

Theoretical and Practical Research in Economic Fields

Biannually

Volume XIV

Issue 2(28)

Winter 2023

ISSN 2068 – 7710

Journal **DOI**

<https://doi.org/10.14505/tpref>

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Call for Papers

Volume XV, Issue 1(29), Summer 2024

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DOI: [https://doi.org/10.14505/tpref.v14.2\(28\).23](https://doi.org/10.14505/tpref.v14.2(28).23)

Management Accounting of Payment Risks of Online Trade during Military Operations

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Article info: Received 18 October 2023; Received in revised form 8 November 2023; Accepted for publication 30 November 2023; Published 20 December 2023. Copyright© 2023 The Author(s). Published by ASERS Publishing. This is an open access article under the CC-BY 4.0 license.

Abstract: *The rapid development of technologies and intensifying military operations have caused several challenges for online trade, in particular, in terms of payment risks. In this context, management accounting as a key means of monitoring and controlling these risks is assigned a special role. The aim of the article is to identify the key peculiarities of the influence of management accounting on the payment risks of online trade in the area of fraudulent operations during active military operations. The study employed a number of economic and statistical method: an in-depth semi-structured interview using the author's questionnaire, as well as an economic analysis of losses from fraud according to the methodical approaches of auditing KPMG and Crowe. The practice of identifying fast recurring transactions (78% of respondents) when working with payment risks was distinguished as a result of the research by interviewing respondents from a sample of management accounting specialists. The importance of estimating losses from fraudulent transactions (78% of respondents) in the management accounting system of payment risks is emphasized. Analysis of the results of interviewing respondents showed a positive effect of the systematic application of management accounting tools on reducing the risks of fraud in online trade. Thanks to adequate management accounting, the fraud losses is reduced by an average of 12% compared to the 2022 average industry loss rate. The obtained results revealed the key role of management accounting in overcoming the negative consequences of payment risks, namely in reducing losses from fraudulent transactions. These results can be applied to improve the financial and operational management of online trade in wartime and other crisis situations. Prospects for further research are in-depth analysis of artificial intelligence tools and machine learning in identifying payment risks of online trade.*

Keywords: fraudulent transactions; fraud losses; transaction monitoring; payment system functionality; loss assessment.

JEL Classification: M20; M40; M41.

Introduction

Online commerce has become an integral part of business operations in the current rapidly developing digital environment. Along with numerous advantages, online trading also presents several difficulties, especially in terms of payment risks. These risks, which cover such issues as fraudulent transactions, chargebacks, and payment disputes, not only have financial implications, but also affect the overall operations and reputation of companies. For this reason, it is extremely important for businesses to adopt effective strategies to mitigate these payment risks. In this context, management accounting has become a valuable tool for business in the field of online trade. These strategies involve the application of management accounting principles and methods to improve decision-making processes, as well as to mitigate potential risks. Companies can proactively identify and overcome payment risks, thereby protecting their financial stability and business reputation by implementing an adequate management accounting system. However, the effectiveness of these measures may vary depending on stronger circumstances, especially in the context of hostilities. Companies face additional complications during such periods, such as volatile market conditions and growing security concerns. So, it is important to identify appropriate management accounting measures designed to mitigate payment risks during hostilities.

The aim of the study is to determine the main features of the impact of management accounting on the payment risks of online trade during military operations in terms of fraudulent transactions. The aim involved the fulfilment of a number of research objectives:

1. Identify the key factors of the impact of management accounting on the payment risks of online trade, in particular, in terms of fraudulent transactions;
2. Carry out an analysis of the main measures of management accounting for detecting fraudulent transactions during military operations;
3. Estimate the rate of reduction of fraud losses of companies in the field of online trade during military operations.

1. Literature Review

Some studies deal with the theoretical and practical experience and features of the management accounting of payment risks of online trade. Affia et al. (2020) presented a threat-based approach to managing security risks in online trading systems. Their research emphasises the importance of proactively addressing risk by identifying potential threats before they manifest. It is emphasized that a holistic view of the online trading system is important, considering both technical and non-technical elements. This research plays an important role in understanding the nuances of security risk management and provides a comprehensive framework for enterprises to strengthen their online commerce platforms. Grüşchow and Brettel (2018) study the costs of payment transactions incurred by international online traders. The study outlines the difficulties these companies face, especially when operating in multiple jurisdictions with different transaction fee structures. Strategic cost management methods are offered to optimize profits and ensure uninterrupted operations. This understanding can help international online merchants develop cost-effective strategies for their payment systems. Nasr and Farrag (2020) present a comprehensive analysis of electronic payment systems by examining the associated risks, opportunities, and challenges. The study identifies common threats such as cyber-attacks, fraud, and system failures. The need for reliable risk management strategies to ensure the realization of the potential of electronic payment systems without compromising security systems is emphasized.

Wang (2020) focuses on the specific international payment niche of online commerce, which identifies the unique risks associated with international transactions. The study provides effective countermeasures to mitigate these risks – from improving cyber security infrastructure to the use of international norms and standards. Lin (2021) studies the risks and development research related to international online trade payments. The changing nature of risks is emphasized as online trading integrates with online financing platforms. It is assumed that companies must constantly update their risk assessment tools and strategies to stay ahead of potential threats in this changing environment. Zhang (2021) examines the transformations in accounting theory and practice due to the surge in online commerce. With the integration of online commerce into the core business, traditional management accounting methods have undergone changes. The work identifies new practices and theories that are better aligned with the digital environment, which emphasizes the need for continuous development of management accounting (Bondarenko et al. 2018).

Zhou and Chai (2020) conducted a comprehensive study of online payment risk control. Advances in technology have created favourable conditions for various innovative payment methods. However, these changes also create new risks. The relevance of adaptive risk management systems in the field of retail payments is emphasized separately. Zhang (2023) analyses the features of risk control for international online trade with a focus on the role of internal audit. It is emphasized that the international nature of these transactions makes them more vulnerable to risks. Accordingly, internal audit systems are becoming indispensable for ensuring the companies' compliance and sustainability. Online traders can create reliable control mechanisms to reduce potential threats by adopting a structured internal audit system. Wang (2021) examines financial management practices in the context of an online trading environment. The study emphasizes that the dynamic nature of online commerce requires companies to regularly improve their risk management strategies. Recommended countermeasures that companies in the field of online trade can implement to increase the efficiency of management accounting are distinguished.

Chun (2019) focuses on the growing concern regarding liability and security breaches in mobile payment systems. As online commerce increasingly tends to mobile platforms, the security of mobile payments has become a critical factor. Accordingly, companies should focus not only on the ease of transactions, but also on ensuring the security and reliability of these payments against potential breaches. Wang et al. (2022a) deal with the credit risks faced by international online traders in China. Companies face increasing credit risks with the growing integration of the world market. The researchers advocate a comprehensive assessment of these risks and emphasize the development of countermeasures adapted to the specific challenges of the Chinese context of international online trade. Yu (2021) focuses on international online trade payments in China, examines the related risks and oversight systems. It is emphasized that oversight mechanisms are becoming paramount to ensure uninterrupted and secure transactions. Such mechanisms are crucial not only for the protection of financial transactions, but also for strengthening trust among users.

Yomas and Kiran (2018) study the relationship between the development of electronic payment systems, online trading platforms, and cyber security risks. An increasing risk of cyber threats with technological progress is emphasized. Hassan et al. (2020) emphasizes the importance of an efficient and secure electronic payment system. The need for constant adaptation to cyber threats and the introduction of innovations in electronic payment systems for secure online trade transactions is emphasized. Wang and Li (2022) study the relationship between online commerce transactions and cloud technologies. The study shows that cloud technologies can offer optimized decision-making processes for online commerce in terms of funds transfer. Sharma and Prashanth (2021, 845–859) deals with the issue of secure payment methods developed for online commerce applications. The importance of ensuring the end-to-end security of transactions due to the appropriate selection of a secure payment mode is emphasized. In this context, Ogbanufe and Kim (2018) compared fingerprint-based biometric authentication with traditional authentication methods. Accordingly, biometric methods, in particular fingerprints, can become the next stage of development for electronic payment systems. Such methods not only provide increased security, but also a convenient transaction experience.

Park et al. (2018) emphasized the importance of understanding user needs in mobile payment services for online commerce. Trust plays a key role in user perception, which emphasizes the importance of building and maintaining user trust for the successful implementation of a mobile payment service. Yali et al. (2021) applied a technological approach to the risk management of online trading companies. The potential of advanced analytical models in identifying complex cases is emphasized, which can potentially fundamentally change the practice of financial risk management in online trading. Yang and Yin (2023) covers the integration of management accounting practices with cyber security for online commerce companies. It is emphasized that with the growth of cyber-threats, traditional management accounting practices require significant improvement in the management accounting system.

Byelozertsev and Prokhvatylo (2018) studied the complex aspects of accounting for payments with online store buyers. The study identifies the complexities inherent in accounting for online trade. The need for standardized processes and innovative solutions to work in the changing environment of digital transactions is emphasized. Dutta et al. (2019) offer a focused view of risk management in online commerce supply chains. The supply chain is becoming more complex because of the rapid growth of online commerce. The study identifies potential risk points and suggests strategies for effective risk management. The importance of a pro-active approach in ensuring smooth operation of the supply chain is emphasized.

Ady et al. (2022) study the context of online trade risks from a legal perspective. The study indicates the relevance of legislation in the investigation of cybercrimes in online trade transactions. The work analyses gaps in the legal framework and provides recommendations for strengthening legal measures against cyber threats.

Wang et al. (2022b) combine technological advances with financial market strategies in online trading. The study focuses on the potential of using cloud technologies to prevent financial risks in the supply chain of online commerce.

However, the issues of the development and application of effective measures of management accounting of payment risks of online trade in the course of intensifying military operations have been poorly studied.

2. Method

2.1. Research Design

The first stage is to collect data on the state of management accounting of payment risks of online trade for their further processing within the scope of this study. The second stage of the research involves studying the key areas of application of management accounting of payment risks to reduce the fraud losses rate during military operations. The method of trend analysis was used to identify the main trends in online trade payments in Ukraine before and after the intensification of military operations in February 2022. It was followed by a study using the method of in-depth semi-structured interviews of management accounting specialists in order to identify the results of the influence of management accounting on payments risks reducing the fraud loss rates of online trading companies during military operations. The reduction in the fraud loss rates during military operations was assessed based on the survey data as part of the analysis of the effectiveness of management accounting of payment risks. The final stage of the study involves the identification of limitations in terms of methodology and implementation of the conducted research on the impact of management accounting of payment risks on reducing the fraud loss rates during military operations. The conclusions of the conducted research were drawn.

2.2. Sample

A survey of a sample of management accounting specialists of online trading companies was conducted in this study in order to identify the specifics of the impact of management accounting of payment risks on reducing the fraud loss rates during military operations. The sample consisted of 180 management accounting specialists from the field working in Ukrainian companies engaged in online trade. The general set of companies in which the surveyed management accounting specialists work is represented by Ukrainian online trade companies that operate in Ukraine. The selection criteria are business activities for at least the last 3 years and the continuation of work after the intensification of hostilities in February 2022. The companies are determined by the method of simple random sampling. The questionnaire used in this study is developed by the author and consists of 15 questions: 12 closed-ended questions and 3 open-ended questions.

The sample includes respondents with different levels of professional experience in the field of management accounting - 1-2 years, 3-5 years, and more than 5 years. The respondents have higher or incomplete higher education. The structure of the studied sample is presented in Table 1. The researched sample was formed by the purposive sampling method. This method contributes to the fact that the studied sample of specialists has a diverse representation of the experience of the impact of management accounting of payment risks on reducing the fraud loss rates during military operations. The respondents were selected based on their level of professional experience, level of education, as well as belonging to the field of online trade.

Table 1. The structure of the researched sample of specialists in management accounting of companies in the field of online trade

Years of experience of specialists	Number of respondents	Educational level	Geographic affiliation
1-2 years	60	Incomplete higher education, Higher Education	Ukraine
3-5 years	60	Higher Education	Ukraine
More than 5 years	60	Higher Education	Ukraine

Source: created by the author

Criteria of the studied sample:

1. Geographical distribution (Ukraine);
2. Level of professional experience (Junior specialists: 1-2 years of experience, Mid-level specialists: 3-5 years of experience; Senior specialists: more than 5 years of experience).
3. Level of education (Higher; Incomplete higher education).

The sampling procedure:

1. Identification of potential candidates: a list of management accounting specialists who meet the research criteria was obtained in cooperation with companies in the field of online trade and industry associations. An additional applied tool for identifying potential candidates was personal recommendations in the professional circle of researchers.
2. Segmentation: Potential candidates are segmented based on their professional experience and education level. Representation of each relevant level of professional experience in the selected groups was ensured.
3. Random selection of candidates: specialists are randomly selected from each segment, which ensures representativeness in terms of professional experience and educational level.
4. Contacting the candidates: the researchers contacted the selected candidates using official communication channels to explain the purpose, scope, content of the survey.
5. Consent to participate in the survey was received from the candidates.

The data were collected through semi-structured interviews, which allowed for a controlled and flexible survey process. Interview questions covered the use of online transaction monitoring and analysis tools, payment risk forecasting approaches, regular updates of risk management accounting approaches. The interview lasted approximately 15 minutes and was conducted using a secure online video conferencing service. The research was conducted in strict accordance with ethical standards and ensured the anonymity of respondents.

2.3. Methods

Economic and statistical methods (trend analysis, in-depth semi-structured interview, economic analysis in terms of fraud losses) were applied in order to determine the specifics of the influence of management accounting on losses caused by fraudulent transactions in wartime. The study involved a survey of management accounting specialists, which was designed to identify the peculiarities of the impact of management accounting on fraud losses. The survey was conducted using the method of qualitative research, namely an in-depth semi-structured interview of 180 management accounting specialists of companies from the sphere of online trade in Ukraine.

The structure and features of the formation of the studied sample of management accounting specialists are presented in greater detail in the previous block - Sample.

The results of the interview are represented by the following indicators: 1. Application of tools for monitoring and analysing online transactions; 2. Application of approaches to predicting payment risks; 3. Applying regular updates of risk management accounting approaches. Table 2 provides a description of the indicators. The selection of selected indicators for the sample is based on best practices in terms of scientific and practical issues of using management accounting to limit fraudulent online trade transactions. The selection of these indicators is based on the methodology of a number of leading financial institutions, consulting companies, and research centres, in particular, Juniper Research (2023), KPMG (2022), Deutsche Bank (2022), Crowe (2019).

Table 2. Indicators used as part of the economic statistical analysis of key measures of management accounting of online trade payment risks

Indicator	Comment
Application of tools for monitoring and analysis of online transactions	Availability of tools to detect suspicious transactions (rapid repeat transactions; numerous disparate delivery addresses associated with a single payment card; discrepancies between IP address location and delivery location), % of respondents
Application of approaches to predicting payment risks	Availability of assessment tools and consideration of potential losses due to the realization of payment risk, % of respondents
Application of regular updates of approaches to management accounting of risks	Regular updates of internal regulatory documents regarding management accounting of risks (in terms of identifying fraudulent transactions; regular reconciliation of accounts and transactions; tracking the level of fraud losses), % of respondents

Source: created by the author

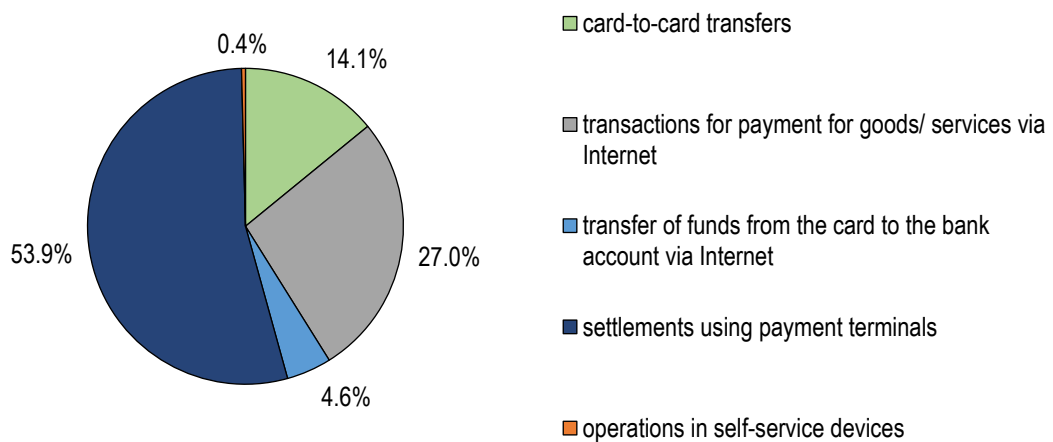
MS Excel was used as part of research to analyse sample data. Limitations of this study include potential errors or interviewer biases, as well as respondent recall mistakes. The purposive sampling method was implemented, and attention was focused on management accounting specialists of Ukrainian online trading companies in order to eliminate the shortcomings of the study. The steps were taken to generalize and discuss the results with other researchers, as well as participant checking measures to increase the validity and reliability of this study. Consolidating the results in an extended circle of researchers involves discussing the research process and the

results obtained. The respondents are checked through the presentation of findings to ensure their correctness and relevance.

3. Research Results

The state of online trade and payment risks in Ukraine are influenced by exogenous and endogenous drivers, in particular, the intensification of military operations, the development of technologies, and the expansion of cyber threats. According to the National Bank of Ukraine (2022), transactions for payment of goods and services on the Internet accounted for more than a quarter (27.0% as of May 2022) of the total volume in the structure of non-cash transactions using payment cards after the intensification of hostilities in February 2022. There has been a total of 588 million transfer transactions amounting to \$12.2 milliard in the 3-month period since the beginning of the full-scale invasion in February 2022. As of May 2022, the average amount of transactions for payment of goods and services on the Internet was \$13. The data is presented in Figure 1.

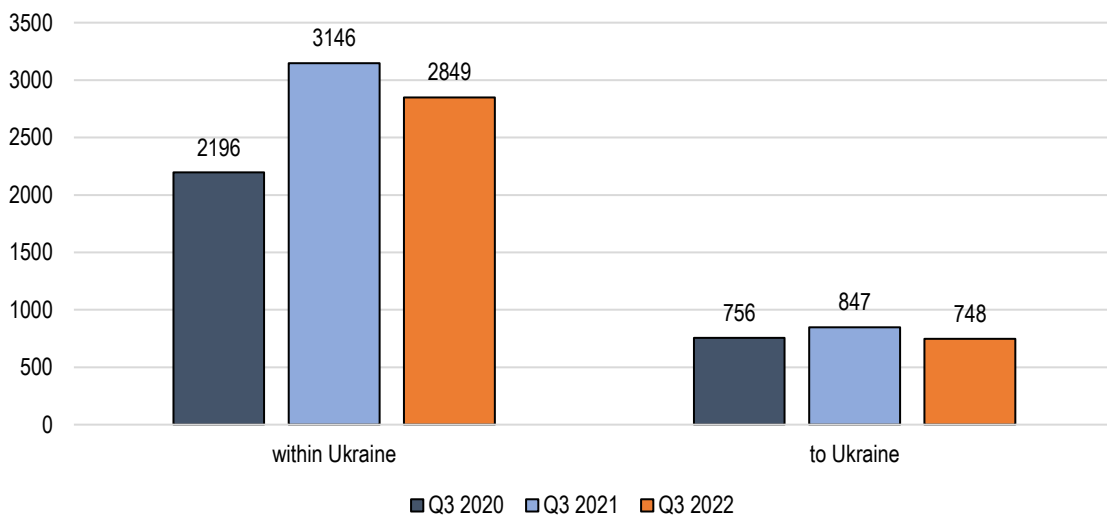
Figure 1. Structure of non-cash transactions using payment cards in Ukraine, % of the number of transactions, May 2022



Source: created by the author based on the National Bank of Ukraine (2022) data

The vast majority of money transfer systems functioned adequately despite active military operations in Ukraine. As of October 2022, 35 money transfer systems were operating in Ukraine, 28 of which were created by residents. According to the results of Q1-Q3 of 2022, 162 million transfers in the amount of \$2,848 million were made within Ukraine using payment systems (in equivalent); to Ukraine - 3 million transfers in the amount of \$747 million (in equivalent). The dynamics of these transfers did not experience a significant drop because of the intensification of hostilities from February 2022. The data are presented in Figure 2.

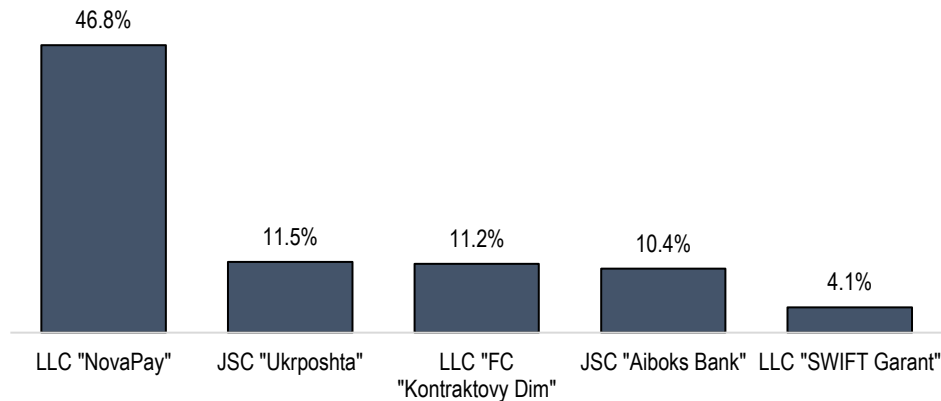
Figure 2. The number of transfers made through payment systems, USD million (equivalent), Q3 2020-2022



Source: created by the author based on the National Bank of Ukraine (2022) data

We also note the activity of payment systems in Ukraine during acute hostilities. According to the National Bank of Ukraine (2022), there were 7 payment systems of Ukrainian banks provided services in Ukraine; 17 payment systems of Ukrainian non-bank institutions; 4 intrabank transfer systems; 1 payment system of non-Ukrainian origin for 9 months of 2022. This situation reflects the high stability of the online payment system in Ukraine during active military operations. Almost half of transfers in Ukraine for Q1-Q3 2022 falls on the NovaPay service of Nova Poshta, the leading operator of the national transport delivery market. This emphasizes the importance of adequate functioning of payment systems for online trade during military operations. The data are presented in Figure 3.

Figure 3. Distribution of transfer amounts by money transfer systems created by banking and non-banking institutions within Ukraine by participants, %

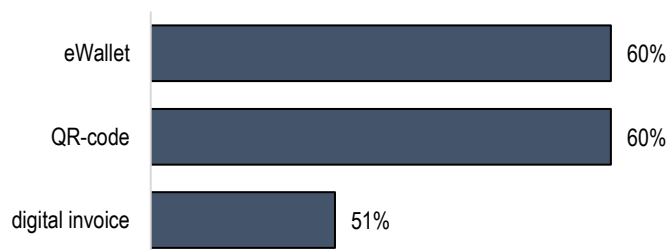


Source: created by the author based on the National Bank of Ukraine (2022) data.

In the context of online payments in 2022, banks, traders and customers suffered a total loss of more than \$14.9 million because of illegal transactions with payment cards (National Bank of Ukraine 2022). This is 46% more than in 2021 before the intensification of hostilities. The number of illegal transactions using payment cards that entailed losses increased by 8%. The average amount of a single fraudulent transaction in 2022 was approximately \$68, a third more than in 2021 (\$52). At the same time, 86% of all payment fraud cases occurred online, while only 14% occurred through physical devices (retail network, ATMs, self-service devices) in 2022.

The development of the technological trend of Ukrainian online trade is noticeable. In 2022, traders expanded the payment functionality during active military operations, which is convenient for users. In particular, according to the results of the study (UAFIC, National Bank of Ukraine 2022), 53% of retailers reported an increase in the range of digital payments in 2022 compared to 38% in 2021, which is an increase of +15 pp. Electronic wallets, QR code payments, and digital invoices stand out among the innovative strategies initiated by retailers. The data are presented in Figure 4. The development of the online trade ecosystem necessitates the improvement of the management accounting system for adequate management of the extended technological functionality of online payments.

Figure 4. Areas of expansion of the payment functionality of online trading platforms in Ukraine, % of respondents, 2022

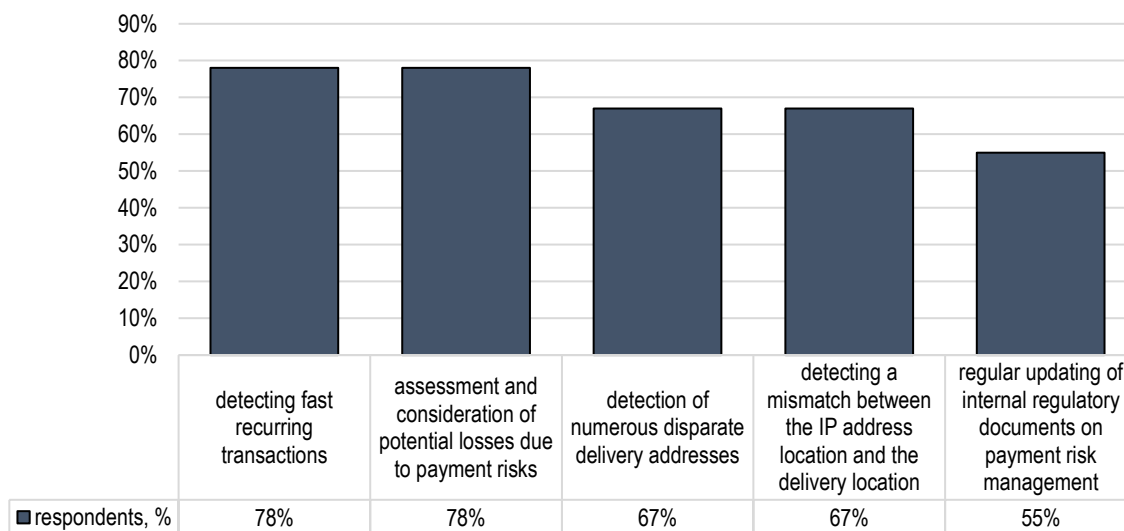


Source: created by the author based on the UAFIC, National Bank of Ukraine (2022) data.

The key directions of management accounting of payment risks of online trade during military operations were studied considering the selected trends of online payments. Interviewing a sample of management accounting specialists established that the detection of suspicious transactions is the most widespread tool in this context.

The management accounting tools identify fast recurring transactions; numerous separate delivery addresses associated with a single payment card; mismatch between the IP address location and the delivery location. Besides, measures are widely taken to regularly update internal regulatory documents of management accounting of risks. The priority directions in this field are identification of fraudulent transactions, regular reconciliation of accounts and transactions, monitoring of the fraud loss rates. The results are presented in Figure 5. This complex of solutions for management accounting of payment risks of online trade is quite effective in the turbulent period of military operations, including for fraud prevention.

Figure 5. Key priorities in management accounting for fraud transaction in online trade, % of respondents, 2022



Source: created by the author based on studied sample data.

Analysis of the studied sample of management accounting specialists also showed that companies engaged in online trade, which widely used the tools of management accounting of payment risks, achieved a reduction in the fraud loss rate. According to National Bank of Ukraine (2022), this reduction was 12% of the industry average for 2022. This reduction in the fraud loss rate improves the financial results of companies, supports their operational and financial stability, improves business reputation, and demonstrates the effectiveness of adequate managerial accounting of payment risks.

4. Discussions

So, the peculiarities of management accounting of payment risks during active military operations are established. The obtained results will be described in greater detail below.

This study accumulates and synthesizes critical findings from a wide range of sources and identifies current trends in online commerce and online payments in Ukraine during hostilities. Managing the payment risks of online commerce is critical, especially in view of the spreading vulnerabilities in the digital environment, including fraudulent transactions. Earlier work by Affia et al. (2020) emphasize the need for a threat-based approach to risk management in online trading systems. This thesis is supported by an earlier study by Wang (2020) on means of protection against the risks of international payments in online trade and points to the global nature of the dangers faced by online trading companies. Earlier work by Grüşchow and Brettel (2018) deals with the payment aspect of online commerce, particularly the challenges faced by international online traders. In particular, the focus on transaction costs reveals another layer of complexity that online commerce companies must manage to streamline operations and improve the consumer experience. This result is related to an earlier study by Nasr and Farrag (2020) in terms of emphasis on the broader context of electronic payment systems, which combines both opportunities and challenges for online commerce. Understanding and managing these difficulties is critical for e-commerce businesses seeking to make the most of digitization.

This study determined that the development of the online trade ecosystem necessitates the improvement of the management accounting system for adequate management of the extended technological functionality of online payments. This thesis is supported by an earlier study by Lin (2021) on international online trade payments in the context of online financing platforms, which demonstrates the relationship between digital finance and online trade. Earlier work by Yang and Yin (2023) examines the implications for management accounting in the context

of the interaction between online trading platforms and cyber security tools. Additional confirmation of this thesis can be found in the earlier work of Byelozertsev and Prokhvatylo (2018), which provides a comprehensive view of the issue of management accounting of online trade as part of a dense network of factors that must be considered in the digital environment. This result also confirms the earlier work of Dutta et al. (2019), which identifies the relationship between the mechanics of online commerce – especially its supply chain – and business environment risks that need to be carefully managed. This line is also supported by the earlier work of Wang et al. (2022a) with a focus on avoiding risks of online commerce supply chains, especially when combined with advanced analytics tools. In this context, an earlier study by Ady et al. (2022) emphasize the need to take into account regulatory aspects in the fight against cybercrime in online trading operations to achieve sustainable results in the market.

In contrast to the existing studies, the results of this study emphasize the need for a more detailed and in-depth study of the complex of management accounting of payment risks of online trade in the context of intensifying military operations. This study emphasizes the importance of assessing the potential for reducing fraud losses through a systemic approach to the management of payment risks during military operations. Moreover, this study emphasizes the need for regular updating of internal regulatory documents on risk management accounting with a focus on fraudulent transactions, which can contribute to improving the state of payment risk management in a turbulent period.

Conclusions and Further Research

So, the key directions of impact of management accounting on payment risks in terms of fraudulent transactions during military operations are determined. This task is difficult because of the intensification of military operations in Ukraine and, accordingly, the aggravation of exogenous and endogenous challenges in terms of users, companies, and payment infrastructure.

A study of the online trade payment risk management system in the context of military operations showed that the detection of suspicious transactions is the most common tool. This is, in particular, the detection of fast recurring transactions (78% of respondents); identification of the multiple delivery locations associated with one payment card (67% of respondents); distinguishing between the IP address and the place of delivery (67% of respondents). Practices of regularly reviewing internal regulatory documentation on management accounting for payment risks are less common (55% of respondents) in this context. These measures include updating the methodology for detecting fraudulent transactions, regularly reconciling accounts and transactions, and monitoring fraud losses. The study showed that e-commerce companies that systematically used payment risk management solutions achieved an average reduction in fraud losses of 12%, compared to the industry average loss rate for 2022. Such a reduction in losses improves the companies' financial results, preserves their operational and financial stability, strengthens their reputation. The obtained results demonstrated that management accounting plays a decisive role during turbulent situations in mitigating the negative consequences of payment risks, namely in reducing fraud losses. These results can be used to improve online trading management practices in financial and operational units, both during military operations and in other crisis situations.

Prospects for further research in this area include the analysis of the management accounting system considering the potential of artificial intelligence and machine learning to detect fraud. An additional direction of research in this field is the issue of digitization of the analysis of payment risks in the management accounting system.

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

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.

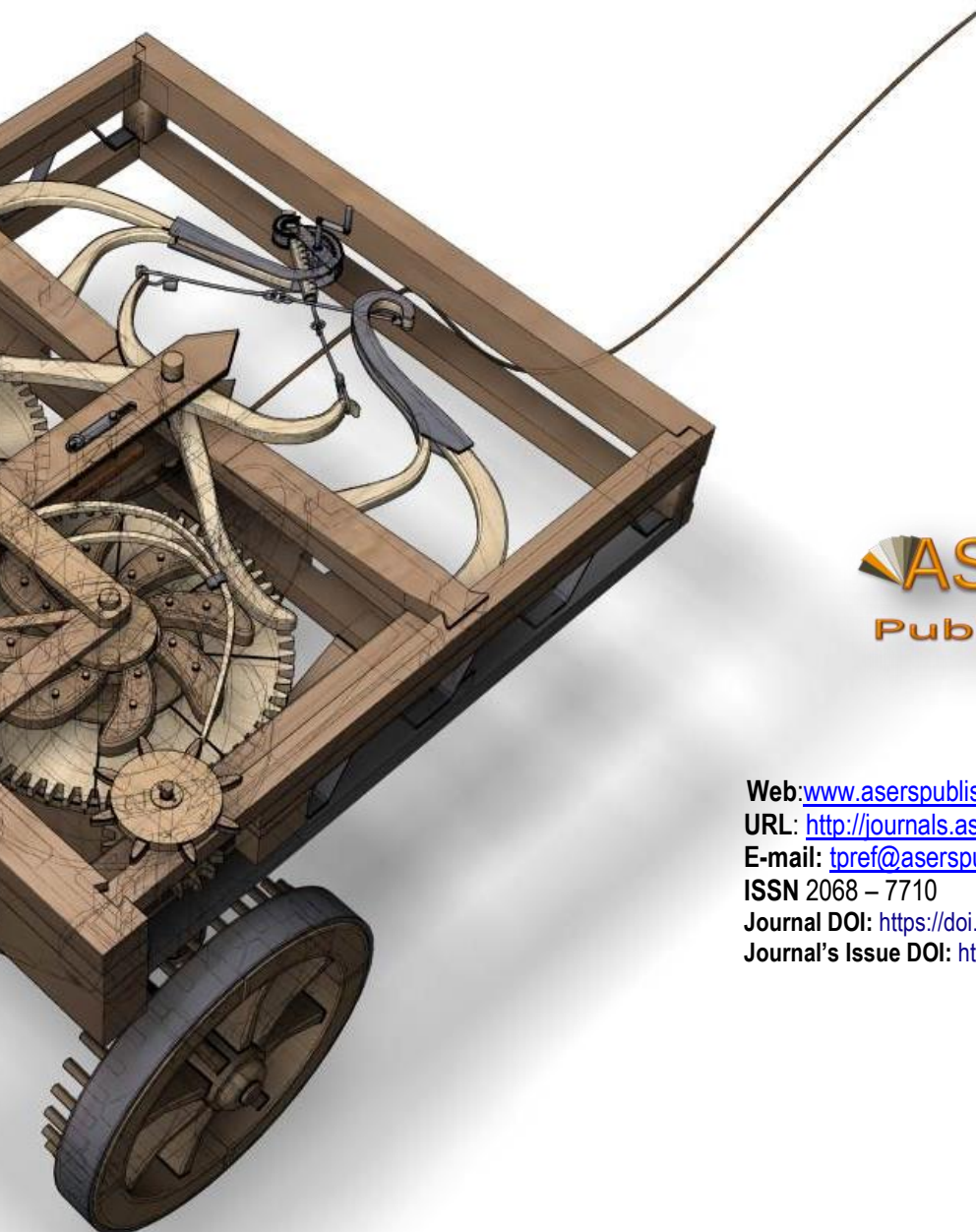
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ISSN 2068 – 7710

Journal DOI: <https://doi.org/10.14505/tpref>

Journal's Issue DOI: [https://doi.org/10.14505/tpref.v14.2\(28\).00](https://doi.org/10.14505/tpref.v14.2(28).00)