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Analysis of Sustainable Development of SMEs in Agriculture

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Abstract:

The issue of managing the financial stability of SME enterprises is one of the most relevant in modern conditions, since low financial stability can lead to the inability of the enterprise to pay its debts and obligations, as well as to the lack of funds for the development of production (investment, expansion of the material and technical base), and excess can hinder development, burdening the costs of the enterprise with excess (extra) stocks and reserves.
The key to minimizing risks, increasing their resilience and competitiveness is essential for many of the world's largest companies to develop and unlock new opportunities. The enterprises of the agro-industrial complex are no exception, given the current conditions for the functioning of the domestic economy, where certain opportunities are created for the development of small and medium-sized businesses, including in the agro-industrial complex, one of which can be noted the provision of state support for the sustainable development of small and medium-sized enterprises at the state level with the adoption a number of national projects and programs.
The aim of the study is to analyze the sustainable development of small and medium-sized businesses in the agro-industrial complex through strategic competitive advantages caused by changes that are associated with economic and structural crises in the economy. The result of the study is the identification of problems and ways to solve them.

Keywords: sustainability; small and medium business; agro-industrial complex; agriculture; development sustainability; gross output.

JEL Classification: O11; Q01; O13; Q14.

Introduction

The issue of economic and financial stability and competitiveness of small and medium-sized businesses is extremely relevant for the modern economy of Kazakhstan. In the new geopolitical situation, given the important role of large enterprises in ensuring economic and strategic security, employment of the working population and improving living standards, it is necessary to pay special attention to the development of industry and provide them with significant investment support, as other countries of the world do.

The current economic environment requires companies to be flexible and constantly improve their management approach to keep up with progress, and there are a number of key areas for developing strategic planning structures, including:

- setting strategic goals at all levels of management necessary for a systematic approach;
- creating solutions to assess regional development and strategic decision-making.

1. Literature Review

The formation, use and maintenance of the competitive advantage of the enterprise largely depend on the strategic competitive analysis. This is due to the ability to immediately identify competitive advantages in all elements of the company's business processes (concentrated in three groups: financial, managerial and marketing), both at present and in dynamics.

Sustainable economic development can be achieved by creating a favorable environment in it, in which investment activity can be stimulated and innovative potential can be effectively used to increase competitiveness and accelerate socio-economic development.

The fourth industrial revolution, according to Levina A.M. (2017) requires high-tech companies to achieve high performance and fast response in a market that is not only growing, but constantly changing. And finally, the country's ability to compete in the high-tech market is important for the development of not only individual companies, but also the country's economy as a whole, as it contributes to the development of advanced practices and the country's involvement in global integration processes.

Thus, the key idea of the sustainable development of companies is the achievement of strategic goals in the long term, taking into account the interests of various stakeholders, which takes into account all aspects of the company's activities, including economic, social and environmental, and also corresponds to its corporate values.

Strategic aspects in the evaluation of sustainable development, emphasizing the expansion of planning functions, refer to the issues of sustainable development included in the overall strategy, covering an increasing number of companies (Izmailova 2021).

The COVID-19 pandemic crisis, identified in early 2019, has already become a permanent part of world history in the 21st century. Its consequences, which have been talked about for two years now, indicate a clear economic decline, and its development, dynamics and global trend indicate the emergence of a domino effect associated with the migration of people and the spread of a virus that has affected not only human lives, but entire economies, including, in particular, some service sectors in the field of small and medium-sized businesses (hereinafter referred to as SMEs). Despite fairly strong global ties, businesses respond differently to similar threats associated with the crisis, and, more broadly, to threats arising from changes in the environment (Siuta-Tokarska, 2021). Therefore, it can be noted that there are better and worse ways to respond to external threats that differentiate the position of enterprises and their competitive advantages in a period of strong environmental turbulence.

Many government and non-governmental organizations (NGOs) have provided various forms of support to SMEs to protect critical SME sectors from the effects of COVID-19. The government has taken a number of policy measures to mitigate the negative effects of this crisis (Ahmad *et al.* 2020).

During the COVID-19 crisis, SMEs received some financial support from local and international NGOs and financial institutions (Song *et al.* 2020). In addition, small business owners have adopted a number of practices and strategies to counter the effects of the crisis (Thorgren and Williams 2020).

At the start of the pandemic, the authors hoped that the responses and practices of small and medium-sized enterprises would be aimed at reducing financial costs by using digital technologies (Go *et al.* 2020), (Papadopoulos *et al.* 2020) and Disaster Management (Eggers 2020).

However, research shows that SMEs face a variety of challenges and difficulties due to the COVID-19 pandemic. The policies adopted by many governments to combat corporate closure periods and population movements have a significant impact on small and medium-sized enterprises, paralyzing their activities, weakening their financial position, and undermining their finances (Omar *et al.* 2020; Oyewale et al. 2020).

SMEs suffer from shortages of workers and production resources due to distortions that obscure the supply chain, which adversely affects sales (Segal and Gerstel 2020) and financial obligations. This problem coincided with a decline in consumer income and consumer spending due to a broad sense of uncertainty.

As a result, many SMEs were unable to cope with the situation (Ozili 2020). Several companies have been shut down and remain closed since the first months of the coronavirus outbreak (Bartik *et al.* 2020).

I would also like to note that SMEs are now undergoing a fundamental transformation. In addition to technological, social and innovative changes that cause the transformation of social relations between people, there is a transformation of the business model of small and medium-sized enterprises.According to studies by Ștefan Cristian Gherghina, Mihai Alexandru Botezatu, Alexandra Hosszu, Liliana Nicoleta Simionescu (2020), small and medium-sized enterprises (SMEs) play a crucial role in local economic development, playing a notable role in job creation, poverty reduction and economic growth, however, they face many barriers to funding.

According to Orlov S.N. (2020), small and medium-sized businesses contribute to ensuring economic, social and political stability, quickly adapt to market needs, effectively implement new technologies and scientific developments, contribute to the formation of a competitive environment, employment growth, and increase tax revenues to budgets of all levels.

The result of the study by Sabirova R.K., Musaeva A.A., Tazhidenova A.R. (2021) was the development of methodological and theoretical provisions on the development of small business in the modern economy, as well as proposals for their implementation. The value of the study lies in a comprehensive quantitative and qualitative analysis of the share of small business.

The dynamics of the results of small and medium-sized businesses in various sectors of the national economy over the past 10 years have been analyzed by Murzakhmetova A., Mukhamedzhanova A., Zhakupova S. (2020), which revealed the main factors influencing their development.

Small and medium enterprises (SMEs) play an important role in any economy as they contribute to GDP and employment. However, the sustainability (the right mix of economic, environmental and social) of SMEs is one of the main concerns as they prioritize economic performance over environmental and social in order to remain competitive. Most of the previous studies on SME sustainability have either looked at the impact of a few constrained factors (*e.g.* lean, green technologies, innovation, etc.).

There is a clear gap in a coherent and robust framework for sustainability performance analysis to measure and improve sustainability performance. A study by Chrisovalantis Malesios, Debashree De Andreas Moursellas, Prasanta KumarDey, Konstantinos Evangelinos (2021) closes this knowledge gap by addressing two research questions - what practices and performance criteria are considered to analyze the effectiveness of sustainability in a broad environmental, economic and social context, how they are related and what methods are used to determine the relationship between sustainable development practices and performance.

In the case of many companies, including small and medium-sized enterprises, sustainability is seen as the key to minimizing risks, increasing resilience, increasing competitiveness and opening up new opportunities.

In order to be competitive and survive in the market, Kazakhstan companies must constantly monitor the external environment and make changes in their economic activities. At the same time, each change creates both new threats and opportunities for additional economic growth. Companies should be aware of unstable internal and external factors in a timely manner and plan operational and strategic measures to maintain financial stability.

The issue of managing the company's financial stability is one of the most relevant in modern conditions. Indeed, low financial stability not only does not allow the enterprise to pay off its debts and obligations, but also leads to a lack of resources for the development of production (investment, expansion of the material and technical base), and if excessive, it can slow down development and burden the enterprise's costs with unnecessary (excessive) stocks and reserves.

The sustainable development of SMEs is actively studied and analyzed by many scientists, for example, A. Karman (2019), V. Stresov, A. Evans, T.J. Evans (2017) and others consider the problems and solutions to the concept of sustainable development of economic growth.

Today, sustainable development should be understood as a process of economic, social and managerial changes aimed at harmonizing economic activity, while it should be noted that the use of natural resources is necessary to solve social problems, develop scientific and technological progress in order to improve the quality of life (Bobylev 2017). Sustainable development plays a key role in society when developing business models, where various stakeholders in the business community are interested in how these opportunities can bring greater returns. The growth of sustainable entrepreneurship, which is considered a comprehensive measure for the preservation and care of future generations, is considered in Labor (Horne *et al.* 2020; Ratten *et al.* 2019; Teran−Yepez *et al.* 2020).

The sustainable development trend is gaining momentum on a global scale and creates new niches for large companies and for the country as whole and new opportunities that will significantly affect the activities of companies both within the country and in foreign economic activity. The growing importance of sustainable development factors generates a request for their analysis and assessment in the activities of companies, including within the framework of indices and sustainable development ratings (ESG-indices). Such an assessment serves as a support for both investors and responsible companies and promotes best practices.

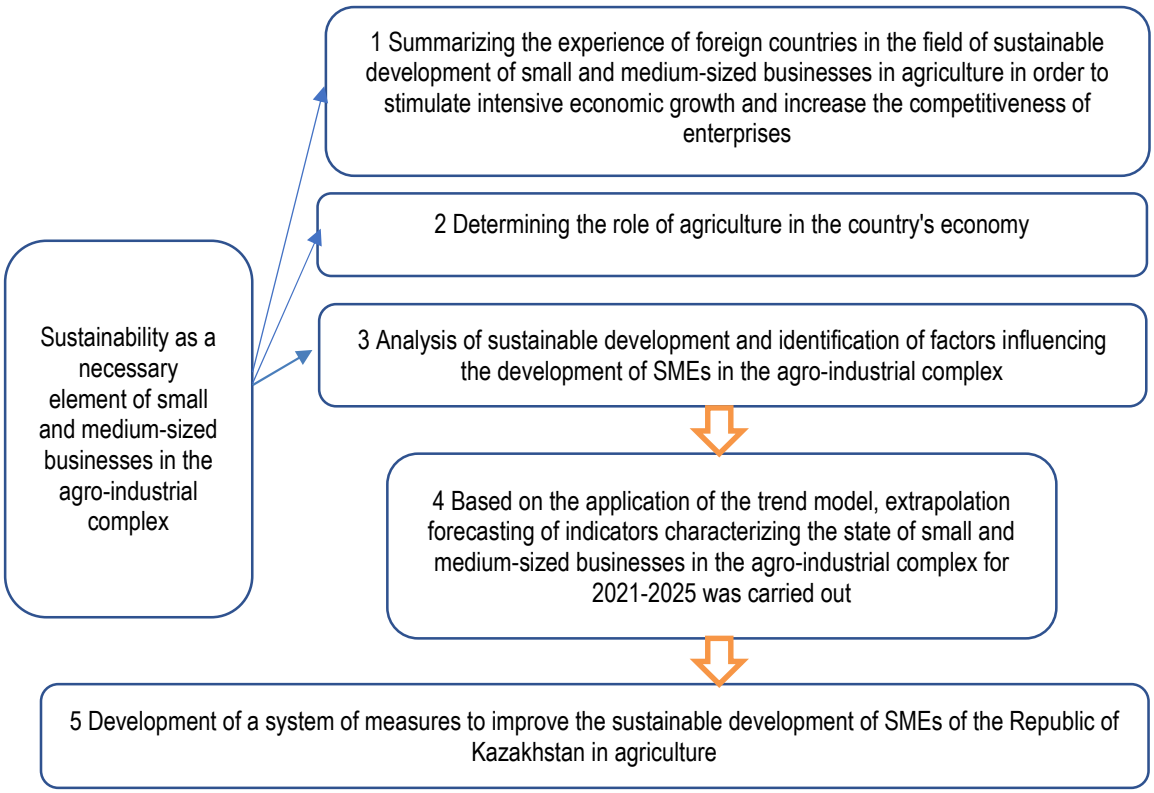
Thus, in today's business environment, sustainability is becoming an increasingly important issue for decision makers as it relates to sustainability in terms of environmental, economic and social dimensions.

2. Research Questions and Scientific Novelty

Small and medium-sized businesses in agriculture are facing serious economic and financial challenges that affect the regional and national economy and create new realities. In this connection, there is a need to identify factors that influence both the development of SMEs in agriculture and factors that have a negative impact on their development, requiring the development of strategic objectives to address these problems, since the need to develop and support the sustainable development of small and medium Entrepreneurship in the modern conditions of Kazakhstan is a priority task that requires a number of activities that stimulate the development of the country with the help of a system of indicators that are developed depending on the strategy of business entities and state policy.

The prospects for the sustainable development of small and medium-sized businesses in the agro-industrial complex and the factors influencing its development are considered as a long-term direction of structural policy at the state level, which makes it possible to create and actively develop SMEs in the face of global competition.

Figure 1. Research questions



Source: compiled by authors according to https://damu.kz/

To date, the priority areas for development in the Republic of Kazakhstan are the following sectors of the economy: mining and manufacturing, as well as the agricultural industry.

The implementation of various government programs that provide support for the country's infrastructure and innovation development has a positive effect on the development of the small and medium-sized business sector, which is supported by financing from second-tier banks. The development of its institutional environment should be focused on increasing the availability of financing for small businesses, which is presented as a set of groups of institutions - its subjects, namely: institutions that regulate the market for bank lending to small businesses, the financing system, tax institutions, legal institutions, etc.

Today, the availability of financing for innovative activities of SMEs through business lending continues to be among the factors that have a significant impact on the business climate and entrepreneurship development. The gradual improvement of lending conditions with state participation helps to attract more customers to banks, the growth of the segment of small and medium-sized businesses, the ability to remain competitive (Fedorova *et al.* 2018).

Features of the financing of SMEs have formed into specific trends around the world, which implementation of support from the state, "responsible" (targeted) investment, crowdfunding and some others.

Based on the review of measures to support SMEs abroad, the following conclusions can be drawn. According to the author, these support measures would have been quite enough for the development of SMEs, if not for the impact of the global financial crisis associated with the coronavirus pandemic that attacked the global economy in March 2020.

There are four main financing problems that SMEs face in the course of their activities. All of these problems ultimately lead to an increase in the risk of lending, which reduces the ability of SMEs to obtain a loan from a bank:

1) own funds of this category of enterprises are limited. The lack of own funds worsens the financial position of the enterprise in terms of its creditworthiness, in particular, the ratio between equity and borrowed capital worsens (financial leverage ratio). Consequently, the degree of risk that the bank takes on when lending to this category of enterprises increases;

2) while information support is of great importance for doing business in the current economic conditions, there is practically no qualitative information on the situation of individual SMEs on the market. This is due to the following reasons:

- SMEs are often family owned and their owners may not have the necessary experience to provide information;
- there is no access to financial markets, which are the main providers of publicly available information;
- there are no specialized rating agencies involved in assessing the financial position of small and medium-sized enterprises.

3. Methodology

An analysis of the development trends of small and medium-sized businesses in the service sector showed that those types of services received the greatest impetus, where rapid capital turnover is possible, a relatively high rate of return and low capital intensity of service production.

The output of products by small and medium-sized enterprises (SMMEs) after last year's reduction (2020) in comparable prices by 3.3% showed an increase of 25.4% at once and in January-June 2021 and amounted to more than 17.5 trillion tenge. 70.6% of the output of all SME products falls directly on small businesses: 12.4 trillion tenge.

Next comes the medium business: 19.6%, or 3.4 trillion tenge. Individual entrepreneurs account for 8.3%, or 1.4 trillion tenge, and peasant farms - only 1.5%, or 266.5 billion tenge. At the same time, quantitatively, almost two thirds of all SMEs are individual entrepreneurs - 62.8%; small businesses account for 21.1%, peasant farms - 15.9%. Only 0.2% of SMEs belong to medium-sized businesses.

At the same time, the majority of those employed in SMEs are small businesses: 41.5%. Following are individual entrepreneurs, where the share of employees from SMEs was 39.3%. 10.3% of the total number of employees in the sector work in companies belonging to medium-sized businesses, and in peasant farms - 8.9%.

Annual growth in the sector is observed in almost all regions of the Republic of Kazakhstan - from 9.8% in the Pavlodar region to 65.9% in the Turkestan region. Only in one region the indicator went negative - in the Mangistau region - by 5.2%.

Almost half of the output of SMEs fell on two megacities - Almaty (4.5 trillion tenge) and Nur-Sultan (4 trillion tenge).

One of the priorities of the state policy of Kazakhstan in the field of economy is the development of small and medium-sized businesses (SMEs). The main areas of state support for SMEs in Kazakhstan include financial support, which includes subsidizing rates, guaranteeing loans and conditional placement of funds for financing SMEs.

The growth of budgets and results of programs implemented through the Damu Fund is carried out with the help of the volume of funds raised for SMEs, loans issued to participants in the programs of the Damu Fund (Table 1).

Over the past seven years, the Government, through the Damu Fund, has provided volumes of concessional SME financing comparable to OECD countries. The budget for SME support programs for 7 years amounted to 857.0 billion tenge: -297.3 billion tenge - SE "DKB 2025" and "EPV" (subsidies and guarantees), -200 billion tenge

- from the National Fund of the Republic of Kazakhstan to support SMEs agroindustry, -222.4 billion tenge - from international financial organizations (ADB, EBRD, UNDP), -43.9 billion tenge - SE "Enbek" -7.1 billion tenge - SE "Nurly Zher" » −86.3 billion tenge - other funds.

Table 1. Growth of budgets and results of programs implemented through the Damu Fund

(million tenge)

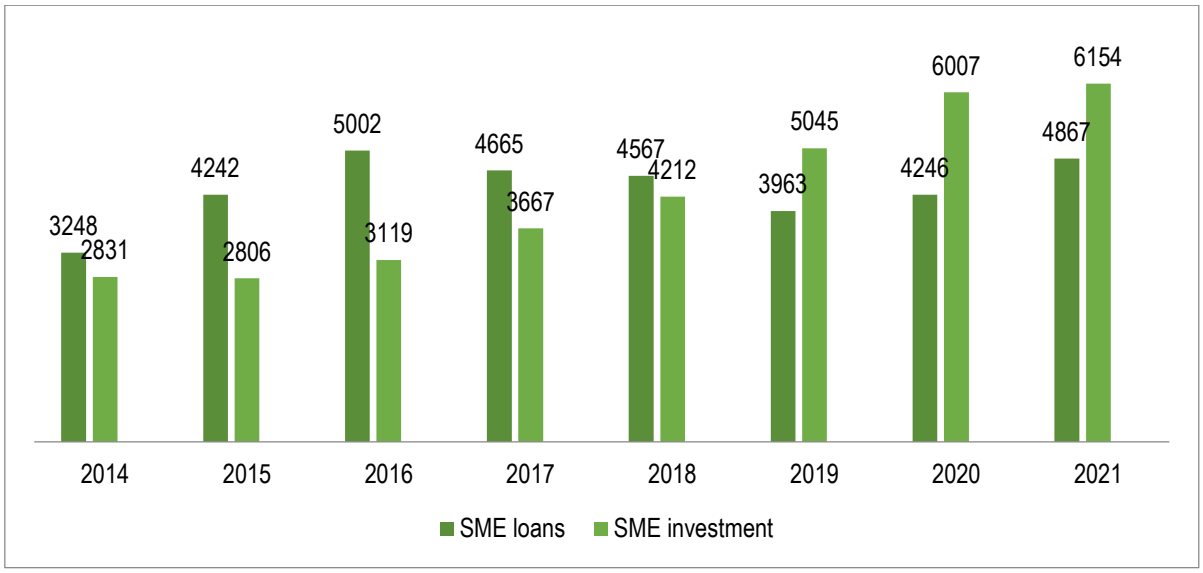
Indicator	2014	2015	2016	2017	2018	2019	2020	Total
Conditional the size	172826	145434	28218	40098	51140	67554	56460	561730
Subsidies	23135	32646	30629	30609	40793	35725	64667	258204
Guarantees	1500	2227	2287	2951	3922	6493	17638	37018
Total	197461	180307	61134	73658	95855	109772	140785	856952
Number of funded projects								
Conditional the size	3271	3650	10145	8305	18656	18930	11136	74093
Subsidies	1497	1595	2121	2287	1475	2641	14763	26379
Guarantees	449	941	951	1234	1679	2470	7246	14970
Total	5217	6186	13217	11826	2180	24041	33145	115442

Source: compiled by authors according to https://damu.kz/

These measures made it possible to finance 115.4 thousand SME projects for a total of 4.9 trillion tenge over 7 years.

Loans are the basic resource for the growth of the SME sector. That is why the main emphasis within the framework of state programs was placed on expanding the access of SMEs to loans (Figure 2).

Figure 2. SME loans and investments, in billion tenge



Source: compiled by authors according to https://damu.kz/

The wide access of small businesses to loans has intensified their investment activities. An important role was played by the conditions of state programs, which provided for long-term financing for up to 7-10 years.

In 2014-2021, investments in fixed assets of small businesses grew, outperforming the market:

1) the annual volume of investments in small business has grown by 122% in seven years, while the entire market volume of investments has grown by 86%;

2) thanks to this, the share of investments in small businesses in total investment increased from 43% to 49%;

3) the active investment activity of entrepreneurs resulted in an increase in the number of SMEs and new manufacturing enterprises. New small and medium-sized enterprises created new jobs;

4) enterprises were able to attract more borrowed funds for investment activities. In seven years, the annual volume of investments due to borrowed funds increased by 61% to the level of 1,200 billion tenge:

- due to the growth of production and sales revenues, small businesses increase tax revenues to the budget. In particular, there is a positive trend in small business CIT expenses;

- over seven years, CIT expenses for small businesses increased by almost 3 times and reached 1,118.9 billion tenge in 2020
- the share of small businesses in the total CIT expenses of all enterprises increased from 25% to 76%. (at the same time, the abnormally high share in 2019-2020 is explained by a decrease in the amount of CIT paid by all enterprises, mainly due to medium and large businesses).

According to the forecast data of the Fund on enterprises and entrepreneurs participating in the "Business Roadmap 2025", the volume of output as of January 1, 2021 amounted to 29.1 trillion tenge, including 3.7 trillion tenge for 2020.

Subsidizing interest rates and guaranteeing loans within the framework of "Business Roadmap 2025" contributes to improving the financial performance of enterprises, which is especially important in the current economic situation. In turn, due to improvements in the activities of enterprises, an increase in budget revenues is ensured, the budgetary effect of the program and its economic feasibility improve. This is evidenced by the data on the results of the implementation of financial programs (Table 2).

Table 2. Results of the implementation of financial programs

Indicator	2017	2018	2019	2020	2021
Financing entrepreneurs through conditional placement of funds in STB					
Number of participants, units	8305	18656	18933	11136	11857
Amount of financing, million tenge	230469	272912	239508	207588	218594
Subsidized interest rates					
Number of participants, units	2310	1470	2647	14679	14948
Amount of loans, million tenge	275660	198380	269786	1197058	1253613
Loan guarantee					
Number of participants, units	1317	1950	2674	7346	7426
Amount of loans, million tenge	42845	65455	102740	275546	317251

Source: compiled by authors

Considering the sustainability of SMEs in the field of the agro-industrial complex (hereinafter referred to as the agro-industrial complex), we note that the formation of the agro-industrial complex has a territorial and regional character. Their level of development depends on many factors:

- proximity of deposits and resources;
- availability of relatively inexpensive energy sources;
- infrastructure development;
- availability of labor, material and other resources necessary for production activities.

The largest number of agricultural organizations is located in Turkestan. Almost 2 times fewer organizations are located in Almaty (1,821), which ranks second in terms of the number of such organizations.

Table 3. Dynamics of the considered indicators for 2010-2021

Year	Output of SME products in agriculture, million tenge	Number of registered legal entities in a peasant farm, units
2010	1 822 074,1	170309
2011	2 720 453,4	182986
2012	2 393 619,0	164856
2013	2 949 485,0	158583
2014	3 143 678,1	152697
2015	3 307 009,6	181154
2016	3 684 393,2	177884
2017	4 070 916,8	187527
2018	4 474 088,1	198268
2019	5 151 163,0	213457
2020	6 334 668,8	228646
2021	6 596 729,4*	318024*

Source: compiled by authors according to https://www.stat.gov.kz

Number of new agricultural organizations by industry:

- mixed agriculture - 211 new organizations;
- animal husbandry - 165 enterprises;
- cultivation of seasonal crops - 133 companies;

- auxiliary activities - 39 organizations;
- cultivation of perennial crops - 8 enterprises.

For comparison, it should be noted that for the whole of 2020, 1,626 new companies operating in the agricultural market (excluding forestry and fisheries) were registered in Kazakhstan and taking into account peasant and farm enterprises for 2021, the number of registered legal entities amounted to 318024* (Table 3).

The largest number of agricultural organizations in the regional aspect is located in the Turkestan, Almaty and Akmola regions of the Republic of Kazakhstan (Table 4).

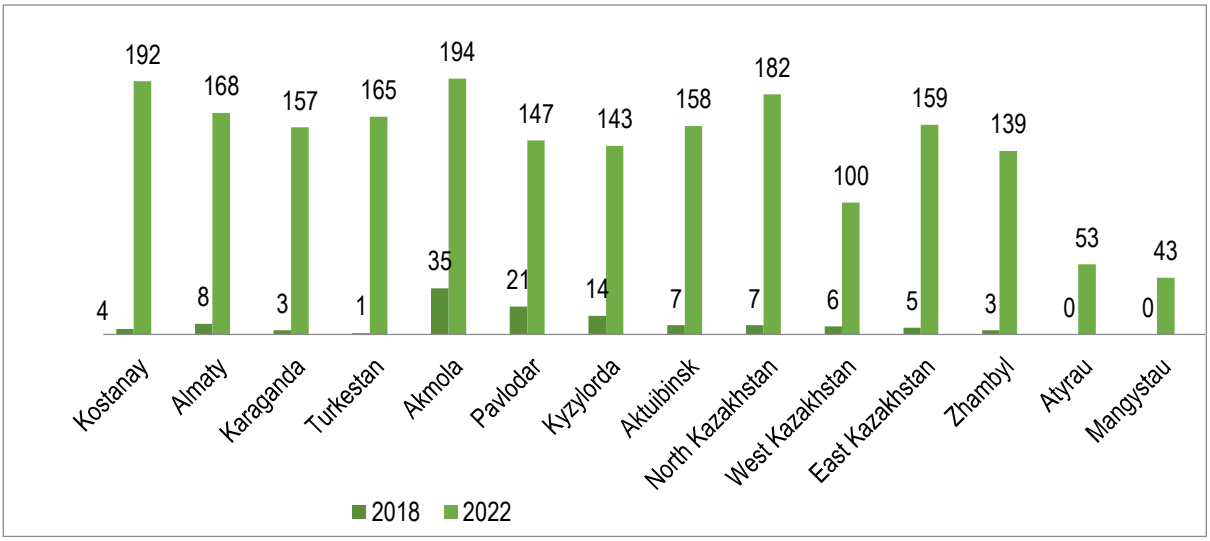
Table 4. Number of agricultural enterprises by regions of Kazakhstan at the end of 2021 (excluding forestry and fisheries)

Region	Number of enterprises
Turkestan	3695
Almaty	2122
Akmola	1999
North Kazakhstan	1346
East Kazakhstan	1241
Kostanay	928
Zhambyl	908
Almaty city	814
Karaganda	757
Shymkent city	672
West Kazakhstan	629
Aktuibinsk	592
Pavlodar	574
Nur-Sultan city	554
Kyzylorda	529
Mangistau	167
Atyrau	142

Source: compiled by authors according to https://www.Kazdata.kz

An important role is played by the level of management in the regions and the level of digitalization of agricultural enterprises. In the process of digitalization, electronic field maps are created. To date, 24 million hectares of arable land have been digitized, almost 100% of the total sown area. Also, work has begun on the digitization of pastures.

Figure 3. Forecast indicators of the development of advanced farms in the regional aspect by 2022 in Kazakhstan



Source: compiled by authors according to E-AIC Program

Farm productivity is enhanced by technologies such as:

- forecasting the optimal time for harvesting;
- "smart watering";
- intellectual system of application of mineral fertilizers;
- pest and weed control system.

In the future, by 2022, it is planned to introduce 2000 advanced farms and 14 digital farms in Kazakhstan, that is, 1 digital farm in each region (Figure 3).

In terms of directions, the distribution of subsidies is leveled off with a slight advantage in favor of crop production (Table 5).

Table 5. Distribution of subsidies in the Republic of Kazakhstan by areas

Subsidies	Crop production, thousand tenge	Animal husbandry, thousand tenge	Total thousand tenge
Animal husbandry	-	40673246839	40673246839
Fertilizer	19138436739	-	19138436739
Pesticides	26800767236	-	26800767236
Seeds	9497363160	-	9497363160
Hectare subsidy	7667397000	-	7667397000
Total	43965527396	40673246839	84638774235
%	51,9	48,1	100

Source: compiled by authors according to www.subsidies.goldau.kz

The performance of the industry has not grown and is seriously lagging behind the world, despite the fact that about 2 trillion tenge has been spent on subsidizing within the framework of three state programs for the development of the agro-industrial complex.

4. Application Functionality

In order to consider the further dynamics of the development of agricultural indicators, which relate to one of the administrative budget programs occupying 90.1% of the implementation, we will make forecast calculations using regression analysis and the Excel program.

In accordance with the forecast calculations made, we obtain the following data (Table 6, 7).

Table 6. Gross output of agricultural products (services) of the Republic of Kazakhstan

million tenge

Year	Gross output of agricultural products (services)	including:		
		gross crop production	gross livestock production	agricultural services
2010	1 822 074,1	895 425,2	920 777,3	5 871,7
2011	2 720 453,4	1 654 428,5	1 059 561,3	6 463,6
2012	2 393 619,0	1 241 517,0	1 145 437,3	6 664,7
2013	2 949 485,0	1 683 851,4	1 256 871,7	8 761,9
2014	3 143 678,1	1 739 436,4	1 393 762,0	10 479,7
2015	3 307 009,6	1 825 236,7	1 469 923,1	11 849,8
2016	3 684 393,2	2 047 580,8	1 621 541,4	15 271,1
2017	4 070 916,8	2 249 166,9	1 810 914,1	10 835,8
2018	4 474 088,1	2 411 486,7	2 050 455,8	12 145,6
2019	5 151 163,0	2 817 660,6	2 319 496,7	14 005,7
2020	6 334 668,8	3 687 310,3	2 637 460,7	9 897,9
2021	6 596 729,4*	3 729 425,2	2 834 625,9	9 957,8

Source: compiled by authors

According to the calculations made and the data obtained for 2025, you can see:

- increase in gross livestock production of the Republic of Kazakhstan by 577,110.3 million tenge;
- increase in gross crop production of the Republic of Kazakhstan by 477,611.7 million tenge;
- increase in the gross output of agricultural products (services) of the Republic of Kazakhstan by 1,061,908.2 million tenge.

The calculations made indicate that the management system of the Republic of Kazakhstan in the field of development of the agro-industrial complex has a direct impact on the growth of the country's economic well-being, since the indicators indicate growth with forecast values until 2025.

The agro-industrial complex of Kazakhstan has a high state support. The policy of the state is aimed at increasing the competitiveness of agricultural products and ensuring maximum coverage of the subjects of the agro-industrial complex with state support. To achieve this goal, state development programs have been developed:

- The State Program for the Development of the Agroindustrial Complex of the Republic of Kazakhstan for 2017 - 2021;

- State program of industrial and innovative development of the Republic of Kazakhstan for 2015 - 2019;
- Program for the development of productive employment and mass entrepreneurship for 2017-2021;
- work is underway to expand cooperation between the Republic of Kazakhstan and international financial organizations, as well as measures are provided to reduce the state's share in the economy and increase the stability of the financial system of the Republic of Kazakhstan as a result of tightening banking legislation and the transition of second-tier banks to Basel III.

Table 7. Forecast values of development indicators of the Republic of Kazakhstan for 2021-2025

Indicator	2021	2022	2023	2024	2025
Gross output of agricultural products (services) of the Republic of Kazakhstan					
Trend	5894366,167	6269919	6645471,584	7021024	7396577
Growth	6427472,285	7133462	7916996,725	8786595	9751709
Prediction	5894366,167	6269919	6645471,584	7021024	7396577
Gross crop production of the Republic of Kazakhstan					
Trend	3308156,685	3522347,944	3736539,202	3950730	4164922
Growth	3635484,424	4052325,988	4516962,253	5034873	5612168
Prediction	3308156,685	3522347,944	3736539,202	3950730	4164922
Gross livestock production of the Republic of Kazakhstan					
Trend	2571877,125	2732550,565	2893224,004	3053897,4	3214571
Growth	2787855,668	3081739,361	3406603,003	3765712,4	4162677
Prediction	2571877,125	2732550,565	2893224,004	3053897,4	3214571
Services in the field of agriculture of the Republic of Kazakhstan					
Trend	6764,259091	7452,270909	8140,282727	8828,2945	9516,306
Growth	6691,958424	7216,818345	7782,843783	8393,2634	9051,559
Prediction	6764,259091	7452,270909	8140,282727	8828,2945	9516,306

Source: compiled by authors

The conclusions of the results of the calculations made are shown in the information below.

RESULTS

Regression statistics	
Multiple R	0,956259977
R- square	0,914433143
Normalized R- square	0,904925714
Standard error	401626,9037
Observations	11

Analysis of variance

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	1,55144E+13	1,55144E+13	96,18091118	4,20675E-06
Remainder	9	1,45174E+12	1,61304E+11		
Total	10	1,69661E+13			

	coefficient	Standard error	*t-statistic*	*P-Meaning*	*Min 95%*	*Max 95%*	*Min 95,0%*	*Max 95,0%*
Y- intersection	-753097657,1	77161744,87	-9,759987392	4,37853E-06	-927649650,9	-578545663,2	-927649650,9	-578545663,2
Variable X 1	375552,7082	38293,62275	9,807186711	4,20675E-06	288926,5152	462178,9012	288926,5152	462178,9012

Thus, the development and support of entrepreneurial activity, the development of competition and investment attractiveness depend on a wide range of factors that reflect the general state of the state's economic policy and the position of state institutions. The issues of developing the business climate, increasing investment attractiveness and, in general, the competitiveness of the economy are among the key areas of the economic policy of any state

5. Environmental Impact

A number of recent high-profile publications have drawn attention to agricultural emissions (Poore and Nemecek, 2018) and how they can and should be reduced to meet environmental obligations (Springmann *et al.* 2018). However, in many studies, the role of agriculture in climate change has some key principles that are increasingly

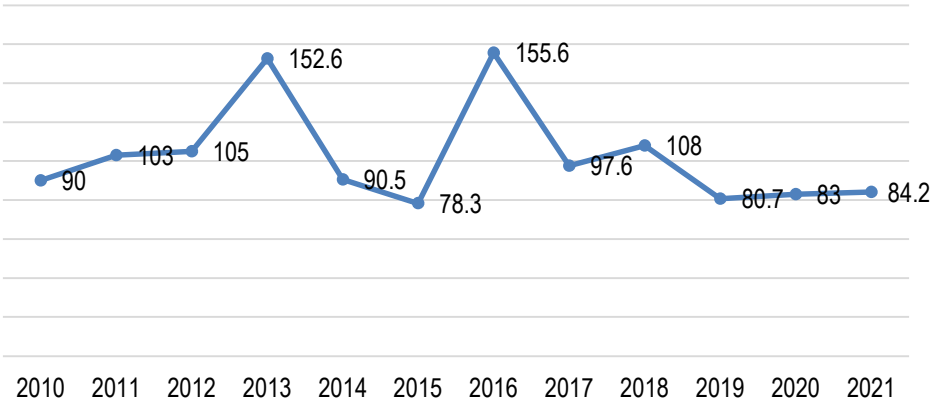
overlooked or misunderstood: in particular, how the impact of methane (CH4) and nitrous oxide (N2O), the main greenhouse gases emitted in agricultural production, is different from each other and, in particular, from carbon dioxide (CO2). Understanding these differences is important not only to understand what reductions in emissions of various gases can achieve in the context of the Paris Temperature Target, but also to inform policy decisions.

Climate change is defined as the increase in combined land and sea surface air temperatures, globally averaged over a 30-year period. Warming is expressed in relation to the period 1850-1900 used to determine the approximate value of pre-industrial temperatures. Warming trend from pre-industrial levels compared to the decade 2006-2015 estimated at 0.87 °C. Since 2000, the estimated level of anthropogenic warming corresponds to the level of observed warming within ±20 percent, taking into account the uncertainty associated with solar and volcanic activity over the historical period (IPCC, 2018). Climate models show consistent differences in regional climate characteristics between today and conditions at 1.5°C global warming, and between 1.5°C and 2.0°C warming. These differences are to increase the following indicators:

- average temperature in most regions of land and ocean,
- extremely hot weather in most populated areas,
- strong atmospheric precipitation in a number of regions,
- as well as the likelihood of drought and lack of precipitation in some regions.

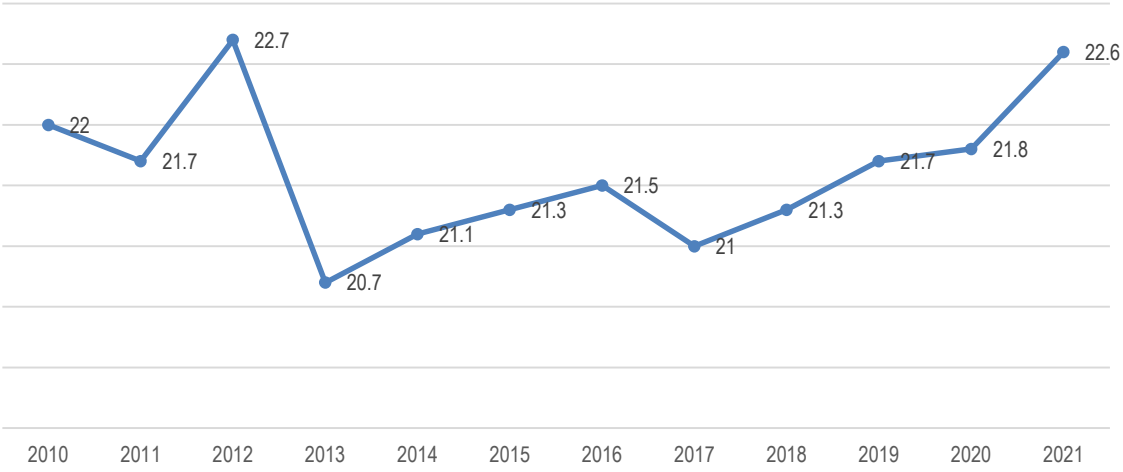
This is evidenced by the data that give an idea of the change in the average air temperature, the amount of precipitation and their fluctuations in the Republic of Kazakhstan (Figure 4, 5).

Figure 4. Dynamics of the average amount of precipitation in the summer for 2010-2021, mm.



Source: compiled by authors according to http://www.kazhydromet.kz

Figure 5. Dynamics of average air temperature in summer for 2010-2021, degrees Celsius



Source: compiled by authors according to http://www.kazhydromet.kz

Further climate change may also pose a threat to food security through impacts on plant-derived food crops and animal feed. Wheat, rice and maize are expected to be worst affected in the tropics and subtropics, with negative climate change impacts on production projected in regions where temperatures rise 2°C or more from late

twentieth century levels, although some some places may benefit from this change, especially at higher latitudes and at higher altitudes. Global production of food and industrial crops, plant protection and plant biosecurity will also be affected, which include all strategies for assessing and managing the risks posed by infectious diseases, quarantine regulated pests, invasive alien species, living modified organisms in natural and managed ecosystems, and managing these risks.

Conclusion

An analysis of the development of SMEs in agriculture and the factors influencing it showed the professional maturity and readiness of SMEs to effectively interact with the state. However, there are issues that require special attention:

- firstly, it is necessary to prioritize access to credit resources for the purpose of replenishing working capital to restore the financial stability of SMEs and preserve jobs;
- secondly, it is worth considering expanding the instrument of partial guarantee of loans in order to really increase the access of SMEs to credit funds, especially in matters of regional SMEs;
- thirdly, in order to build effective interaction between the state and business, it is necessary to strengthen the role of institutions of associations and associations.

The author formulated conclusions and recommendations for improving the assessment of the sustainable development of small and medium-sized businesses in the agriculture of the Republic of Kazakhstan and the factors influencing the development of the agro-industrial complex. Based on the application of the trend model, extrapolation forecasting of indicators characterizing the development of small and medium-sized businesses in the agro-industrial complex for 2021-2025 was carried out, the results of which made it possible to observe an increase in the gross output of agricultural products, as well as to identify further ways for the sustainable development of SMEs in the agro-industrial complex:

- creation of favorable conditions and incentives for the implementation of effective and productive business activities;
- sustainable development of SMEs as a factor in the formation of a competitive environment;
- increasing the share of SMEs in the formation of GDP, in tax revenues of the republican and local budgets. promotion of green technologies in agriculture.

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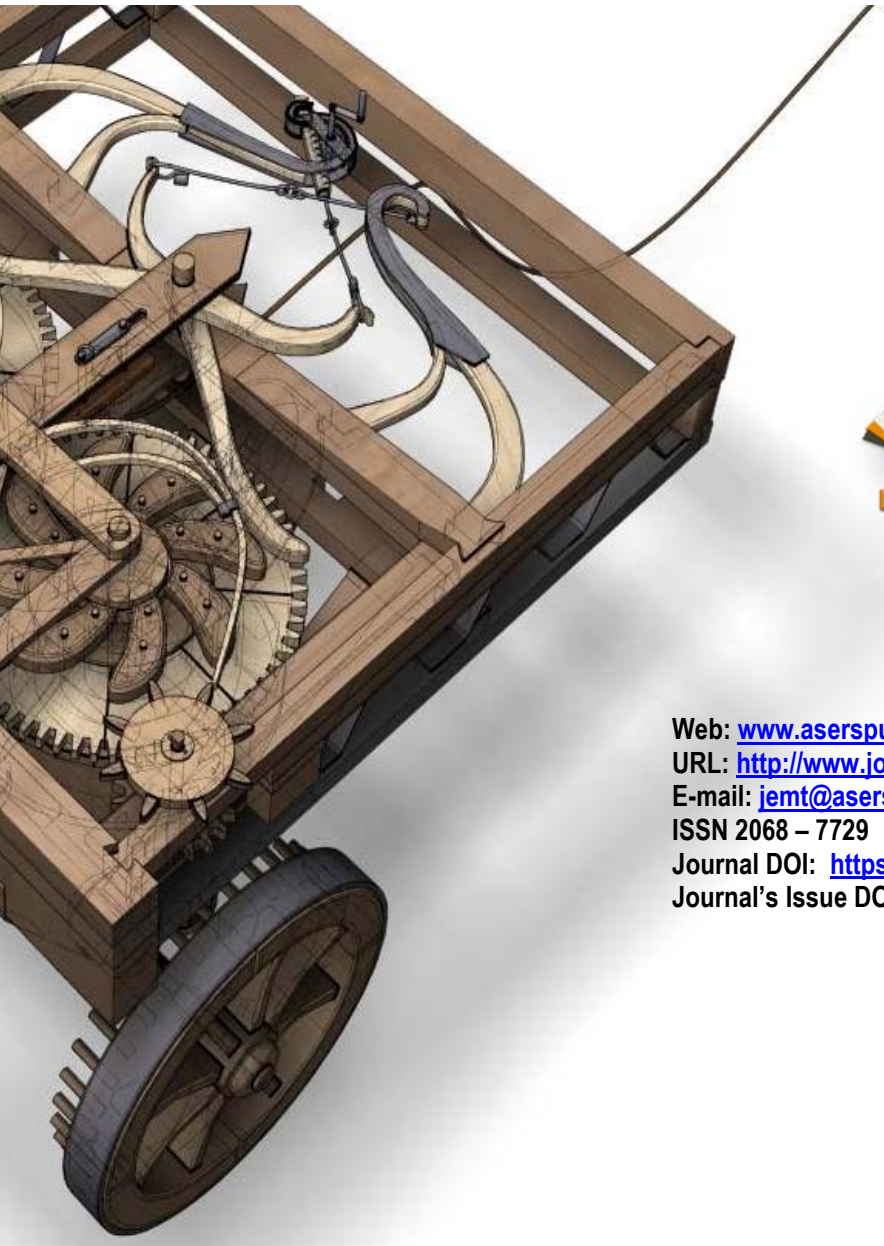
ASERS



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