

V International Scientific and Technical Conference Actual Issues of Power Supply Systems

Mathematical Analysis and Forecasting of Development of the Agro-Industrial Sector of the Regions

AIPCP25-CF-ICAIPSS2025-00511 | Article

PDF auto-generated using **ReView**



Mathematical Analysis and Forecasting of Development of the Agro-Industrial Sector of the Regions

Barno Tillaeva^{1,a)}, Rano Akramova², Jamshid Tukhtabaev³, Nigina Sayfutdinova¹

¹ Tashkent state technical university named after Islam Karimov, Tashkent, Uzbekistan

² Tashkent Institute of Chemical Technology (TICT), Tashkent, Uzbekistan

³ Graduate School of Business and Entrepreneurship under the Cabinet of Ministers of the Republic of Uzbekistan, Tashkent, Uzbekistan

^{a)} Corresponding author: barnotillaeva78@gmail.com

Abstract. Russian agricultural industrial production is at the stage of active development, and this situation is associated, first of all, with the pandemic, sanctions pressure on the economy and effective measures taken by the state to develop the industry. The country's government actively supports producers working in the agricultural sector, and through various financial systems, measures are taken to assist highly profitable producers working in the long term. Based on the analysis, we will determine the qualitative and effective change in the processes of the agro-industrial complex of the Tambov region, which is studied as an object of analysis in this issue. The purpose of the article is to analyze the results of the largest agricultural holding in the region, including agriculture and related industries, which are closely interconnected with agricultural production, transporting, storing, processing agricultural products, supplying consumers with high-quality agricultural products. For a complete study and analysis of the goal, the object of the study was a limited liability company - LLC "South-Eastern Agrogroup", which successfully, efficiently and effectively operates in the Tambov region.

INTRODUCTION

High competition in the field of agricultural production (plant growing) forces the management of agricultural enterprises to improve the functional components of economic security, which leads to an increase in the competitiveness of the enterprise. In a highly competitive environment, maintaining the stable functioning of an enterprise is quite difficult, and also requires an integrated approach. Agricultural enterprises are characterized by a high degree of dependence on natural and climatic conditions, as well as exposure to various unpredictable factors that impede the development of the company. The business reputation of an enterprise (organization) depends not only on the level of fulfillment of its supply obligations, but, to no lesser extent, on the quality of the products and services it offers to the market. Their quality should be the subject of constant concern for the management of the enterprise and, of course, the subject of constant analysis and control.

In the conducted research, we studied the theoretical aspects and methods of analyzing the functional components of economic security, examined the mechanisms of risk management in economic security, and analyzed the main indicators of the organization.

The activities of modern enterprises are difficult to imagine today without the use of a certain set of technologies for material and intellectual production. The quality of these technologies largely determines the efficiency of the enterprise's functioning and its economic security. Therefore, it is important that the chosen technologies meet the best quality standards.

METHODS

In the course of the research, methods such as analysis and synthesis, moving from the specific to the general, critical analysis, the method of logical imperatives, and financial condition diagnostics based on a comprehensive analysis of financial statements were used.

RESULTS

According to Rosstat and the Ministry of Agriculture, at the beginning of 2022, according to the criterion of the amount of value added that was produced in the Russian agricultural sector, the country occupies the fifth position in the world ranking (4.4 trillion rubles); is in seventh place in terms of direct investment in the agro-industrial complex, farms of all categories of the Russian Federation (agricultural organizations, farmers, personal subsidiary) in 2021 produced products worth 7 trillion 572 billion 344.5 million rubles. Nevertheless, domestic experts in the field of agriculture speak of an extensive type of development of the industry [1]. At the same time, the area under crops and, accordingly, the number of agricultural machinery [2], is gradually decreasing, which may be due to the economic difficulties facing the farms, as a result of which the farms simply do not have the opportunity to fully use all available land and resources [3], [4].

What are the current realities in the agricultural organizations of the Tambov region? To answer this question, we have identified "South-Eastern Agrogroup" LLC, which is one of the largest agricultural holdings in the region.

The farmland of the agricultural holding is located in the Tambov, Penza, Voronezh, Volgograd and Saratov regions. In the Tambov region, the enterprise has land on the territory of Bondarsky, Gavrilovsky, Zherdevsky, Inzhavinsky, Kirsanovsky, Muchkapsky, Pichaevsky and Umetsky districts. The company is part of the ASB Group of Companies. "South-Eastern Agrogroup" has a closed production cycle, including the cultivation, storage, processing and sale of agricultural products. Particular attention is paid to the cultivation of sugar beet in "South-Eastern Agrogroup" LLC. The farms have successfully introduced the technology of growing this crop without the cost of manual labor using chemical plant protection products. Since 2013, the agricultural holding has been cooperating with the Tambov State Scientific Research Institute of Agriculture. 15 promising varieties of winter and spring wheat are under ecological testing. The leading role in the technical equipment of the agricultural holding is played by modern agricultural machinery, both domestic and imported, which meets all modern requirements in terms of the quality of operations performed and ease of use.

In picture 1 it can be noted that LLC "South-Eastern Agrogroup" is the leader in terms of revenue received.

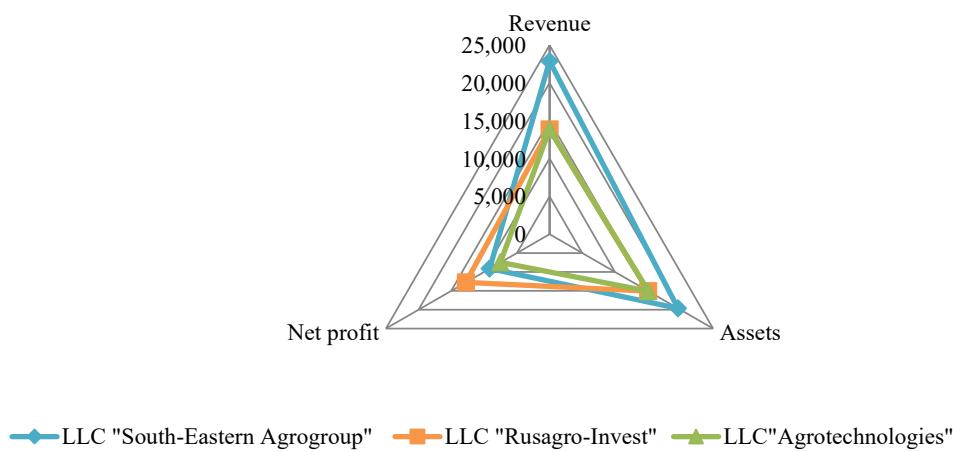


FIGURE 1. Indicators of the main competitors of "South-Eastern Agrogroup" LLC for 2021

Let us consider in detail the analysis of the profitability of "South-Eastern Agrogroup" LLC, for this we will compile a table 1.

TABLE 1. Assessment of the profitability of the organization

Indicators	2017	2018	2019	2020	2021
Net profit, thousand rubles	1200430	1634410	1656810	5707000	9145060
Return on investment (ROI), %	0.058	0.102	0.066	0.148	0.171
Return on sales, %	0.399	0.381	0.320	0.534	0.629

When assessing the profitability of the enterprise, absolute deviations and the growth rate of indicators from the table were calculated. Their values are shown in table 2.

One of the most important performance indicators of any company is net profit. After analyzing tables 1 and 2, one can note an increase in the size of this indicator. So from 2017 to 2021, it increased by 7944630 thousand rubles, which is 662%. According to the tables, we can say about a slowdown in the growth rate of the indicator in the last year by 184.2%.

TABLE 2. Calculation of absolute and relative deviations

Indicators	2017-2018	2018-2019	2019-2020	2020-2021
Absolute deviation				
Net profit, thousand rubles	433980	22400	4050190	3438060
Return on investment, %	0.05	-0.04	0.08	0.02
Return on sales, %	-0.02	-0.06	0.21	0.1
Relative deviation				
Net profit, %	36.15	1.37	244.46	60.24
Return on investment, %	77.71	-35.60	125.03	15.07
Return on sales, %	-4.47	-16.08	66.87	17.82

Return on investment grew throughout the study period. The only exception was 2019 with a value of 0.066%. The highest return on investment was 0.171%. The total increase for 2016-2020 was 0.113%, which is 195%. Return on sales also showed significant growth in the study period. It changed from 0.399% in 2017 to 0.629% in 2021. Despite the fact that in 2018 and 2019 the indicator decreased, it subsequently recovered. The amount of gross profit directly affects the organization of commercial activities and its planning in the organization. A positive value of the indicator indicates the correct and competent conduct of the economic activity of the organization.

Comparing the changes in indicators, the absolute deviations and the growth rate indicated in table 1 were calculated.

The dynamic annual growth of gross profit for the study period 2017–2021 correlates with the annual growth in the company's revenue, regardless of the difference in their growth rates. The minimum absolute deviation of the amount of gross profit compared to the previous year is observed in 2019 and amounted to -817.050 thousand rubles or 20%, the maximum - in 2021 with a value of 2,768.250 thousand rubles, which is 43%.

TABLE 3. Calculated data

Indicators	2017-2018	2018-2019	2019-2020	2020-2021
Absolute deviation				
Gross profit	1.004660	-817050	4.618160	2.768250
Revenue	3.045450	-1.274080	6.489340	2.605300
Advance Capital	2.686000	849600	14.319300	7.050700
Relative deviation				
Gross profit	60.934	-30.792	251.483	42.888
Revenue	91.507	-19.990	127.255	22.481
Advance Capital	15.257	4.187	67.733	19.884

Revenue has a positive trend throughout the study period. Its value increased significantly from 2017 to 2021. In 2017, its amount was 3,328.090 thousand rubles. By 2021, this value has grown to 14,194.100 thousand rubles. The absolute deviation for 2017–2021 was 10,866.010 thousand rubles, and the growth rate was 326%. The largest growth occurred in 2019–2020 and amounted to 6,489.340 thousand rubles.

The value of the advanced capital for the study period increased by 24,905.600, which is 232%. So in 2016, the indicator was 17,605.100 thousand rubles, and by 2021 it reached 42,510.700 thousand rubles. Throughout the period, there was a constant increase in this indicator. The largest increase occurred in 2020 and amounted to 68%. or 14319300 thousand rubles.

Analysis of the functional components of "South-Eastern Agrogroup" LLC. In table 4 shows the calculations of the profitability indicators of "South-Eastern Agrogroup" LLC for 2016-2021. The return on sales in 2016 was 49.755%, and by 2021 the enterprise received 62.880 rubles from each ruble of products profit, that is, the indicator increased by 13.25%. The lowest value of the indicator was achieved in 2019, which is due to an increase in management expenses and a decrease in sales profit.

TABLE 4. Calculated data of profitability indicators of “South-Eastern Agrogroup” LLC

Indicators	2016	2017	2018	2019	2020	2021
Product profitability	49.76	39.89	38.11	31.98	53.37	62.88
Return on investment (ROI)	116.81	71.756	63.38	51.14	111.89	185.66
Economic profitability	20.65	7.54	12.44	8.05	20.29	23.68
Return on equity (ROE)	22.20	8.73	10.83	9.97	24.09	26.49
Return on permanent capital	22.27	8.77	15.62	10.04	24.25	26.73
Return on borrowed capital	1.56	1.291	1.37	2.06	2.15	4.71
Profitability of production	0.20	0.08	0.13	0.08	0.23	0.24

DISCUSSION

One of the most important indicators of the organization's activity - return on investment (ROI) - also increased in the studied period by 68.953%. In 2016, it reached 116.807%. By 2021, the enterprise received 185.660 rubles from each ruble of costs arrived.

Economic profitability in the studied period increased by 3.029%. In 2016, the value of the indicator was 20.646, and by 2021 it has increased to 23.675%.

Return on equity in 2016 was 22.198%. During the study period, the indicator repeatedly decreased. So in 2017, its value was only 8.733%, the value of the indicator was formed in 2017 and amounted to 8.733%, however, by 2021 the situation improved and the indicator increased to 26.489%. This indicator reflects the amount of profit that the company will receive per unit cost of equity capital. The return on permanent capital in 2016 was 22.275%, in subsequent years it repeatedly decreased, but by 2021 it gave a result, it was equal to 26.734%. The growth of this indicator in the last 3 years indicates an increase in the efficiency of the use of capital invested in the activities of the organization for a long time [5], [6]. Return on borrowed capital reflects the feasibility of investing funds by investors. In 2016, the indicator was equal to 155669, which is due to the extremely low amount of long-term borrowings, their values are presented in figure 14 below. From 2017 to 2021, the value of the indicator increased and by the end of the studied period it reached 4.707%. The profitability of production in the period from 2016 to 2021 remained at the same level. The profitability of production reflects the economic efficiency of a business or its division.

Thus, over the past 3 years, a positive trend in the profitability indicators of “South-Eastern Agrogroup” LLC can be noted. The most problematic years were 2017 and 2019, it was during these periods that the values of the indicators decreased significantly. This is due to a decrease in revenue with a simultaneous increase in management costs and increased accounts receivable [7].

TABLE 5. Data for calculating indicators required for factor analysis

Indicators	2020	2021
Net profit (NP)	5707000	9145060
Sales revenue(SR)	11588800	14194100
Assets (A)	35460000	42510700
Private equity (PE)	30017200	39031400
Return on equity (ROE)	0.190	0.234

Table 5 presents the initial data, on the basis of which the calculation of the indicators necessary for factor analysis was made (Table 6) [8].

TABLE 6. Calculated data

Indicators	2019	2020	Absolute deviations	Relative deviations
Profitability of sales	0.49	0.64	0.15	30.83
Asset turnover	0.33	0.33	0.01	2.17
Private equity multiplier	1.18	1.09	-0.09	-7.80
Return on equity (ROE)	19.01	23.43	4.42	23.24

TABLE 7. Influence of factors on roe by the method of chain substitution

Indicators	Influence result (+ -)	Specific gravity (%)
Profitability of sales	5.862	69.917
Asset turnover	0.539	6.429
Private equity multiplier	-1.983	23.654
Total	4.418	100.0

Thus, based on the calculation, we can conclude that the return on equity of the organization at the end of the year compared to the beginning of the year increases by 4.418 thousand rubles, including:

- due to the increase in profitability of sales by 0.152%, the return on equity increased by 5.862%, which is 69.917% of the total influence of factors;
- due to the increase in asset turnover by 0.007%, the return on equity increased by 0.539%, which is 6.429% of the total influence of factors;
- due to the decrease in the equity multiplier by 0.092%, the return on equity decreased by 1.983%, which is 23.654% of the total influence of factors.

TABLE 8. Turnover indicators of "South-Eastern Agrogroup" LLC

Indicators	2016	2017	2018	2019	2020	2021
Asset turnover ratio	0.40	0.21	0.34	0.25	0.41	0.36
Accounts receivable turnover ratio	0.74	0.39	0.61	0.42	0.72	0.67
Accounts payable turnover ratio	5.50	1.89	2.28	1.64	4.03	6.56
Own capital turnover ratio	0.43	0.24	0.42	0.31	0.49	0.41
Working capital turnover ratio	0.51	0.26	0.43	0.33	0.54	0.47
Inventory turnover ratio	2.47	1.01	1.93	1.83	3.28	3.24
Cash turnover ratio	4827	261	802	772	873	1565

The asset turnover ratio in 2016 amounted to 0.402 rubles, and by 2021 it decreased to 0.364 rubles. The lowest value of the indicator was achieved in 2017 and amounted to 0.208%, this situation was due to a decrease in revenue. The receivables turnover ratio in 2016 was 0.736, and by 2021 it decreased to 0.672, that is, by 0.064 or 0.913%. The lowest value of the indicator was obtained in 2017, which is due to low revenue in this period with a simultaneous increase in receivables. The organization's own capital turnover ratio in 2016 was 0.434, in subsequent years it decreased to 0.242 and 0.307 in 017 and 2019, respectively. However, by 2021, the value of the indicator was 0.411.

The turnover ratio of working capital in the period from 2016 to 2021 decreased by 0.041 and amounted to 0.511 and 0.470, respectively. A decrease in the indicator means that the number of turnovers that working capital makes per year has decreased.

The turnover of receivables is estimated together with the turnover of accounts payable. The accounts payable turnover in 2016 was 5.500, subsequently decreasing in 2017 and 2019 to 1.890 and 1.644, respectively. The growth of this indicator over the past two years indicates an increase in the payment discipline of "YuVAG" LLC in relations with counterparties.

The inventory turnover ratio in 2016 was 2.473, and by 2021 it increased to 3.240, by 0.767 or 31%. Such an increase in the value of the indicator indicates more efficient production and less need for working capital. However, in 2017, the indicator dropped to a year-over-year 1.014, which was due to a decrease in the company's revenue with a simultaneous increase in inventories and value added tax on acquired assets.

The cash turnover ratio in the period from 2016 to 2017 decreased by 3262 days and amounted to 4827 and 1565 days, respectively. A decrease in the indicator indicates a reduction in the days required for the turnover of funds.

Thus, when analyzing the turnover ratios of "South-Eastern Agrogroup" LLC, it was found that in 2017 the lowest results were obtained for most indicators. By 2021, the situation has leveled off to the level reached at the beginning of the study period. The improvement in the situation is due to an increase in the level of revenue received, with a slight increase in selling and administrative expenses, as well as the cost of sales.

Further, to assess the financial stability of "South-Eastern Agrogroup" LLC, we use the methodology for calculating a three-component indicator of the type of financial situation. To do this, the necessary indicators were calculated, presented in picture 2.

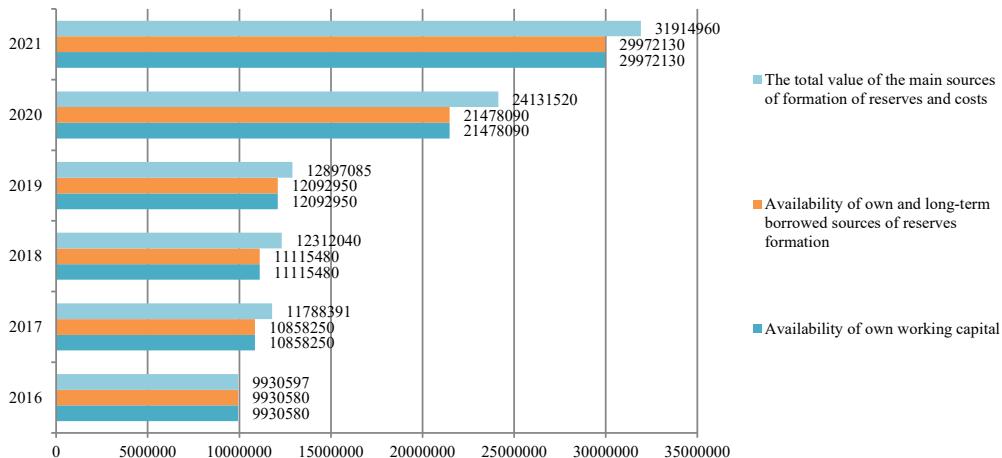


FIGURE 2. Calculation of a three-component indicator of financial stability of “South-Eastern Agrogroup” LLC

Next, let's make a table 9, in which we define the type of financial stability.

TABLE 9. Type of financial stability of “South-Eastern Agrogroup” LLC

Indicators	2017	2018	2019	2020	2021
Type of financial stability	1;1;1	1;1;1	1;1;1	1;1;1	1;1;1

To determine the type of financial stability, an analysis of the organization's activities from 2016 to 2021 was carried out. As a result, it was found that throughout the study period, the absolute financial stability of the enterprise was maintained. That is, “South-Eastern Agrogroup” LLC is able to develop at the expense of its own sources of financing, since all reserves are covered by its own working capital. The organization in question is completely independent of creditors.

Next, we will conduct a relative assessment of the financial stability of the organization using financial ratios (Table 10)

TABLE 10. Coefficients characterizing the financial stability of “South-Eastern Agrogroup” LLC

Indicators	Standard value	2017	2018	2019	2020	2021
Financial Independence Ratio	>0.5	0.814	0.782	0.822	0.847	0.918
Financial tension ratio	<0.5	0.186	0.218	0.178	0.153	0.082
Coverage ratio with own sources of financing	>0.6	0.768	0.715	0.762	0.798	0.896
Equity maneuverability ratio	0.2-0.5	0.758	0.701	0.696	0.716	0.768
Coefficient of real property value	0.3-0.5	0.418	0.356	0.389	0.355	0.324
Debt ratio	<0.6	0.186	0.218	0.178	0.153	0.082

Based on the monitoring table 10, we note that the coefficient of financial independence throughout the entire scientific period corresponded to the normative value equal to >0.5 . From 2017 to 2021, the ratio increased by 0.104 or 13%. In 2021, the value of the indicator was 0.918, which means that 92% of the organization's assets were provided by its own sources of formation. In turn, the remaining 8% was covered by borrowed funds. The coefficient of financial tension in 2017 was equal to 0.186, and by 2021 it decreased to 0.082, that is, by 0.104 or 56%. A decrease in this indicator means a decrease in the amount of borrowed funds and indicates an increase in the financial stability of the organization. In the studied period, the indicator corresponded to the standard value. The coefficient of provision with own sources of financing also corresponded to the established norm >0.6 during the reading of the entire study period.

In 2017, this indicator was equal to 0.768, and by 2021 it increased by 0.128 or 16.6%. The growth of this indicator indicates an increase in the share of current assets, which is financed at the expense of own funds. The coefficient of maneuverability of own capital in the studied period exceeded the maximum threshold of the normative value. In 2017, it was 0.758, and by 2021 it has increased to 0.768. The growth of this indicator may mean an increase in additional financing resources for the expansion and modernization of production. The coefficient of the real value of the property corresponded to the established norm during the entire period. From 2017 to 2021, this ratio has changed from 0.324 to 0.418. Despite the fact that the indicator corresponds to the norm, a downward trend can be traced. So in this period it decreased by 0.094 or 22%, which indicates a decrease in the provision of the production process with the means of production. The debt ratio was also in line with the norm between 2017 and 2021. The indicator decreased by 0.104 and by 2021 reached 0.082. This means a decrease in the share of assets formed as a result of attracting debt financing to 8%.

Thus, the study of financial stability ratios allows us to conclude that "South-Eastern Agrogroup" LLC is a financially stable company. Next, we will carry out a factorial analysis of the coefficient of sustainability of economic growth.

TABLE 11. Initial data for the analysis of the financial stability of the company

Indicators	Designation	2020	2021
Net income reinvestment ratio	RR	5.260	4.268
Profitability of sales	POS	0.53	0.63
Return on capital	ROC	0.39	0.36
Financial Independence Ratio	FIR	0.85	0.92
Economic Growth Sustainability Ratio	EGSR	0.92	0.89

Table 11 presents the initial data, on the basis of which the calculation of the indicators necessary for factor analysis was made (Table 12).

TABLE 12. Calculated data for factor analysis of the company's performance

Indicators	Designation	2020	2021	Absolute deviations	Relative deviations
Net income reinvestment ratio	RR	5.260	4.268	-0.992	-18.854
Profitability of sales	POS	0.534	0.629	0.095	17.817
Return on capital	ROC	0.386	0.364	-0.022	-5.806
Financial Independence Ratio	FIR	0.847	0.918	0.072	8.464
Economic Growth Sustainability Ratio	EGSR	0.917	0.896	-0.021	-2.325

TABLE 13. Influence of factors on egsr by the method of chain substitution

Indicators	Designation	Influence result (+ -)	Specific gravity (%)
Net income reinvestment ratio	RR	-0.173	40.560
Profitability of sales	POS	0.133	31.103
Return on capital	ROC	-0.051	11.940
Financial Independence Ratio	FIR	0.070	16.397
Total:	EGSR	-0.021	100

Conclusion: based on the calculation, we can conclude that the coefficient of sustainability of economic growth at the end of the year compared to the beginning of the year increases by 0.021 thousand rubles, including (Table 13):

- due to the decrease in the net profit reinvestment ratio by 0.992%, the economic growth sustainability ratio decreased by 0.173%, which is 40.560% of the total influence of factors;

- due to the increase in sales profitability by 0.095, the economic growth sustainability ratio increased by 0.133%, which is 31.103% of the total influence of factors;

- due to a decrease in capital productivity by 0.022, the economic growth sustainability coefficient decreased by 0.051%, which is 11.940% of the total influence of factors;

- due to the increase in the coefficient of financial independence by 0.072%, the coefficient of sustainability of economic growth increased by 0.070%, which is 16.397% of the total influence of factors.

The assessment of the technical and technological component of the economic security of an enterprise begins with a technical and technological analysis [9], [10]. The content of the technical and technological analysis is the study of the production and economic activities of the enterprise in order to objectively assess the results achieved and develop measures to further improve the efficiency of management [11].

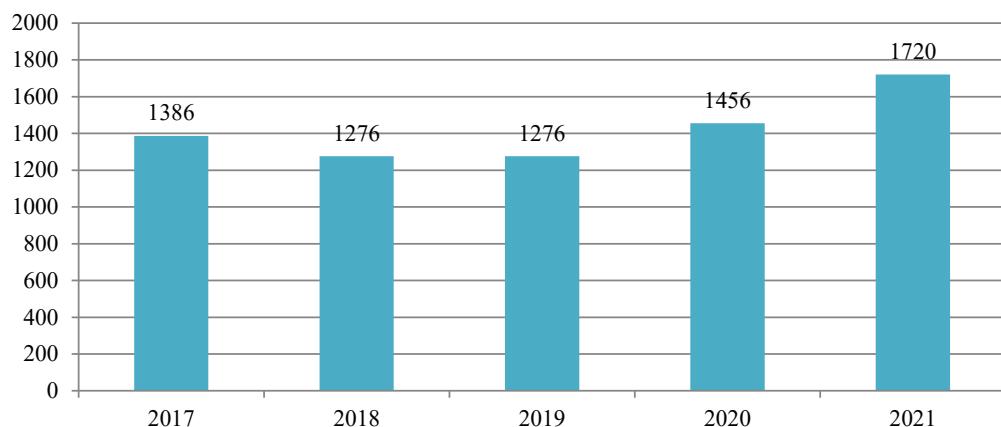


FIGURE 3. The average number of employees of “South-Eastern Agrogroup” LLC

Having studied picture 3, we can note the growth in the number of employees over the studied period. So, in 2018 their number was 1276 people, and by 2021 it increased to 1720 people [4], that is, by 444 people or 35%.

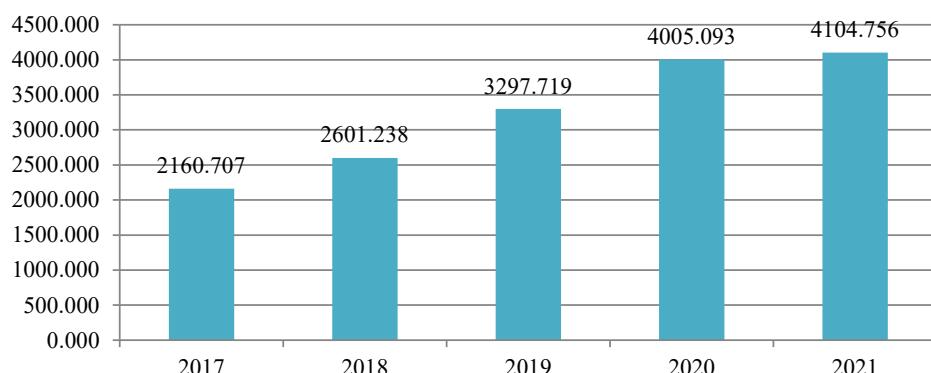
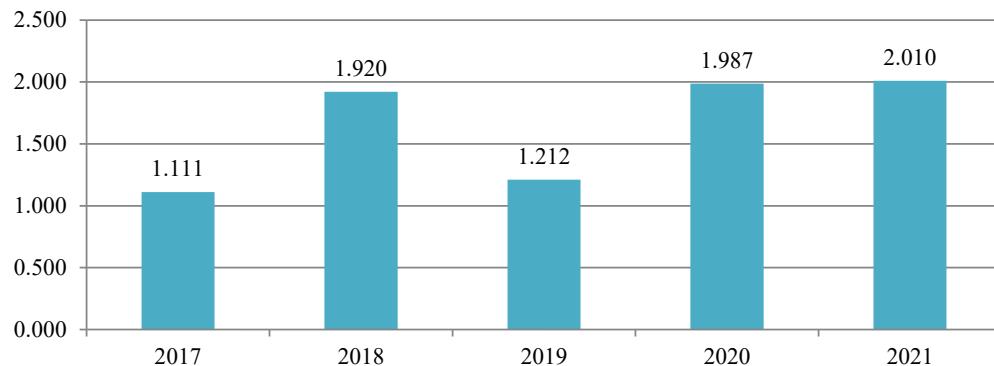


FIGURE 4. Capital-labor ratio of “South-Eastern Agrogroup” LLC

Having studied picture 4, it can be noted that in the period from 2018 to 2021, the value of the capital-labor ratio had a positive growth trend. In 2018, the indicator was equal to 2601.238 thousand rubles., and by 2021 increased to 4104.756 thousand rubles. Thus, the growth amounted to 1503.518 thousand rubles or 58%. The growth of this indicator means an increase in the cost of equipment per employee [12], [22].

Let's consider the indicator of return on assets of “South-Eastern Agrogroup” LLC (picture 5).

**FIGURE 5.** Return on assets of “South-Eastern Agrogroup” LLC

On picture 5 shows the change in the return on assets of “South-Eastern Agrogroup” LLC in the period from 2017 to 2021. The lowest values of the indicator are observed in 2017 and 2019 and amount to 1.111 and 1.212, respectively. In turn, 2021 showed the highest value of the indicator under consideration, equal to 2.010.

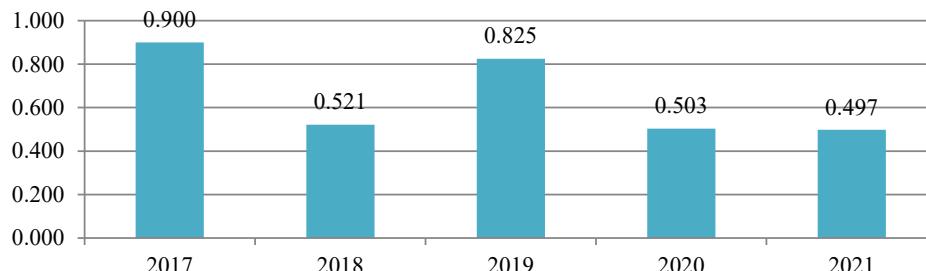
Let's make a table in which we calculate the deviations of this indicator.

TABLE 14. Absolute and relative deviations of the return on assets of “South-Eastern Agrogroup” LLC

Indicators	2017–2018	2018–2019	2019–2020	2020–2021
Absolute deviation	0.809	-0.708	0.775	0.023
Relative deviation	72.788	-36.888	63.985	1.164

Having studied the table 14, it can be noted that the dynamics of the indicator is not linear. The largest increase in the indicator occurred in 2019–2020 and amounted to 63.985% or 0.775. The growth of the indicator means an increase in the amount of production for each ruble of fixed assets spent.

The inverse indicator of capital productivity is capital intensity we calculate its value.

**FIGURE 6.** Capital productivity of “South-Eastern Agrogroup” LLC

Next, we will compile a table in which we calculate the deviations of this indicator.

TABLE 15. Absolute and relative deviations of the capital intensity of “South-Eastern Agrogroup” LLC

Indicators	2017–2018	2018–2019	2019–2020	2020–2021
Absolute deviation	-0.3791	0.3044	-0.3219	-0.0058
Relative deviation	-42.126	58.449	-39.019	-1.1509

It can be noted a significant decrease in capital intensity in the study period. So in 2017, the indicator amounted to 0.900 thousand rubles, and by 2021 it decreased to 0.497, that is, by 0.403 thousand rubles, which is 45%. A decrease

in this indicator indicates a more efficient use of the organization's equipment. Such high values of the indicator are explained by the specifics of agro-industrial companies.

CONCLUSIONS

The successful and efficient functioning of each agricultural enterprise in the conditions of modern market relations directly depends on the competent management of the functional components of economic security [13], [20], [21].

The level of risk of agricultural enterprises is associated with some specific features of the industry: seasonality, dependence on natural and climatic conditions, the quality of natural resources used, and rapid spoilage of grown products [14], [15], [16], [17], [19].

On the example of South-Eastern Agrogroup LLC, indicators characterizing various components of the economic security of an enterprise were considered. Based on the results of the analysis, we can single out a high level of financial stability of the organization, an increase in production profitability and turnover.

It should be noted that in order to stimulate the development of the agro-industrial complex at the present stage in the Russian Federation, several sectoral strategies are being implemented that enable each direction of the agro-industrial complex to find its growth reserves, namely [18], [23]:

1) In April 2020, the Government of the Russian Federation approved the Strategy for the Development of the Agro-Industrial and Fisheries Complexes of the Russian Federation for the period up to 2030, which assumes an increase in the gross value added created in agriculture: by 2024 to 5374.8 billion rubles (by 2030 - 7000 billion rubles), including due to a significant increase in exports.

2) Law "On Viticulture and Winemaking": a ban is introduced on the use of imported wine materials for the production of wines in Russia.

3) 285 billion rubles were allocated for the state program for the development of agriculture and regulation of the markets for agricultural products, raw materials and food in 2022, in subsequent years (2023 and 2024) - 304.7 and 326.9 billion respectively.

The key ways to support farmers today are preferential loans and subsidies. Preferential lending is the issuance of loans at a minimum rate, not higher than 5% per annum. Issued for certain agricultural needs, the requirement for farmers: a stable financial position, no delinquency on existing loans. Subsidies are state financial support in the form of compensation for a certain part of the costs for specific purposes: for example, the construction of agricultural facilities, the purchase of agricultural machinery, breeding stock. Provided free of charge: return, like a loan, funds are not required. These government guarantees and opportunities inspire confidence, as well as growth prospects for the agro-industrial complex in the future.

REFERENCES

1. Available online: <https://delprof.ru/press-center/open-analytics/reyting-krupneyshikh-apk-v-rossii-perspektiv-polnogo-importozameshcheniya-tendentsii-razvitiya-2022/> (accessed on 05 November 2022).
2. S.A Tursunov; et al. *The development of the digital economy as a factor in increasing the consumer basket of the population (on the example of the Tambov region)*. ICFNDS'2022: Proceedings of the 6th International Conference on Future Networks & Distributed Systems. <https://doi.org/10.1145/3584202.3584310>.
3. D.F. Mirzaxmedova; et al. *Econometric modeling and forecasting of the increase in the export potential of small businesses and private enterprises in the Republic of Uzbekistan*. ICFNDS'2022: Proceedings of the 6th International Conference on Future Networks & Distributed Systems, pp. 298-310. <https://doi.org/10.1145/3584202.3584246>.
4. S.E. Yuldashev; et al. *Econometric assessment of prospects of ensuring food safety in Uzbekistan*. ICFNDS'2022: Proceedings of the 6th International Conference on Future Networks & Distributed Systems. <https://doi.org/10.1145/3584202.3584280>.
5. R.R. Akramova; et al. *Ways of development of agriculture and processing industry enterprises manufacturing cooperation*. IOP Conf. Series: Earth and Environmental Science, 1043, 2022. doi:10.1088/1755-1315/1043/1/012024. <https://iopscience.iop.org/article/10.1088/1755-1315/1043/1/012024>.
6. Portal "Checko". Available online: <https://checko.ru/company/yugo-vostochnaya-agrogruppa-1076824000362> (accessed on 05 November 2022).
7. O.V. Bondarskaya; et al. *The use of public-private partnership in the machine-building industry*. AIP Conference Proceedings, 2022. <https://doi.org/10.1063/5.0093721>.

8. G.M. Abdulxayeva; et al. *Socio-economic necessity and prospects for the introduction of the digital economy*. ICFNDS'2022: Proceedings of the 6th International Conference on Future Networks & Distributed Systems. <https://doi.org/10.1145/3584202.3584227>.
9. Official website of the Federal State Statistics Service. Available online: <https://rosstat.gov.ru/> (accessed on 05 November 2022).
10. S. Yekimov; et al. The use of machine-building clusters to increase the efficiency of the machine-building sector of the economy. AIP Conference Proceedings 2526, 020029. 2023. <https://doi.org/10.1063/5.0115672>
11. O.G. Loretts; et al. *The role of industrial enterprises in ensuring food security*. IOP Conf. Series: Earth and Environmental Science, 1043, 2022. doi:10.1088/1755-1315/1043/1/012023. <https://iopscience.iop.org/article/10.1088/1755-1315/1043/1/012023>.
12. U. Shirinov; et al. *The Impact of Digitalisation on the Safe Development of Individuals in Society. Internet of Things, Smart Spaces, and Next Generation Networks and Systems*. NEW2AN 2022. Lecture Notes in Computer Science, vol 13772. Springer, Cham. https://doi.org/10.1007/978-3-031-30258-9_25.
13. D. Yormatova; et al. *Research of Olive Sprouts and Fruits Grown in Uzbekistan. International Conference on Smart Technologies and Applied Research (STAR'2023)*, E3S Web of Conferences, 477, 00075. 2024. <https://doi.org/10.1051/e3sconf/202447700075>.
14. G.T. Samiyeva; et al. *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. Internet of Things, Smart Spaces, and Next Generation Networks and Systems*. NEW2AN 2022. Lecture Notes in Computer Science, vol 13772. Springer, Cham. https://doi.org/10.1007/978-3-031-30258-9_39.
15. B.R. Tillaeva; et al. *Econometric Evaluation of Influential Factors to Increasing Labor Efficiency in Textile Enterprises*. Webology, Volume 18, Special Issue on Information Retrieval and Web Search, 2021. <https://www.webology.org/datacms/articles/20210129114502amWEB18024.pdf>.
16. N.H. Bekmurodov; et al. *Analysis of investments in fixed capital in the context of the development of digital economy in the Republic of Uzbekistan*. ICFNDS'2022: Proceedings of the 6th International Conference on Future Networks & Distributed Systems. <https://doi.org/10.1145/3584202.3584267>.
17. F. Khamidova; et al. *Analyzing the Auto Industry: Benchmarking for Competitive Market Assessment*. ICFNDS'2023: Proceedings of the 7th International Conference on Future Networks and Distributed Systems, pp. 432-437. <https://doi.org/10.1145/3644713.3644775>.
18. M. Ermatova; et al. *Econometric analysis of evaluation of investment projects implemented in the Northern Regions of Uzbekistan*. ICFNDS'2022: Proceedings of the 6th International Conference on Future Networks & Distributed Systems. <https://doi.org/10.1145/3584202.3584311>.
19. Decree of the Government of the Russian Federation No. 731 dated May 14, 2021 "On the State Program for the effective involvement in the turnover of agricultural land and the development of the Reclamation complex of the Russian Federation".
20. A. Kasimov; et al. *Organizational and Economic Modeling of the System of Interregional Industrial Cooperation as a Control Object*. ICFNDS'2023: Proceedings of the 7th International Conference on Future Networks and Distributed Systems, pp. 333-343. <https://doi.org/10.1145/3644713.3644757>.
21. B. Mamatkulov; et al. *Predicting future living standards in Uzbekistan: utilizing econometric analysis*. ICFNDS'2023: Proceedings of the 7th International Conference on Future Networks and Distributed Systems. <https://doi.org/10.1145/3644713.3644774>.
22. B. Salimov; et al. *Strategies for Integrating Digitalization in Leveraging Regional Economic and Scientific Expertise for the Innovative Growth of Small and Medium Enterprises*. ICFNDS'2023: Proceedings of the 7th International Conference on Future Networks and Distributed Systems, pp. 483-490. <https://doi.org/10.1145/3644713.3644784>.
23. J.S. Tukhtabaev; et al. *Problems of Security of Economic and Ecological Systems in the Countries of the Central Asian Region*. In: Koucheryavy, Y., Aziz, A. (eds) Internet of Things, Smart Spaces, and Next Generation Networks and Systems. NEW2AN ruSMART 2023. Lecture Notes in Computer Science, vol 14543. Springer, Cham. https://doi.org/10.1007/978-3-031-60997-8_16.
24. Gulchekhra Allaeva, Gulchekhra Yusupkhodjaeva, Kamola Mukhiddinova, Methodology for calculating sustainable development of fec enterprises based on consolidated integral indices. AIP Conf. Proc. 3331, 030006 (2025) <https://doi.org/10.1063/5.0308133>
25. Gulchekhra Yusupkhodjaeva, Gulchekhra Allaeva, Kamola Mukhiddinova, Sustainable development of transport enterprises in the context of the formation of the digital economy. AIP Conf. Proc. 3331, 030087 (2025) <https://doi.org/10.1063/5.0306872>

26. Kamala Mukhiddinova, Gulchekhra Yusupkhodjaeva, Gulchekhra Allaeva, Econometric modeling of investment potential of industrial enterprises. AIP Conf. Proc. 3331, 050026 (2025) <https://doi.org/10.1063/5.0308123>

27. Gulchekhra Allaeva, Main directions of sustainable development of fuel and energy enterprises. AIP Conf. Proc. 3152, 050012 (2024) <https://doi.org/10.1063/5.0220851>

28. Gulchekhra Allaeva, The role of energy security in forming the foundations for sustainable development of fuel and energy complex enterprises. In E3S Web of Conferences 461, 01061 (2023), <https://doi.org/10.1051/e3sconf/202346101061>

29. Gulchekhra Allaeva, Sustainable development methodology of fuel-energy complex of the republic of Uzbekistan. In E3S Web of Conferences 289, 07033 (2021) <https://doi.org/10.1051/e3sconf/202128907033>

30. Gulchekhra Allaeva, Fiscal instruments of taxation improvement as a factor of sustainable development of enterprises of the fuel and energy sector. In E3S Web of Conferences 216, 01173 (2020) <https://doi.org/10.1051/e3sconf/202021601173>

31. Gulchekhra Allaeva, Priority directions of development "Uzbekneftegas" jsc in the conditions of globalization of the world economy. In E3S Web of Conferences 139, 01008 (2019) <https://doi.org/10.1051/e3sconf/201913901008>

32. Saodat Ibragimova, Khilola Bakhodirova, Formation of investment activities of energy enterprises. E3S Web of Conferences 461, 01074 (2023) <https://doi.org/10.1051/e3sconf/202346101074>

33. Ravshan Xusainov, Otobek Begmullaev, Problems of ensuring the electricity supply system in Uzbekistan. In AIP Conference Proceedings. 3331, 030002 (2025) <https://doi.org/10.1063/5.0305927>

34. Ravshan Xusainov, Barno Tillayeva, Nigina Sayfutdinova, Development of ecology and energy in Uzbekistan. AIP Conf. Proc. 3331, 030010 (2025) <https://doi.org/10.1063/5.0306384>

35. Gulchekhra Yusupkhodjaeva, Development of a unified digital transport and logistics intelligent platform based on the National Operator. E3S Web of Conferences 461, 01055 (2023) <https://doi.org/10.1051/e3sconf/202346101055>

36. Kamola Mukhiddinova, Gulmira Tarakhtieva, Ensuring sustainable future: The interconnectedness of food safety and environmental health. E3S Web of Conferences 497, 03037 (2024) <https://doi.org/10.1051/e3sconf/202449703037>

37. Hashimova, S., Yakubova, D., Tursunova, N. (2024). Possibilities of Expanding the Mineral Resource as a Base of Ferrous Metallurgy. In Lecture Notes in Networks and Systems, vol 733. Springer, Cham. https://doi.org/10.1007/978-3-031-37978-9_70

38. Sarvinoz Salomova, Matlyuba Saidkarimova, Latofat Karieva, Kamola Ibragimova, Gulnora Saidova, Ravshan Khikmatov, Improving the efficiency of energy enterprises AIP Conf. Proc. 3331, 040076 (2025) <https://doi.org/10.1063/5.0305987>

39. Otobek Begmullaev, Saidaxon Nabieva, Shakhnoza Mirsaidova, Classification of energy efficiency policies and their implementation Available to Purchase. In AIP Conference Proceedings. 3331, 030053 (2025) <https://doi.org/10.1063/5.0305929>

40. Otobek, A., Otobek, B. Alternative energy and its place in ensuring the energy balance of the Republic of Uzbekistan. In AIP Conference Proceedings, 2023, 2552, 050030 <https://doi.org/10.1063/5.0117633>

41. Akhmedov, O., Begmullaev, O. The ways ensuring energy balance in Uzbekistan. In E3S Web of Conferences 216, 01137 (2020), <https://doi.org/10.1051/e3sconf/202021601137>

42. Saidakhon Nabieva, Shakhnoza Atakhanova, Modern methods of investment activity in the development of industrial enterprises. AIP Conf. Proc. 3331, 050010 (2025) <https://doi.org/10.1063/5.0308119>

43. Sarvinoz Salomova, Increasing the efficiency of oil and gas industry enterprises in Uzbekistan. AIP Conf. Proc. 3331, 040075 (2025) <https://doi.org/10.1063/5.0305986>

44. Mukhiddinova, K.A, Vildanova, L.A Transport improvement of the method of assessing the attractiveness of investment in automotive enterprises. Published 2020 Engineering, Business, Economics, 171 Corpus ID: 218792573, <https://DOI:10.31838/jcr.07.05>.