarova, T. V., and Zozulia, N. (2024). The impact of electronic governance on the quality of public services and municipal property management. *Pakistan Journal of Criminology 16*(1): 201–216. DOI: https://doi.org/10.62271/pjc.16.1.201.216

[8] Kwilinski, A., Dalevska, N., and Dementyev, V. V. (2022). Metatheoretical issues of the evolution of the international political economy. *Journal of Risk and Financial Management 5*(3): 124. DOI:https://doi.org/10.3390/jrfm15030124

[9] Mavļutova, I., Spilbergs, A., Verdenhofs, A., Nātriņš, A., Arefjevs, I., and Volkova, T. (2022). Digital transformation as a driver of the financial sector sustainable development: An impact on financial inclusion and operational efficiency. *Sustainability 15*(1): 207. DOI: https://doi.org/10.3390/su15010207

[10] Melnik, M. V., and Antipova, T. (2019). Organizational aspects of digital economics management. Paper presented at *Lecture Notes in Networks and Systems*, (pp. 148–162). Springer. DOI:https://doi.org/10.1007/978-3-030-22493-6_14

[11] Moşteanu, N. R. (2020). Finance digitalization and its impact on labour market. *Technium Social Sciences Journal 8*: 598–605. DOI: https://doi.org/10.47577/tssj.v8i1.804

[12] Muharsito, M., and Muharam, H. (2023). The effect of digital financial inclusion on bank efficiency. *Proceeding International Conference on Research and Development 2*(1): 1–6. DOI:https://doi.org/10.47841/icorad.v2i1.77

[13] Paryzkyi, I., Perehuda, Y., Kryvoberets, M., Hurina, O., and Glybovets, V. (2023). Smart economy in the regions of Ukraine: Current trends and development vectors. *Review of Economics and Finance 21*: 1380-1388. DOI: https://doi.org/10.55365/1923.x2023.21.151

[14] Serah, Y. A., Fernando, Z. J., Hastian, T., Junius, Z., and Temmy, F. (2024). Virtual police: Guardians of security and consumer protection in the era of electronic information and transactions. *Pakistan Journal of Criminology 16*(2): 1061–1080. DOI: https://doi.org/10.62271/pjc.16.2.1061.1080

[15] Syrtseva, S., Burlan, S., Katkova, N., Cheban, Y., Pysochenko, T. C., and Kostyrko, A. (2021). Digital technologies in the organization of accounting and control of calculations for tax liabilities of budgetary institutions. *Estudios De Economía Aplicada 39*(7). DOI: https://doi.org/10.25115/eea.v39i7.5010

[16] Taka, M. E., and Bayarçelik, E. B. (2023). Sustainable digital transformation of financial institutions. *Business and Management Studies: An International Journal 11*(1): 253–269. DOI:https://doi.org/10.15295/bmij.v11i1.2181

[17] Tian, X., Zhang, Y., and Qu, G. (2022). The impact of digital economy on the efficiency of green financial investment in China's provinces. *International Journal of Environmental Research and Public Health 19*(14): 8884. DOI: https://doi.org/10.3390/ijerph19148884

[18] Verkhovna Rada of Ukraine (2021). Ukraine's Strategy for Implementation of Digital Development, Digital Transformations and Digitalization of the State Finance Management System for the Period until 2025. Available at: https://zakon.rada.gov.ua/laws/show/1467-2021-p#Text

[19] Volosovych, S., and Baraniuk, Y. (2019). State financial control in terms of digitalization of the institutional environment. *Baltic Journal of Economic Studies 5*(4): 82. DOI: 10.30525/2256-0742/2019-5-4-82-91

[20] Wang, H., Zheng, L. J., Xu, X., and Hung, T. H. B. (2022). Impact of financial digitalization on organizational performance. *Journal of Global Information Management 30*(1): 1–35. DOI:https://doi.org/10.4018/jgim.301602

[21] Wang, Q., Yang, J., Chiu, Y., and Lin, T. Y. (2020). The impact of digital finance on financial efficiency. *MDE. Managerial and Decision Economics 41*(7): 1225–1236. DOI: https://doi.org/10.1002/mde.3168

[22] Zhuk, I. (2022). Public administration system in the field of finance under the influence of digitalization. *Economic Affairs 67*(3). DOI: https://doi.org/10.46852/0424-2513.3.2022.11

[23] European Commission (2023). EGovernment benchmark 2023. *Shaping Europe's Digital Future*. Available at: https://digital-strategy.ec.europa.eu/en/library/egovernment-benchmark-2023

[24] Government Transformation Magazine (2023). State of digital government. Available at: https://www.government-transformation.com/download-state-digital-government-report

[25] McKinsey and Co. (2022). Unlocking the potential of public-service digitization. Available at: https://www.mckinsey.com/industries/public-sector/our-insights/unlocking-the-potential-of-public-service-digitization

[26] OECD (2023). Digital government index: Results and key findings. Available at: https://www.oecd.org/publications/2023-oecd-digital-gvernment-index-1a89ed5e-en.htm

[27] President of the Republic of Azerbaijan (2021). Order of the President of the Republic of Azerbaijan on approval of 'Azerbaijan 2030: National Priorities for Socio-Economic Development'. Available at: https://president.az/en/articles/view/50474

[28] PwC (2023). The journey to digital government 5.0. Available at: https://www.pwc.com/m1/en/publications/documents/the-journey-to-digital-government-part-one.pdf

[29] The White House (2023). Fact sheet: Building digital experiences for the American people. Available at: https://www.whitehouse.gov/omb/briefing-room/2023/09/22/fact-sheet-building-digital-experiences-for-the-american-people/

[30] UN (2023). E-government survey 2022. Available at: https://publicadministration.un.org/egovkb/en-us/Reports/UN-E-Government-Survey-2022

[31] US Department of State (2023). Digital government strategy. Available at: https://www.state.gov/digital-government-strategy/

[32] World Bank (2020). GovTech: The new frontier in digital government transformation. Available at: https://thedocs.worldbank.org/en/doc/8052116122151881980090022021/original/GovTechGuidanceNote1TheFrontier.pdf

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Evaluating the Impact of Borrower Characteristics, Loan Specific Parameters, and Property Conditions on Mortgage Default Risk

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Abstract: This study empirically examines the impact of borrower, loan, and mortgage parameters on default risk in residential mortgage loans. Using 6743 individual housing loan accounts data from Housing Finance Institutions in Lebanon, we develop a comprehensive model using the multivariable binary logistic regression, best subset logistic regression, and stepwise regression analysis procedures to investigate the impact of 21 predictors and 29 sub-predictor parameters on log odds of default risk. In addition, the study conducted a model diagnosis using the Hosmer - Lemeshow Goodness of fit test, Likelihood Ratio Test, Model accuracy- Classification Table, Statistically Significant Test- ROC curve, and Pregibon Delta Beta Statistics. The study aims to assist financial institutions in managing and assessing the default risk more effectively and develop effective strategies to mitigate this risk. The empirical results suggest that the estimated probability of defaulting on a housing loan is approximately 3.8% when all predicted variables are set at their lowest value. In addition, marital status and the existence of dependence have a positive impact on default risk. The higher the number of dependents is, the higher the risk of default. Moreover, a widowed borrower has a higher log odd of default compared to single, married, and divorced borrowers. Furthermore, the results revealed that self-employed borrowers positively impact the risk of default due to the absence of a steady flow of income. In addition, there is an inverse relationship between the market price-to loan ratio and the log odds of default since the borrower's equity will increase when the house price increases. However, log odds of default will increase when the loan value is higher than the mortgage market price. Moreover, the result shows that the nature of the borrower's occupation has a positive relationship with log odds of default where borrowers working in real estate and construction sectors have lower default rates than borrowers working in other industries. In addition, a high interest rate increases the loan's monthly payment and therefore increases the probability of default. Furthermore, the loans granted for purchase and renovation purposes have a lower risk of default than the ones given for construction and under-construction. In addition, the model's overall accuracy was demonstrated by a 91.61 percent visible correct classification rate.

Keywords: binary logistic regression; loan default; credit risk; housing finance; risk management; STATA statistical software.

JEL Classification: C23; C52; C53; C54; C55; C58; G21; G28.

Introduction

Housing loan default has become a significant problem in many countries, with borrowers facing financial distress due to the inability to make timely loan payments. Many of the financial institutions are at risk of incurring financial losses from the high rate of loan defaults. Therefore, it is crucial to identify the factors that contribute to housing loan default to develop effective strategies to mitigate this risk.

Housing loans are a critical source of financing for homeownership, enabling individuals and families to purchase their own homes. Financial institutions grant housing loans to individual borrowers after studying their financial capabilities and ensuring their financial eligibility and ability to pay back the loan principal amount, interest rate, and other lending noninterest expenses. In addition, the lender applies lending policies at the loan origination stage and therefore policymakers need to explore most of the possible parameters that might increase the probability of the risk of default during the loan duration to maturity.

Identifying parameters that contribute to default risk can assist financial institutions in managing and assessing the risk of default more effectively. It helps to develop models that can predict the likelihood of default and enhance decision-making procedures. In addition, lenders can set optimal interest rates and fees that reflect the level of risk associated with housing loans. In addition, exploring borrower, loan, and property parameters that drive default risk helps lenders allocate credit more efficiently. It allows them to grant loans to borrowers who are less likely to default. Furthermore, assessing default risk helps maintain economic, housing market, and financial system stability.

While previous studies have dedicated attention to quantitative factors affecting default risk in residential mortgage loans such as borrower credit score, loan-to-value, and debt ratio, there is a growing recognition of the need to examine socio-economic categorical parameters that might influence default risk besides quantitative variables. This research study aims to fill this gap by empirically investigating the impact of both quantitative and categorical dummy variables related to borrower, loan, and property characteristics on the risk of default in residential mortgage loan

The study examines factors contributing to default to help lenders identify and avoid risky loans, which can reduce their overall losses and improve their profitability. In addition, this can also help to ensure that borrowers are not given loans that they are unlikely not able to repay, which can prevent financial hardship for individuals and families. This can also assist in minimizing the negative impact on borrowers, who may face financial and legal consequences if they default on their loans. Second, understanding the risk factors affecting housing loan default can also inform public policy decisions related to housing finance and consumer protection. By identifying trends and patterns in loan default, policymakers can develop policies and regulations that better protect consumers and promote a stable and sustainable housing finance system, and be able to develop effective strategies to mitigate this risk.

This research aims to identify and analyze the key determinants of default risk in housing loans and to understand how these factors impact the likelihood of default. The study seeks to develop a comprehensive model that can predict default risk based on 41 quantitative and categorical variables related to various borrower characteristics, loan-specific variables, and property parameters. We will use cross-sectional data of 6743 individual housing loan accounts for loans granted by the Housing Financial Institutions in Lebanon during the period extending from 2005 to 2020.

The importance of this research is to understand the interplay between various determinants driving housing loan default since it has a direct negative effect on all parties involved in the lending process, banking system, and the whole economy. As for the lender, the default will decrease the bank’s capital since both loan principal and interest payment will fail to be repaid by the borrower, affecting negatively any future funding, and leading to a drop in investment rate. In addition, defaulted loans will shrink the bank’s equity since the loss shall be deducted from the equity as a provision. Furthermore, failure to repay the mortgage loan will also have a direct negative impact on the borrowers themselves. Borrowers will lose homes, have lower credit scores, and as a result, will not be able to borrow again in the future.

1. Literature Review

Many studies were conducted to predict the factors that increase the default risk of residential loans. The current literature has identified various factors that affect the likelihood of defaulting on a housing loan. The literature suggests that borrower characteristics, and loan characteristics, play a significant role in predicting the likelihood of defaulting on a housing loan. These factors are interconnected, and understanding their interactions is crucial in managing the risk of housing loan defaults. The findings of this literature review can inform the development of models and policies aimed at mitigating the risk of housing loan defaults.

Studies have consistently shown that borrower characteristics play a key role in housing loan default. Lower credit scores, higher debt-to-income ratios, and unstable employment are all associated with a higher likelihood of default. Moreover, borrowers with a history of missed payments or defaults are more likely to default again in the future. In contrast, as indicated by Li and Yang (2018), borrowers with higher incomes and more stable employment are less likely to default. In addition, the literature also suggests that borrower characteristics, such as credit score, income, employment status, and debt-to-income ratio, are significant factors in predicting the likelihood of defaulting on a housing loan. Another study was conducted by Mayer and Pence (2009) and empirical results suggest that borrowers with low credit scores and high debt-to-income ratios were more likely to default.

Additionally, borrowers with unstable employment and income were also more likely to default. Furthermore, a study by Sandar *et al.* (2010) was conducted to predict the borrower-related determinants that affect the default risk of micro-finance loans. The empirical results revealed that default risk is mainly linked to borrowers who suffer from health problems and therefore have high medication expenses, female borrowers who have lower years of experience, poor educated borrowers, and those who have outside loans with high interest rates. Moreover, another study was conducted by Canepa and Khaled (2018), and the result revealed, regarding borrowers’ default risk, that the higher the debt of borrowers, the harder it becomes for them to pay their scheduled obligations.

Further, the results of a study by Bandyopadhyay and Saha (2009), which aimed to examine major factors affecting housing demand, and default risk, revealed that the default risk will be decreased if the borrower submits a collateral additional to the main guarantee. Further, the presence of a greater number of co-borrowers in the loan will significantly decrease the risk of default. This is because the existence of a co-borrower will include many incomes. Moreover, the results show that the borrower's age and the existence of dependence have an impact on default risk. The older the borrower and the higher the number of dependents is, the higher the risk of default is. Also, the study examined the effect of employment on housing default, and the results revealed that employment has a significantly negative impact on default risk while self-employed borrowers have a positive impact on the risk of default due to the absence of a steady flow of income.

In addition, the result of a study conducted by Levy and Kwai-Choi stated that the 'purpose of purchase' plays an important role in residential default risk. Borrowers who apply for a housing loan for personal investment rather than to own an occupied residence prefer to pay a smaller amount of the property's selling price as a down payment and thus decrease the initial equity commitment. Therefore, when the value of the property (collateral) falls due to any economic distress or due to a supply-demand mismatch in the housing market, borrowers will settle the housing loan to limit their loss and therefore this will decrease the risk of defaulting.

Loan characteristics such as loan-to-value (LTV) ratio, loan term, and interest rate also influence the likelihood of default. Higher LTV ratios are associated with higher default rates, as borrowers with less equity in their homes have less to lose by defaulting. Longer loan terms also increase the likelihood of default, as borrowers are more likely to experience income shocks over a longer period. Moreover, adjustable-rate mortgages (ARMs) have been found to have higher default rates than fixed-rate mortgages, particularly during periods of economic stress. In addition, the features of the loan itself, such as the loan-to-value ratio and interest rates, have also been found to affect the likelihood of default. Studies, such as that of Foote *et al.* and Gerardi *et al.* (2008) have shown that a high loan-to-value ratio and adjustable-rate mortgages are associated with a higher risk of default.

Moreover, property characteristics such as location, type, and condition can also affect the likelihood of default. Properties located in areas with higher unemployment rates, crime rates, and declining property values are more likely to experience default. Moreover, properties with structural or maintenance issues are more likely to be subject to default. Additionally, LaCour-Little *et al.* show that borrowers who live further away from their properties are more likely to default, as distance makes it harder to monitor and maintain the property.

Furthermore, Canepa and Khaled also examined the relationship between the housing default risk and the collateral value. The result revealed that there is an inverse relationship between the change in house prices and the housing risk of default. An increase in house prices will lead to an increase in the value of the collateral and vice versa. Therefore, borrowers' probability to default will decrease to avoid losing their housing. In addition, it has been found that housing loans granted to borrowers where the house subject of the loan is located in sub-urban and rural areas are significantly riskier than the loans provided for housing located in urban areas.

Moreover, a study was conducted in the Irish mortgage market revealed that housing loan default risk increases when the housing market price worth less than the repayment value of the mortgage. In addition, the vulnerability of banks depends on the correlation between the falling in housing prices and the borrower's level of equity invested when granted the housing loan. When housing price increase, borrowers will accumulate wealth created by home-price appreciation. However, as mentioned by Rosengren, if price decreases, the probability of default will rise. Additionally, Foote *et al.* found that a decline in housing prices increases the likelihood of default.

2. Research Methodology

This chapter describes the research methodology used in the current study to meet the objective of the study which is to develop a prediction model from a cross-sectional historical dataset collected for existing individual customers from Lebanese financial institutions. The methodology includes the research design, research model, sources of data collecting, and estimating techniques.

2.1. Research Design

This study finds out the determinants that lead to housing loan default in the Lebanese market as well as discovers the impact of each determinant on the risk of default to assist lending policies and strategies adopted by Banks to decrease and /or hedge against such risk.

The research design section describes the overall strategy adopted to accumulate the various components of the research in a comprehensible and analytical way. It is a rational technical plan that ensures the accuracy, reliability, and validity of the survey that shall stay intact. The present research seeks to investigate the determinants of default housing loans in Lebanon. To achieve that aim, the researcher measures the impact of different parameters on house loan default. This is conducted by taking into consideration borrower, loan, and mortgage predictors. These three predictors consist of 20 parameters and 21 sub-predictor parameters.

Borrower Characteristics include the following predictors and sub-parameters: age, gender with sub-categories (male, female, couples as co-borrowers, marital status which categorized into single, married, divorced, widow borrowers, number of children, borrower's job economic sectors including the banking, construction, industrial, service, public, private sectors, borrower's occupation category as employed, self-employed, and freelance, job location whether residential or expatriate, income, the existence of additional guarantees, and debt ratio. In addition, Loan parameters consist of the loan amount, monthly installment, tenor, interest rate, loan type which is categorized as purchase, construction, under-construction, renovation loans, and monthly installment to income ratio. Furthermore, the mortgage parameters include: market price, book value, location (Beirut, Mount Lebanon, North, South), loan-to-value ratio, and loan-to-market price ratio.

The dependent variable is default risk: This variable is binary and represents whether or not the borrower defaulted on the loan. Default rates will be the focus of this paper because we want to analyze how they could be related to other variables.

2.2. Research Model

We will use binary logistic regression analysis to examine the relationship between the predictor variables and the log-odds of the outcome using the logistic function (also known as the sigmoid function). The logistic function ensures that the predicted probabilities range between 0 and 1, which is suitable for binary outcomes. The logistic regression model estimates the coefficients (log-odds ratios) associated with each predictor variable, indicating the direction and strength of their relationship with the outcome. These coefficients are typically estimated using maximum likelihood estimation (Hosmer *et al.* 2013).

The binary logistic regression model function is derived based on the principles of maximum likelihood estimation. It assumes that the log odds of the probability of the outcome dependent binary variable occurring are a linear function of the predictor independent variables.

$$\ln\left(\frac{P}{1-P}\right) = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \ldots\ldots + \beta_k x_k \qquad (1)$$

where: P is the probability of the outcome variable occurring

$x_1, x_2, \ldots\ldots, x_k$ are the predictor variables

β_0 is the intercept

$\beta_1, \beta_2, \ldots\ldots \beta_k$ are the coefficients to be estimated.

The logistic function is then applied to transform the linear combination of predictor variables into a probability between 0 and 1:

$$P = \frac{1}{1+e^{-(\beta_0 + \beta_1 x_1 + \beta_2 x_2 + \ldots\ldots + \beta_k x_k)}} \qquad (2)$$

where e is the base of the natural logarithm. The logistic function above ensures that the estimated probabilities fall within the range of 0 and 1, which makes it suitable for modeling binary outcomes. The method used to estimate the coefficient $\beta_0, \beta_1, \beta_2, \ldots \beta_k$ is the maximum likelihood estimation method. This method pursues to find the set of coefficients that maximizes the likelihood of observing the given data under the assumed logistic regression model to get the best fitting model parameters (Moore *et al.* 2018).

2.3 Data Collection

Data is collected from Lebanese financial Institutions between 2005 and 2020 using 6743 individual housing loan accounts. There are 566 accounts that are defaulted representing 8.4% of the total number of loans. The predictors that might influence the odds of default in this study are 20 independent variables out of which 12 variables are continuous explanatory variables and 8 are discrete categorical independent variables.

2.4. Estimation Technique

2.4.1. Selection Criteria and Model Development

To determine which binary logistic regression model is best, we first conduct univariable regression analysis for each explanatory variable then we select predictors for the multivariable regression analysis. A predictor is a candidate for the multivariable model if its univariable test yields a p-value less than 0.25. The suggestion that a screening criterion for variable selection be employed at a 0.25 level stems from the research conducted by Mickey and Greenland[13] as well as Bendel and Afifi (2017). Then we will conduct a multivariable regression analysis and choose variables with p-value < 0.1 to develop the candidate fitted model. Then model will be built using the best subset model based on the lowest AIC. First, we run a model that includes variables with a p-value less than 0.25 after performing univariable regression analysis, then the new model eliminates variables with a p-value greater than 0.1 after performing multivariable regression. Finally, we will add to the model the eliminated variables and run a combination of variables for those who were eliminated since their p-value is greater than 0.25 and those with a p-value greater than 0.1 to select the best model based on the one that has the lowest AIC.

Next, we will have refined the main effects model and check for interactions among the predictors in the model. We include the interaction variable in the new model and compare it to the previous model using the likelihood ratio test. After obtaining the fitted model, next we perform a diagnosis test for the fitted model, as indicated in Neyman's (2023) study.

2.4.2. Model Diagnosis

After obtaining the candidate-fitted model, next, we perform a diagnosis test. The diagnosis procedures will be applied in this study including the following: Hosmer-Lemeshow test for overall goodness of fit, likelihood ratio test, model adequacy test through Link test, model accuracy and classification table, and Roc curve.

2.4.2.1. Goodness of Fit Tests

Goodness-of-fit tests are used to evaluate how well a statistical model fits the observed data. It provides a measure of the discrepancy between the observed data and the estimated values predicted by the model. We will apply in this study the chi-square goodness-of-fit test for hypothesis testing, and the Hosmer Lemeshow test to assess the adequacy of the fitted model. The model's suitability for fitting the data is the null hypothesis. A small p-value from the Hosmer Lemeshow test indicates a poor fit of the logistic regression model. In this paper, we will perform the Test of Overall Goodness of Fit using Stata Statistical software using the command 'estat gof'.

H0: Data is correctly fitted in the current model

HA: Not

We will reject the null hypothesis if the outcome of the chi-square statistic is high.

2.4.2.2. Likelihood Ratio Test (LRT)

The likelihood ratio test (LRT) is a statistical technique used to compare the fit of two nested models: a full model and a reduced model. The full model includes all predictor variables of interest, while the reduced model is a simplified version of the full model with fewer predictor variables. The likelihood ratio test measures whether the additional variables in the full model significantly improve the fit of the model compared to the reduced model. It compares the likelihood of the observed data under both models and determines whether the improvement in fit is statistically significant. It is obtained as the result of the difference in log-likelihoods between the full model (L_f) and the reduced model (L_r).

$$LR = -2 \times (L_f - L_r) \quad (3)$$

Under the null hypothesis that the reduced model is sufficient to explain the data, the value of 'LR' approximately follows a chi-square distribution with degrees of freedom equal to the difference in the number of parameters between the full and reduced models. A small p-value from the likelihood ratio test indicates that the full model provides a significantly better fit to the data than the reduced model, suggesting that the additional predictor variables contribute significantly to explaining the outcome variable. The likelihood ratio test, as mentioned by Hosmer *et al.*, is widely used in logistic regression for model comparison, variable selection, and assessing the overall goodness of fit of the model to the data.

2.4.2.3. Model Accuracy - Classification Table

The Contingency or classification table is a tabular representation of the performance of a classification model. It compares the predicted classifications predicted by the logistic regression model with the actual classifications observed in the data. It has four categories decomposed as below:

True positive represents the number of cases where the logistic regression model correctly predicts a positive outcome when actual outcome is positive; true negative represents the number of cases where the logistic regression model correctly predicts a negative outcome when actual outcome is negative, false positive represents the number of cases where the logistic regression model incorrectly predicts a positive outcome when actual outcome is negative, and false negative represents the number of cases where the logistic regression model incorrectly predicts a negative outcome when actual outcome is positive. Based on the outcomes of classification table, many performance metrics can be obtained including model accuracy, sensitivity, precision, specificity, and others (Hosmer *et al.*).

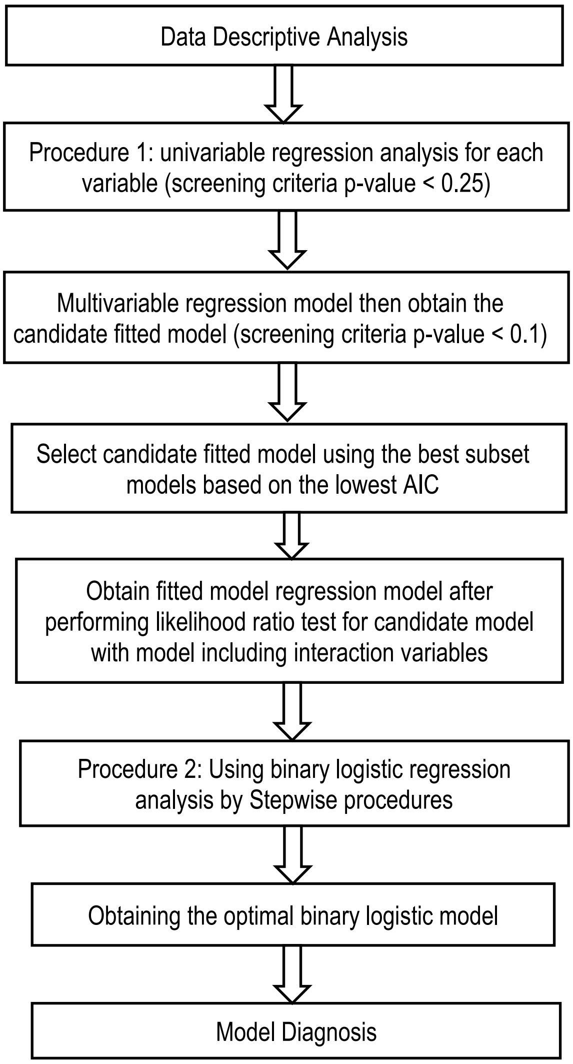
2.4.2.4. Statistically Significant Test – Roc Curve and Pregibon Delta Beta Statistics

A receiver operating characteristic (ROC) curve is a graphical representation of tradeoff between true value rate and false positive rate for different threshold values of the predicted probabilities. The area under ROC curve (AUC) is a commonly used metric to quantify the overall performance of the logistic regression model. A higher AUC value indicates better discrimination ability of the model, with an AUC value of 1 representing perfect discrimination and that of below or equal to 0.5 representing poor discrimination and that better fit is indicated by larger value than 0.5. Therefore, the ROC curve and AUC values assist to evaluate the model discriminating power and select an optimal threshold based on specific requirements of the analysis (Hosmer *et al.*). In addition, Pregibon Delta Beta Statistics helps in identifying any influential points.

2.4.2.5. Methodology Framework

The methodology framework of this study is displayed as below:

Figure 1. Methodology Framework



3. Results and Discussion

3.1. Variables Code Book

In this study, we will try to find the impact of any of 20 independent variables on Loan default. These variables are divided between categorical and continuous variables. Discrete variables amounted eight which are: Gender, Marital Status, Existence of Additional Guarantee, Job category, Economic Sector, Country, Mohafaza, and Loan Type. However, continuous variables amounted 12 which are: Age, Number of Children, Loan amount, monthly payment, income, debt ratio, Book value, LTV, Market price, loan value to market price, Interest Rate, and Loan Tenor.

Table 1. Code Book

Variable	Label	Range /Codes
Default Loan	Default	1=yes, 0 =no
Gender	Female, Male, MF co-borrower	1= Female, 2 =Male, 3= MF
Marital Status	Divorced, Married, Single, Widow	1= Divorced, 2= Married, 3=Single, 4= Widow
Additional Guarantee	Additional Guarantee	1= No additional Guarantee, 2= Yes
Job category	Employee, freelance, Self-employee	1= Employee, 2= Freelance, 3= Self employee
Economical Sector	Banking, Commercial, Construction, Industrial, Public, Service	1 = Banking , 2 = Commercial,3 = Construction, 4 = Industrial, 5 = Public ,6 = Service
Country	Expatriate, Lebanon	1= Expatriate, 2= Lebanon
Mohafaza	Beirut, Bekaa, Mount Lebanon, North, South	1=Beirut, 2= Bekaa, 3= Mount Lebanon ,4= North , 5=South
LoanType	Purchase, Renovation, Under-construction	1 = Purchase, 2= Renovation, 3= Under-construction
Age	Age, years	Continuous
Number of children	Number of children	Continuous
Loan Amount	Loan Amount, millions of Lebanese pounds	Continuous
Monthly Payment	Monthly Payment, thousands of Lebanese pounds	Continuous
Income	Income, thousands of Lebanese pounds	Continuous
debt Ratio	Debt Ratio, Monthly Payment/Income, Ratio	Continuous
Book Value	Book Value, millions of Lebanese pounds	Continuous
LTV	Loan to Value , loan amount/Book Value , Ratio	Continuous
Market Price	Market Price, millions of Lebanese pounds	Continuous
Loan to Market Price	Loan to Market Price , loan/Market Price , Ratio	Continuous
Interest Rate	Interest Rate , cost of money, percentage	Continuous
Loan Tenor	Loan Tenors , years	Continuous

3.2. Descriptive Statistics

3.2.1. Quantitative Data Analysis

Table 2. Summary Table Quantitative Variables

Variable	N	Mean	Std. dev.	Min	Max
Y=0 Non-Default Loan (91.60%)					
Age	6,177	37	7	19	63
Number of Children		2	1	0	8
Loan Amount		200,000,000	130,000,000	18,000,000	800,000,000
Monthly Payment		1,400,000	920,000	120,000	10,000,000

Variable	N	Mean	Std. dev.	Min	Max
Income		6,000,000	4,600,000	687,000	57,000,000
Debt Ratio		0.26	0.07	0.042	0.62
Book Value		340,000,000	240,000,000	24,000,000	3,600,000,000
LTV		0.63	0.16	0.09	1.05
Selling Price		330,000,000	250,000,000	36,000,000	8,000,000,000
Loan to Market value		0.65	0.14	0.06	1.05
interest rate		5.04	0.92	1.628	6.5
Loan Tenor		19.65	5.2	5	30
Y=1, Default Loans (8.40%)					
Age	566	37	7	20	59
Number of Children		1.95	1.26	0	6
Loan Amount		170,000,000	124,000,000	25,000,000	800,000,000
Monthly Payment		1,200,000	920,000	150,000	8,200,000
Income		5,300,000	5,000,000	750,000	51,000,000
Debt Ratio		0.2475483	0.07	0.07	0.5
Book Value		282,000,000	240,000,000	41,000,000	2,600,000,000
LTV		0.64	0.15	0.14	0.844
Selling Price		280,000,000	250,000,000	39,000,000	2,600,000,000
Loan to Market value		0.64	0.15	0.14	1
Interest Rate		5.24	0.9	1.63	6
Loan Tenor		20	4	7	30

3.2.2. Categorical Variables

Categorical variables are: Gender, Marital Status, Existing of guarantee, Existing of children, job type, job industry, country, property location, loan type.

Table 3. Summary Table Categorical Variables

Discrete Independent Variable		Freq.	Percent	Cum.
Gender	FEMALE	377	5.59	5.59
	MALE	669	9.92	15.51
	MF	5,697	84.49	100
Marital Status	Divorced	225	3.34	3.34
	Married	5,697	84.49	87.82
	Single	776	11.51	99.33
	Widow	45	0.67	100
Additional Guarantee	NO	6,255	92.76	92.76
	YES	488	7.24	100
Job category	Employee	5,179	76.81	76.81
	Freelance	846	12.55	89.35
	Self-employed	718	10.65	100
Economic Sector	Banking	456	6.76	6.76
	Commercial	382	5.67	12.43
	Construction	72	1.07	13.5
	Industrial	74	1.1	14.59
	Public	605	8.97	23.57
	Service	5,154	76.43	100
Country	Expatriate	1,349	20.01	20.01
	Lebanon	5,394	79.99	100

Property Location	Beirut	660	9.79	9.79
	Bekaa	289	4.29	14.07
	Mount Lebanon	4,760	70.59	84.67
	North	603	8.94	93.61
	South	431	6.39	100
Loan Type	Construction	430	6.38	6.38
	Purchase	6,183	91.7	98.07
	Renovation	65	0.96	99.04
	Under Construction	65	0.96	100

Comparing defaulting to non-defaulting borrowers, data revealed that 91.60% of the lending portfolio is non-default loan borrowers and 8.40% are default borrowers. In addition, defaulted borrowers are slightly older than non-defaulted ones and have more dependents, and were granted less loan amounts than those of non-defaulting borrowers. In addition, the mean of monthly installment of defaulted borrowers is less than the one associated with performing one. Furthermore, in comparison with that of non-defaulted borrowers, defaulted borrowers have less income.

Debt ratio which reflects the portion of monthly installment out of the monthly income is higher in non-defaulted borrowers. In addition, the book value of the mortgage subject of the loan which is based on the Bank's estimated value is lower in defaulted loans in comparison to non-defaulted ones. Since the book value of the mortgage subject of the loan for defaulted loans is lower than those of non-defaulted, the LTV is higher in non-performing loans.

Housing prices of defaulted borrowers are lower than those of non-defaulted borrowers. In addition, the average mortgage price of performing borrowers is higher with comparison to those of default ones, and since their associated loan to market value is higher, this suggests that defaulted borrowers granted loan amounts are lower than those of performed borrowers.

The Average loan tenor is the same for both defaulted and non-defaulted loans. Married borrowers constitute the highest percentage of default clients with 83.57% followed by single 358 borrowers with 10.25%. In addition, there is 90.64% of defaulted borrowers do not have backed-up additional guarantees other than the main guarantee which is the mortgage subject of the housing loan.

Moreover, most of defaulted borrowers are categorized as employees' workers which constitute to 64.5% of the total number of defaulted borrowers. Most defaulted borrowers work in the service sector (71.38%) followed by those who work in the commercial sector with 10.95% out of the total number of defaulted borrowers. There is 13.25% of defaulted borrowers work outside Lebanon. There is around 70% of defaulted borrower properties are located in Mount Lebanon area and 89.22% of defaulted loans are granted for purchase purposes.

3.3. Model Development

3.3.1. Run single predictor regression models: drop predictors with significance levels > 0.25

Table 4. Single Predictors Regression Models

Predictor	Significance of Wald Z	Remark
Age	0.356	drop
No. of Children	0.002	Consider further – p-value is < .25
Loan Amount	0	Consider further – p-value is < .25
Monthly Payment	0	Consider further – p-value is < .25
Income	0.001	Consider further – p-value is < .25
Debt Ratio	0.003	Consider further – p-value is < .25
Book Value	0	Consider further – p-value is < .25
LTV	0.101	Consider further – p-value is < .25
Market price	0	Consider further – p-value is < .25
LTMP	0.234	Consider further – p-value is < .25
Interest Rate	0	Consider further – p-value is < .25
Loan Tenor	0.898	drop

Predictor	Significance of Wald Z	Remark
Gender		
M	0.426	drop
MF	0.814	drop
Marital Status		
Married	0.087	Consider further – pvalue is < .25
Single	0.054	Consider further – pvalue is < .25
Widow	0.129	Consider further – pvalue is < .25
Additional Guarantee		
Yes	0.042	Consider further – pvalue is < .25
Job Category		
Freelance	0.007	Consider further – pvalue is < .25
Self-employed	0	Consider further – pvalue is < .25
Economical Sector		
Commercial	0	Consider further – p-value is < .25
Construction	0.26	Consider further – p-value is < .25
Industrial	0	Consider further – pvalue is < .25
Public	0.011	Consider further – p-value is < .25
Service	0.033	Consider further – pvalue is < .25
Country		
Lebanon	0	Consider further – pvalue is < .25
Mohafaza		
Bekaa	0.112	Consider further – pvalue is < .25
Mount Lebanon	0.538	drop
North	0.564	drop
South	0.318	drop
Loan Type		
Purchase	0.013	Consider further – p-value is < .25
Renovation	0.061	Consider further – p-value is < .25
Under construction	0.185	Consider further – pvalue is < .25

Following the selection criteria, the following variables are not significant since their p-values are greater than 0.25. These variables are Age, Gender, and loan tenor. Note that for this stage, we will keep the property location since the Bekaa area is significant and has p-vales less than 0.25. After dropping parameters that are associated with p-values > 0.25, we run a logistic regression with predictors of p-values <0.25 and refer to it as the Full Model

Full Model: The likelihood and deviance are calculated below:

(-2) log Likelihood = (-2) (-1841.7963) = 3683.58
Deviance d f = number of observation – number of predictors = 6743 - (26) = 6717

3.3.2. Test for multi-collinearity:

Collinearity occurs when the predictors are themselves interrelated with each other's. If extreme, this is a problem for at least 2 reasons:

1) the model is unstable; and/or
2) it is uninterpretable.

Multi-collinearity problem is suggested if VIF > 10 or Tolerance < .10

Collinearity Diagnostics is performed for this study after examining the 20 variables (Age Number of Children Monthly Payment Income Debt Ratio LTV Selling Price Loan to Market Price Ratio Interest Rate Loan Tenor Gender _code Marital Status _code Additional Guarantee _code Job category _code Economical Sector _code Country _code Mohafaza _code Loan Type _code).

The result above concludes that there are three variables which are Loan amount, Monthly payment, and Book value have VIF greater than 10 and are associated with a Tolerance value < .10. Consequently, we perform more diagnoses to check which of these variables have a higher impact. As per the results, we will drop variables Loan amount and Book value. After performing a Collinearity diagnosis, and dropping variables associated with a p-value greater than 0.25, the dropping variables are: Age, gender, loan tenor, loan amount, and book value.

3.3.3. Run multiple remaining predictors and drop predictors with p-value > 0.1

Table 5. Multiple Regression Analysis

Predictor	Significance of Wald Z	Remark
Number of Children	0.02	Consider further – p-value is < .10
Monthly Payment	0.001	Consider further – p value is < .10
Income	0.336	Drop
Debt Ratio	0.871	Drop
LTV	0	Consider further – p value is < .10
Selling Price	0.583	Drop
Loan to Market Price Ratio	0.003	Consider further – p-value is < .10
Interest Rate	0	Consider further – p-value is < .10
Marital Status		
Married	0.073	Consider further – p-value is < .10
Single	0.448	Drop
Widow	0.179	Drop
Additional Guarantee		
YES	0.186	Drop
Job category		
Freelance	0.007	Consider further – p-value is < .10
Self-employed	0	Consider further – p-value is < .10
Economical Sector		
Commercial Sector	0.009	Consider further – p-value is < .10
Construction Sector	0.994	Drop
Industrial Sector	0.006	Consider further – p-value is < .10
Public Sector	0.026	Consider further – p-value is < .10
Service Sector	0.215	Drop
Country		
LEBANON	0.139	Drop
Mohafaza		
Bekaa	0.921	Drop
Mount Lebanon	0.778	Drop
North Lebanon	0.809	Drop
South Lebanon	0.983	Drop
Loan Type		
Purchase	0.212	Drop
Renovation	0.081	Consider further – p-value is < .10
Under Construction	0.169	Drop

In step three, the following variables are not significant since their P values are greater than 0.10. These variables are: Income, Debt Ratio, Selling Price, Additional Guarantee, Country, and Mohafaza (property location). We will next run logit regression after dropping these six variables.

Reduced Model: Run logit regression to find the relationship between defaulted loans and the following remaining predictors: Number of Children, Monthly Payment, LTV, Loan Market Price Ratio, Interest Rate, Marital Status, Job Category, Economical Sector, and Loan Type. The result is presented below:

Table 6. Regression Full Model Predictors

Logistic regression			Number of obs	=	6,743	
			LR chi2(18)	=	199.16	
			Prob > chi2	=	0	
Log likelihood = -1844.3293			Pseudo R2	=	0.0512	
Loan Status	**Coefficient**	**Std. err.**	**z**	**P>z**	**[95% conf.**	**interval]**
Number of Children	0.104183	0.0434807	2.4	0.017	0.0189624	0.1894036
Monthly Payment	-3.67E-07	6.07E-08	-6.04	0	-4.85E-07	-2.48E-07
LTV	2.287339	0.5318519	4.3	0	1.244928	3.329749
LTMP Ratio	-2.008557	0.5997135	-3.35	0.001	-3.183974	-0.8331406
Interest Rate	0.210041	0.0549681	3.82	0	0.1023055	0.3177765
Marital Status						
Married	-0.4217655	0.2209292	-1.91	0.056	-0.854787	0.0112477
Single	-0.2213838	0.2634957	-0.84	0.401	-0.737258	0.2950582
Widow	0.600315	0.4391309	1.37	0.172	-0.260658	1.460996
Job category						
Freelance	0.419258	0.1355891	3.09	0.002	0.1535083	0.6850078
Self-employed	0.9437229	0.1277156	7.39	0	0.693405	1.194041
Economical Sector						
Commercial Sector	0.7148428	0.268354	2.66	0.008	0.1888787	1.240807
Construction Sector	-0.0039821	0.4887424	-0.01	0.993	-0.961995	0.9539353
Industrial Sector	1.006652	0.3687148	2.73	0.006	0.283984	1.729319
Public Sector	0.5975713	0.2627259	2.27	0.023	0.0826381	1.112505
Service Sector	0.2542959	0.2244384	1.13	0.257	-0.185952	0.6941871
Loan Type						
Purchase	-0.2495123	0.178292	-1.4	0.162	-0.589582	0.0999336
Renovation	-1.250974	0.7425358	-1.68	0.092	-2.76317	0.2043694
Under Construction	0.5290428	0.3773	1.4	0.161	-0.214516	1.268537

Reduced Model Likelihood and Deviance Value:(-2) ln L = (-2) (-1844.3293) = 3688.64

Deviance d f = 6743-(18) = 6725

Likelihood ratio test comparing the above two regression models manual calculation:

LR Test = [(-2) ln (L) REDUCED] - [(-2) ln (L) FULL] = = 3688.64 - 3683.58 = 5.06
LR Test d f = change Deviance d f = change in numbers predictors in model = 6725 - 6717= 8
p-value = Pr {Chi square with 8 degree of freedom > 5.06} = 0.7511

Results: This is not significant. Possibly, we can drop 9 variables Age, Gender, Loan Tenor, Income, Debt Ratio, Selling Price, Additional Guarantee, Country, and Mohafaza.

Likelihood ratio test comparing REDUCED and Full Model Using STATA Software:

To perform the Likelihood test ratio using Stata software, first, we find a REDUCED model using the command quietly: to suppress output. The reduced model will be produced using the variables: Number of Children, Monthly Payment, LTV, Loan to Market Price Ratio, Interest Rate, Marital Status, Job Category, Economical Sector, and Loan Type. Second, we find the FULL model using command quietly using the following variables: Number of Children, Monthly Payment, Income, Debt Ratio, LTV, Selling Price, Loan to Market Price Ratio, Interest Rate, Marital Status, Additional Guarantee, Job Category, Economical Sector, Country, Mohafaza, and Loan Type. Obtain the LR test using Stata command

Likelihood-ratio LR chi2(8) = 5.07 (Assumption: reduced nested in full)
Prob > chi2 = 0.7505 match

Therefore, the candidate significant parameters that affect log odds of default are included in the reduced regression model which are the quantitative predictors: Number of children, Monthly Payment, Loan to Value, Loan to Market Price, Interest rate, and the categorical predictors which are: Marital Status, Job type, Job economic sector, and the housing loan type.

3.3.4. Investigate Confounding

A 'good' final model is the nine predictors model mentioned above. However, we need to explore possible confounding of the nine predictor models by the omitted variables Age, Gender, Loan Tenor, Income, Debt Ratio, Selling Price, Additional Guarantee, Country, and Mohafaza. We will assess these variables as a potential confounder using 2 criteria:

1. Likelihood Ratio test < .10
2. Relative Change in estimated betas > 15% using the following formula:

Where change in estimated betas: $\Delta\hat{\beta} = \frac{|\hat{\beta}\text{without confounders} - \hat{\beta}\text{with confounders}|}{\hat{\beta}\text{with confounders}}$ x 100

Run regression of candidate final model:

Table 7. Candidate Final Model

Loan Status	Coefficient	Std. err.	Z	P>z	[95% conf.	interval]
Number of Children	0.104183	0.0434807	2.4	0.017	0.0189624	0.1894036
Monthly Payment	-3.67E-07	6.07E-08	-6.04	0	-4.85E-07	-2.48E-07
LTV	2.287339	0.5318519	4.3	0	1.244928	3.329749
Loan to Market price Ratio	-2.008557	0.5997135	-3.35	0.001	-3.183974	-0.8331406
Interest Rate	0.210041	0.0549681	3.82	0	0.1023055	0.3177765
Marital Status						
Married	-0.4217655	0.2209292	-1.91	0.056	-0.8547787	0.0112477
Single	-0.2213838	0.2634957	-0.84	0.401	-0.7378258	0.2950582
Widow	0.600315	0.4391309	1.37	0.172	-0.2603658	1.460996
Job category						
Freelance	0.419258	0.1355891	3.09	0.002	0.1535083	0.6850078
Self-employed	0.9437229	0.1277156	7.39	0	0.693405	1.194041
Economical Sector						
Commercial Sector	0.7148428	0.268354	2.66	0.008	0.1888787	1.240807
Construction Sector	-0.0039821	0.4887424	-0.01	0.993	-0.9618995	0.9539353
Industrial Sector	1.006652	0.3687148	2.73	0.006	0.283984	1.729319
Public Sector	0.5975713	0.2627259	2.27	0.023	0.0826381	1.112505
Service Sector	0.2542959	0.2244384	1.13	0.257	-0.1855952	0.6941871
Loan Type						
Purchase	-0.2495123	0.178292	-1.4	0.162	-0.5989582	0.0999336
Renovation	-1.250974	0.7425358	-1.68	0.092	-2.706317	0.2043694
Under Construction	0.5290428	0.3773	1.4	0.161	-0.2104516	1.268537

Table 8. Run Regression full model which includes predictors of candidate fitted model in addition to omitted predictors:

Loan Status	Coefficient	Std. err.	Z	P>z	[95% conf.	interval]
Number of Children	0.1018338	0.0436941	2.33	0.02	0.0161949	0.1874728
Monthly Payment	-5.00E-07	1.57E-07	-3.19	0.001	-8.08E-07	-1.93E-07
Income	2.62E-08	2.72E-08	0.96	0.336	-2.71E-08	7.96E-08
Debt Ratio	0.1758393	1.086102	0.16	0.871	-1.952882	2.304561
LTV	2.234713	0.5389621	4.15	0	1.178367	3.291059
Selling Price	1.55E-10	2.83E-10	0.55	0.583	-3.99E-10	7.10E-10
LTMPR	-1.966337	0.6505957	-3.02	0.003	-3.241481	-0.6911934
Interest Rate	0.2067166	0.056264	3.67	0	0.0964412	0.316992
Marital Status						
Married	-0.3979486	0.2216966	-1.8	0.073	-0.832466	0.0365688
Single	-0.2004013	0.2643156	-0.76	0.448	-0.7184503	0.3176478
Widow	0.5903815	0.4394251	1.34	0.179	-0.2708759	1.451639
Additional Guarantee						
YES	0.2100846	0.1588032	1.32	0.186	-0.1011639	0.5213331
Job category						
Freelance	0.3748148	0.1394592	2.69	0.007	0.1014798	0.6481497
Self-employed	0.8757572	0.1338527	6.54	0	0.6134108	1.138104
Economical Sector_						
Commercial Sector	0.7050568	0.2698374	2.61	0.009	0.1761851	1.233928
Construction Sector	0.0038314	0.4904956	0.01	0.994	-0.9575222	0.9651851
Industrial Sector	1.010965	0.3699979	2.73	0.006	0.2857828	1.736148
Public Sector	0.5858204	0.263109	2.23	0.026	0.0701361	1.101505
Service Sector	0.2797729	0.2258699	1.24	0.215	-0.1629239	0.7224697
Country						
LEBANON	0.2168795	0.1464982	1.48	0.139	-0.0702517	0.5040107
Mohafaza						
Bekaa	0.0251559	0.2535913	0.1	0.921	-0.471874	0.5221857
Mount Lebanon	-0.0458258	0.1629166	-0.28	0.778	-0.3651364	0.2734849
North Lebanon	-0.0527893	0.2182368	-0.24	0.809	-0.4805257	0.374947
South Lebanon	-0.0050185	0.2346429	-0.02	0.983	-0.4649102	0.4548731
Loan Type						
Purchase	-0.2294727	0.1840196	-1.25	0.212	-0.5901445	0.1311991
Renovation	-1.298583	0.7437918	-1.75	0.081	-2.756388	0.1592224
Under Construction	0.5245479	0.381181	1.38	0.169	-0.2225531	1.271649
_cons	-3.495022	0.615263	-5.68	0	-4.700915	-2.289128

Next, we need to check for a greater than 15% Change in Betas for Predictors in the Model. Potential confounding of predictors: Number of Children, Monthly Payment, LTV, Loan to Market Price Ratio, Interest Rate, Marital Status, Job Category, Economical Sector, Loan Type **By:** Age, Gender, Loan Tenor, Income, Debt Ratio, Selling Price, Additional Guarantee, Country, Mohafaza.

Table 9. Confounding Predictors Coefficient Change in Beta

Predictors	Coefficient without confounding	Coefficient with confounding	Change in Beta's	Change
number of children	0.104183	0.1018338	0.023069	2.306896
Monthly Payment	-3.67E-07	-5.00E-07	-0.266	-26.6
LTV	2.287339	2.234713	0.023549	2.354933

Predictors	Coefficient without confounding	Coefficient with confounding	Change in Beta's	Change
LTMP ratio	-2.008557	-1.966337	0.021471	2.147139
Interest Rate	0.210041	0.2067166	0.016081	1.608192
MaritalStatus_code				
Married	-0.4217655	-0.3979486	0.059849	5.984918
Single	-0.2213838	-0.2004013	0.104702	10.47024
Widow	0.600315	0.5903815	0.016825	1.682556
Jobcategory_code				
Freelance	0.419258	0.3748148	0.118573	11.85737
Self-employed	0.9437229	0.8757572	0.077679	7.760726
EconomicalSector_code				
Commercial Sector	0.7148428	0.7050568	0.01397	1.79733
Construction Sector	-0.0039821	0.0038314	-2.039329	-203.9333
Industrial Sector	1.006652	1.010965	-0.002662	-0.426622
Public Sector	0.5975713	0.5858204	0.020589	2.0058878
Service Sector	0.2542959	0.2797729	-0.0910631	-9.106314
LoanType_code				
Purchase	-0.2495123	-0.2294727	0.03289	8.7328907
Renovation	-1.250974	-1.298583	-0.036623	-3.666227
Under Construction	0.5290428	0.5245479	0.0085691	0.8569093

Results: The relative change in the beta's in the good model are less than 15.6%. Therefore, greater chances are there for candidate model to be the best fitted model. Next, we need next to investigate about interaction between predictors of the candidate model.

3.3.5. Investigate Effect Modification

Are individuals who are both unemployed and with low income more likely to be defaulted? For this illustration, we will create a new variable called 'low' to capture borrowers whose monthly payment is less than or equal to 900.000 LBP. Then we will create an interaction of lowpay and Job categories. Then we run a regression model that includes the main effects of both of the variables contributing to the interaction. Thus, this model includes the main effects of low-pay and in addition to the interaction low-pay _Job category. Next, we generate a new variable labeled low-pay where it is a Monthly installment associated with an amount less than or equal to 900.000 LBP

Table 10. Summary Statistics for Variable lowpay

lowpay new variable		Monthly Payment	Freq.	Percent	Valid	Cum.
0	Other	> 900.000 LBP	4550	67.47	67.48	67.48
1	Lowpay	<=900.000 LBP	2193	32.52	32.52	100
		Total	6743	99.99	100	

We are interested to generate an interaction variable for borrowers those who work as employees and their loan monthly payment less than or equal to 900.000 LBP.We generate new variable low pay _ Job category so that borrowers are assigned zero if their monthly payment greater than 900,000 LBP and those who monthly payment less than or equal to 900,000 to assigned 1 for employees, 2 for freelancer, and 3 for self-employed.

Table 11. Interaction Variable

	lowpay_Jobcategory	Freq.	Percent	Valid	Cum.
0	Other	4550	67.47	67.48	67.48
1	employee and lowpay	1853	27.48	27.48	94.96
2	Freelancer	184	2.73	2.73	97.69
3	Self-employed	156	2.31	2.31	100
	Total	6743	99.99	100	

Table 12. Descriptive Statistics for Interactive Variable

Job category	other	Monthly pay <=900.000	Total
Employee	3,326	1,853	5,179
Freelance	662	184	846
Self-employed	562	156	718
Total	4,550	2193	6,743

We can conclude from the above figure that 1853 borrowers are both employees and have loan monthly payments less than or equal to 900.000 LBP. Next, we need to perform a likelihood ratio test to check the significance of the model after adding a new variable with the new variable interaction inserted into the candidate's final model. Therefore, we will add to the final model an additional variable (low-pay) and the interaction variable (lowpay_jobcategory) and check its significance. After running the logistic regression including the variables: Number of Children, Monthly Payment, LTV, Loan to Market Price Ratio, Interest Rate, Marital Status, Job Category, Economical Sector, Loan Type, lowpay, lowpay _ Jobcategory, the following results are presented below:

Table 13. Regression Model Including Interaction Variable

Iteration 0: log-likelihood	=	-1943.9103				
Iteration 1: log-likelihood	=	-1864.8602				
Iteration 2: log likelihood	=	-1835.6704				
Iteration 3: log-likelihood	=	-1835.5781				
Iteration 4: log-likelihood	=	-1835.578				
Logistic regression			Number of obs	=	6,743	
			LR chi2(20)	=	216.66	
			Prob > chi2	=	0	
Log likelihood = -1835.578			Pseudo R2	=	0.0557	
Loan Status	**Coefficient**	**Std. err.**	**z**	**P>z**	**[95% conf.**	**interval]**
Number of Children	0.1078049	0.0435149	2.48	0.013	0.02251	0.1930
Monthly Payment	-1.54E-07	7.39E-08	-2.09	0.037	-2.99E-07	-9.40E-09
LTV	2.335896	0.5324232	4.39	0	1.292365	3.379426
Loan to Market price Ratio	-1.94	0.599954	-3.23	0.001	-3.115888	-0.7641
Interest Rate	0.1909533	0.0546323	3.5	0	0.083876	0.2980305
Marital Status _code						
Married	-0.4329017	0.2214756	-1.95	0.051	-0.866986	0.0011826
Single	-0.2225849	0.2640039	-0.84	0.399	-0.7400	0.2948533
Widow	0.5780773	0.4380881	1.32	0.187	-0.2805	1.436714
Job category _code						
Freelance	0.3788648	0.1452397	2.61	0.009	0.0942003	0.6635293
Self-employed	0.8520233	0.1580499	5.39	0	0.5422511	1.161795
Economical Sector _code						
Commercial Sector	0.7158771	0.2689094	2.66	0.008	0.1888244	1.24293
Construction Sector	-0.0677168	0.4903858	-0.14	0.89	-1.028855	0.8934217
Industrial Sector	0.9659601	0.3700067	2.61	0.009	0.2407602	1.69116
Public Sector	0.5429135	0.2641617	2.06	0.04	0.0251661	1.060661
Service Sector	0.2574801	0.2246614	1.15	0.252	-0.18284	0.6978083
Loan Type _code						
Purchase	-0.2337222	0.1785744	-1.31	0.191	-0.5837	0.1162771
Renovation	-1.226884	0.7454903	-1.65	0.1	-2.688	0.2342504
Under Construction	0.4800383	0.3775808	1.27	0.204	-0.2600	1.220083
Lowpay	0.3361596	0.2117022	1.59	0.112	-0.0787	0.7510884
Lowpay _Jobcategory	0.1269765	0.1210548	1.05	0.294	-0.1102	0.3642395
_cons	-3.692678	0.5161525	-7.15	0	-4.7043	-2.681038

Performing likelihood ratio test of interaction variable: Adding the low pay variable and the interaction variable lowpay_jobcategory to the candidate final model and assume it as **Full model**. This model will include the variables: Number of Children, Monthly Payment, LTV, Loan to Market Price Ratio, Interest Rate, Marital Status, Job category, Economical Sector, Loan Type, low pay, lowpay _ Jobcategory.

Adding the low pay variable to the candidate final model and assume it as **reduced model**. This model will include the variables: Number of Children, Monthly Payment, LTV, Loan to Market Price Ratio, Interest Rate, Marital Status, Job category, Economical Sector, Loan Type, low pay, run quietly regression to both full and reduced model and conduct likelihood ratio test for both models (lrtest reduced full).

Likelihood-Ratio Test: Assumption: reduced nested within full model LR chi2 (1) = 1.09; Prob > chi2 = 0.2955

Results: Not significant so we drop the induced variable. Therefore, as a conclusion: A reasonable multiple predictor model of default in this study contains the following predictors: Number of Children, Monthly Payment, LTV, Loan to Market Price Ratio, Interest Rate, Marital Status, Job category, Economical Sector, Loan Type.

Let's fit the final model one more time, in two ways: (1) using the command logit to obtain the prediction equation and (2) using the command logistic to obtain odds ratios instead of betas.

Table 14. Best Fitted Model

Loan Status	Coefficient	Std. err.	z	P>z	[95% conf.	interval]
Number of Children	0.104183	0.0434807	2.4	0.017	0.01896	0.1894036
Monthly Payment	-3.67E-07	6.07E-08	-6.04	0	-4.85E-0	-2.48E-07
LTV	2.287339	0.5318519	4.3	0	1.24492	3.329749
LTMP Ratio	-2.008557	0.5997135	-3.35	0.001	-3.183974	-0.8331406
Interest Rate	0.210041	0.0549681	3.82	0	0.1023055	0.3177765
Marital Status						
Married	-0.4217655	0.2209292	-1.91	0.056	-0.8547787	0.0112477
Single	-0.2213838	0.2634957	-0.84	0.401	-0.7378258	0.2950582
Widow	0.600315	0.4391309	1.37	0.172	-0.2603658	1.460996
Job category						
Freelance	0.419258	0.1355891	3.09	0.002	0.1535083	0.6850078
Self-employed	0.9437229	0.1277156	7.39	0	0.693405	1.194041
Economical Sector						
Commercial Sector	0.7148428	0.268354	2.66	0.008	0.1888787	1.240807
Construction Sector	-0.0039821	0.4887424	-0.01	0.993	-0.9618995	0.9539353
Industrial Sector	1.006652	0.3687148	2.73	0.006	0.283984	1.729319
Public Sector	0.5975713	0.2627259	2.27	0.023	0.0826381	1.112505
Service Sector	0.2542959	0.2244384	1.13	0.257	-0.1855952	0.6941871
Loan Type						
Purchase	-0.2495123	0.178292	-1.4	0.162	-0.5989582	0.0999336
Renovation	-1.250974	0.7425358	-1.68	0.092	-2.706317	0.2043694
Under Construction	0.5290428	0.3773	1.4	0.161	-0.2104516	1.268537
_cons	-3.256975	0.505895	-6.44	0	-4.248511	-2.265439

3.3.6. Model Equation:

Logit {Pr[default=1]} = - 3.25 + 0.10 X Number of Children – 0.000000367 X Monthly Payment + 2.28 X LTV - 2 X Loan to Market Price Ratio + 0.21X Interest Rate - 0.42 X (married borrower) + 0.42 X (freelance borrower) +0.94 x (self-employed borrower) + 0.7148428 X (Borrower works in Commercial Sector) + 1 X (Borrower works in industrial Sector) + 0.25 X (Borrower works in Public Sector) -1.25 X (renovation loans)

3.4. Model Diagnosis

3.4.1. The Hosmer-Lemeshow Test of Goodness-of-Fit

The Hosmer-Lemeshow Goodness of Fit Test compares observed versus predicted counts of outcome events in each of several 'meaningful' subgroups of the data, like the Chi-Square Goodness of Fit. If the fit is good (the null hypothesis is true), the observed and (model-based) expected counts will be close and their differences will be small. The actual test statistic is a sum of (observed – expected)/expected2 and is distributed chi square under the null hypothesis.
Hosmer-Lemeshow Goodness of Fit Test
HO: The current model is a 'good' fit for the data.
HA: not.
Rejection occurs for large values of the chi-square statistic with associated small p-value

3.4.2. Goodness-of-fit Test after Logistic Model

Test Results: The sample number of observation is 6743 associated with eight number of groups with Hosmer-Lemeshow chi2(6) is 5.61, The Hosmer_Lemeshow test (p=0.4686) suggests no statistically significant departure from a good fit. The null hypothesis of 'good fit' is NOT rejected.

3.4.3. The Link Test (check if there is another model that best fits the data)

The Link Test is a simple check of the fitted model. It assesses whether or not the fitted model is an adequate fit (null hypothesis) to the data or, if not if there is still some additional modeling that needs to be done (alternative hypothesis).

HO: The current model is an adequate fit for the data.
HA: Alternative modeling is needed.
A Likelihood Ratio (LR) Test is performed and compares a 'null hypothesis' adequate model (reduced) with an 'alternative hypothesis enhanced (full) model:

Reduced: logit[π] = β (0) + β (1) [$\hat{\pi}$ model]
Full: logit[π] = β (0) + β (1) [$\hat{\pi}$ model] + β (2) [$\widehat{\pi 2}$ model]
H0: β2 = 0
H 1 = not
$\hat{\pi}$: This is the predicted probability from our model; we hope this is significant.
π ˆ2: If the null is true (the model is adequate), this should be non-significant
Thus, Rejection of the null occurs for large values of the LR Test and associated small p-values.

Table 16. Table for Link test

Link test						
Log likelihood = -1844.049			Pseudo R2	=	0.0514	
Loan Status	Coefficient	Std. err.	Z	P>z	[95% conf.	interval]
_hat	1.267682	0.3613615	3.51	0	0.5594264	1.975937
_hatsq	0.0619295	0.0818108	0.76	0.449	-0.0984166	0.2222757
_cons	0.2640519	0.3867142	0.68	0.495	-0.4938941	1.021998

_hat = $\hat{\pi}$ model : This is marginally significant (p=.0)
_hatsq = πˆ2 : This is non-significant (p=0.449)
Test Results: The Link Test (p=0.449) suggests no statistically significant departure from model adequacy. The null hypothesis of 'model adequacy' is NOT rejected.

3.4.4. The Classification Table

The classification table describes the predicted number of successes compared with the observed number of successes. Likewise, it compares the predicted number of failures with the actual number of failures observed. Stata software by default chooses a threshold probability for an event as 0.5. This probability can be amended when needed. In this study, we use the default cutoff which is 0.4

Table 17. Classification Table

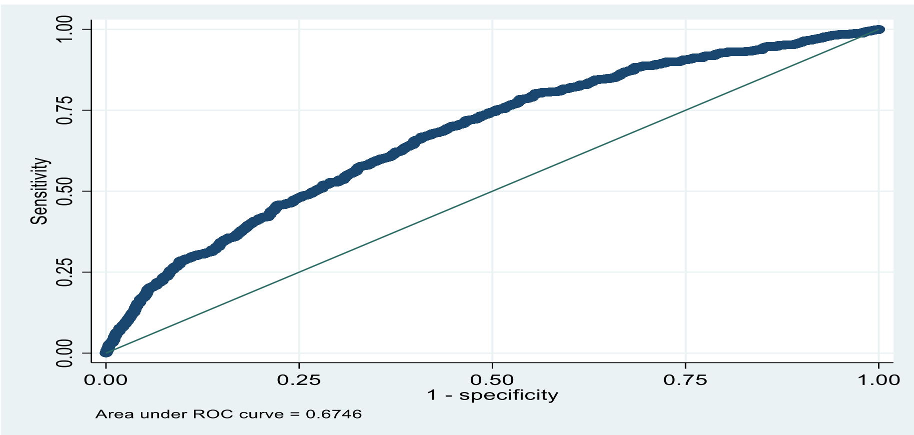
		TRUE		
Classified	D	~D	Total	
+	2	2	4	
-	564	6175	6739	
Total	566	6177	6743	
Classified + if predicted Pr(D) >=	0.4			
True D defined as Loan Status !=	0			
Sensitivity		Pr(+ D)	0.35%	
Specificity		Pr(-~D)	99.97%	
Positive predictive value		Pr(D +)	50.00%	
Negative predictive value		Pr(~D -)	91.63%	
False + rate for true ~D		Pr(+~D)	0.03%	
False - rate for true D		Pr(- D)	99.65%	
False + rate for classified	+	Pr(~D +)	50.00%	
False - rate for classified	-	Pr(D -)	8.37%	
Correctly classified				**91.61%**

Manual Calculation implies: (True Negative + True positive) / Total Sample Size = (2+ 6175) / 6743 = 91.61 % **match**

3.4.5. The ROC Curve and The Pregibon Delta Beta Statistic

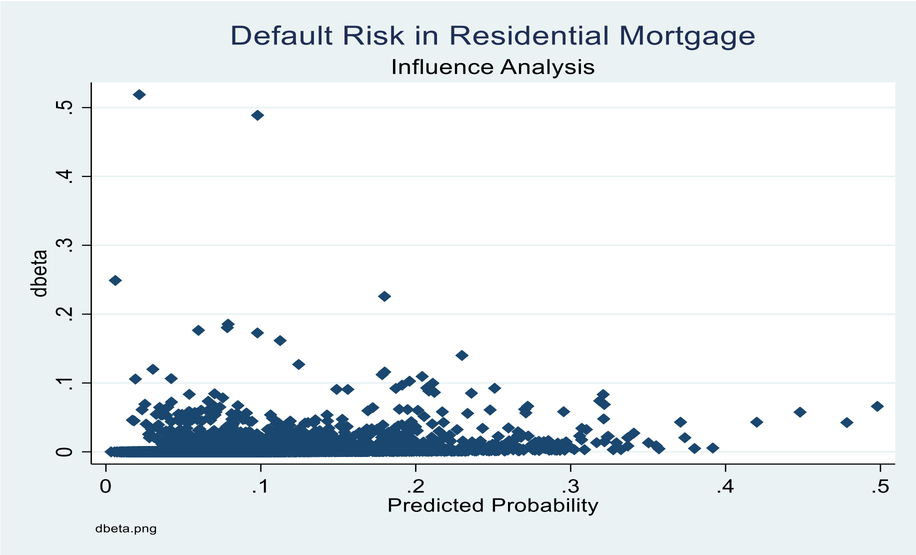
A ROC curve, short for Receiver-Operating Characteristic, serves as a graphical representation showcasing the overall effectiveness of a logistic model and the corresponding equation for predicted probabilities. This visualization accounts for two types of prediction errors: (1) incorrectly predicting a true event as a non-event (false negative), and (2) incorrectly predicting a true non-event as an event (false positive, equivalent to 1 - specificity). For different selected 'cut-off' values (where a predicted probability is designated as a predicted event), the ROC curve illustrates the relationship between false positive (X-axis) and true positive (Y-axis) values across various 'cut-off' choices. The ROC Curve c-statistic is equal to the overall percentage correctly classified which is reflected by the area under the curve.

Figure 2. ROC Curve



The straight line with slope =1 is a reference line; it corresponds to the ROC curve where chance alone is operating (coin toss with probability heads = .50). The ROC c-statistic = 0.6746 says that the overall percentage who are correctly classified is 67.46% close to 70%.

Figure 3. The Pregibon Delta Beta Statistic



Results: The dbeta values are all less than 0.25, suggesting the absence of influential points.

Conclusion and Further Research

This study empirically examines the impact of borrower, loan, and mortgage parameters on default risk in residential loans. Using 6743 individual housing loan accounts data for the selected period from 2005 to 2020 from Housing Finance Institutions in Lebanon, we use the multivariable logistic regression model, best subset logistic regression model, and stepwise regression analysis procedures to investigate the impact of 21 predictors on log odds of default risk. The empirical results suggest the following: the estimated probability of defaulting on a housing loan is approximately 3.8% when all predicted variables are set at their lowest value. In addition, gender, the existence of additional guarantees, geographical location, property location, age, loan amount, income, debt ratio, book value, selling price, and loan tenor parameters have no impact on the risk of default risk. However, the log odds of defaulting on loans increased by 10.5% for every increase in the number of dependents, decreased by approximately 0.0000367% for every one dollar increase in the monthly payment, increased by 876.1 % for one percent increase in loan to book value ratio, decrease by approximately 86.5 % for one percent increase in loan to market price ratio, and increase by approximately 23.3% for every increase of one percent of interest rate. Furthermore, for the marital status predictor, having the divorced category as a reference variable, the odds of default on loans for married and single borrowers are lower than the divorced borrower by about 34.4% and 19.9% percent respectively. However, the odds of default on loans of widow borrowers have approximately 82.2% higher log odds of default than divorced borrowers. Second, for the job category predictor, having the employed borrower category as the reference variable, the odds of default for freelance and self-employed borrowers are higher than for employee borrowers by 52.1% and 156.1 % respectively. Furthermore, for borrower's job industry, having the banking industry as the reference variable, the log odds of default on loans for borrowers working in commercial, industrial, public, and service sectors have higher log odds of default by 105.3%, 171.8%, 80.6%, 28.4% respectively. However, borrowers working in the construction industry have lower log odds of default compared to those working in the banking sector by approximately 0.395. Moreover, for the housing loan type predictor, having construction loans as a reference variable, the log odds of default for purchase and renovation loan borrowers are about 22.12% and 71.35% respectively lower than the construction loans. However, the log odds of default for under-construction loan borrowers are about 68.2 % higher than the construction loan borrowers. Furthermore, the model's overall accuracy was demonstrated by a 91.61 % visible correct classification rate.

The limitation of the study is reflected by the lack of information about borrower's credit scoring and the lending criteria as they were mentioned in many studies to have a high impact on the log odds risk of default. In addition, it is highly recommended for further work to include macroeconomic factors to examine its impact on default risk in mortgage loans. For instance, high inflation will decrease borrower income, any raise in interest rate will be associated with an increase in the monthly payment, and the high unemployment rate will affect the borrower's income and therefore the ability to pay back the loan.

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Declaration of Competing Interest

The author declares that there are no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Declaration of Use of Generative AI and AI-assisted Technologies

The author declares that he has not used generative AI and AI-assisted technologies during the preparation of this work.

References

[1] Bandyopadhyay and A. Saha (2009). *Factors driving demand and default risk in residential housing loans: Indian evidence.* MPRA Paper 14352, University Library of Munich, Germany.

[2] Bendel R. B. and Afifi A. A. (1977). Comparison of stopping rules in forward 'Stepwise' regression. *Journal of the American Statistical Association, 72*(357): 46–53. DOI: https://doi.org/10.2307/2286904

[3] Canepa and F. Khaled (2018). Housing, housing finance and credit risk. *International Journal of Financial Studies, 6*(2): 50. DOI: https://doi.org/10.3390/ijfs6020050

[4] Foote L. *et al.* (2008). Just the facts: An initial analysis of subprime's role in the housing crisis. *Journal of Housing Economics, 17*(4): 291-305. DOI: https://doi.org/10.1016/j.jhe.2008.09.001

[5] Gerardi, K. *et al.* (2008). Making sense of the subprime crisis. Brooking Papers on Economic Activity, Fall.

[6] Hosmer Jr, D. W. *et al.* (2013). *Applied logistic regression.* John Wiley and Sons.

[7] Lacour-Little, M. *et al.* (2016). What role did piggyback lending play in the housing bubble and mortgage collapse? *Journal of Housing Economics, 34:* 94-117. DOI: https://doi.org/10.1016/j.jhe.2016.08.003

[8] Levy D.S. and Lee C. Kwai-Choi (2004). The influence of family members on housing purchase decisions. *Journal of Property Investment and Finance, 22*(4): 320-338. DOI:https://doi.org/10.1108/14635780410550885

[9] Li Y.and J. Yang (2018). Default risk prediction and feature analysis: A comprehensive study. *Journal of Finance, 72*(3): 456-473.

[10] Mayer, Christopher *et al.* (2009). The rise in mortgage defaults. *Journal of Economic Perspectives, 23* (1): 27-50. DOI: https://doi.org/10.1257/jep.23.1.27

[11] Mickey, R. M. and S. Greenland (1989). The impact of confounder selection criteria on effect estimation. *American Journal of Epidemiology, 129*(1): 125-137. DOI: https://doi.org/10.1093/oxfordjournals.aje.a115101

[12] Moore *et al.* (2018). *Introduction to the practice of statistics.* Publisher: W. H. Freeman Publication.

[13] Neyman, J. (2023). *Unit 7: Logistic regression.* Available at: https://people.umass.edu/biep640w/pdf/7.%20%20Logistic%20Regression%202023.pdf

[14] Rosengren E. S. (2008). The mortgage meltdown - Implications for credit availability. Discussion presented at the U.S. Monetary Policy Forum, New York, NY. Federal Reserve Bank of Boston. Available at: https://fraser.stlouisfed.org/title/statements-speeches-eric-rosengren-9015/mortgage-meltdown-implications-credit-availability-667430

[15] Sandar, T.*et al.* (2010). Factor affecting the borrowers' repayment performance of microfinance in sub-urban areas of Yangon, Myanmar. *Journal of Economics, 14*(2): 125.

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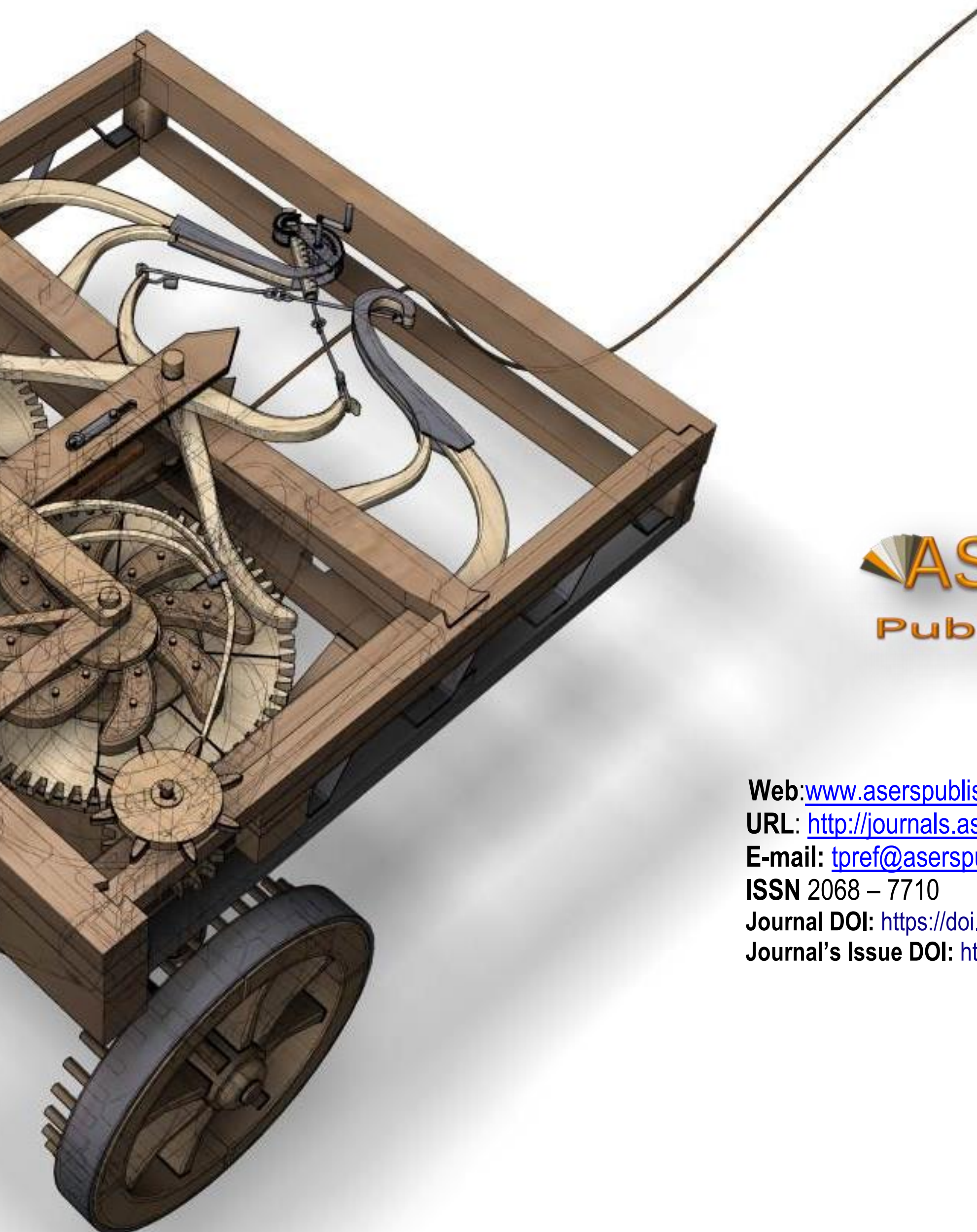

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