



FACTORS AFFECTING THE FINANCIAL RESULT OF AN AGRICULTURAL ENTERPRISE

V.S. Kuchkovskaya¹ * , L.A. Kuanova² 

¹Kenzhegali Sagadiyev University of International Business, Almaty, Kazakhstan

²Al-Farabi Kazakh National University, Almaty, Kazakhstan

*e-mail: victory2000k99@mail.ru

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Abstract. This article reflects a comprehensive analysis of the factors affecting the financial result of an agro-industrial enterprise using the example of AsiaAgroFood JSC. The research is based on the experience of international and domestic authors who have researched this area. The purpose of the study is to determine the most significant factors affecting the financial result of the organization of an agro-industrial enterprise. To achieve the goal, 8 hypotheses were put forward, 4 of which were rejected, 4 were accepted. The center of this research is AsiaAgroFood JSC, with a special emphasis on the use of advanced statistical methods, in particular correlation and regression analysis, to create an econometric model. In total, 72 different periods were carefully analyzed, with particular attention being paid to the dependent variable of revenue generated from contracts with customers, combined with four other key independent factors, including cost of sales (cost of goods sold), implementation (selling) costs, general and administrative expenses and other sources of income. The authors concluded that with an increase in cost, the revenue of an agro-industrial enterprise increases; with an increase in sales costs, the revenue of an agro-industrial enterprise increases; with an increase in general and administrative expenses, the revenue of an agro-industrial enterprise increases; with an increase in other income, the revenue of an agro-industrial enterprise increases. Thus, the management of an agro-industrial enterprise, based on the data of a scientific article, can come to conclusions about the dependence of revenue and expenses of the enterprise. The significance of the article lies in the application of its results in practice. One of the options for applying the data of the scientific article is the formation of the budget of an agro-industrial enterprise for subsequent years.

Key words: financial result, factor, econometrics, model.

Introduction

The relevance of the research topic is the importance and necessity of developing the agro-industrial sector in the Republic of Kazakhstan. In 2021, the Board of the Ministry of Agriculture raised the issue of the development of the agro-industrial complex. According to statistics, gross agricultural output in 2022 amounted to 9,481. 2 billion tenge, which exceeds the previous year's figure by 9.1%; gross crop production increased from 4,387. 2 billion tenge to 5,808. 3 billion tenge; gross livestock production increased from 3,117 billion tenge to 3,658. 8 billion tenge; services in the field of agriculture farms also note an increase from 11.2 billion tenge to 14.2 billion tenge (Statistics of the Republic of Kazakhstan, 2022).

The Government of the Republic of Kazakhstan develops principles and approaches for the development of the agro-industrial complex. According to the Concept of Rural Development of the Republic

of Kazakhstan for 2023-2027 years, one of their approaches is to increase the income of the rural population by developing the agro-industrial complex, stimulating support for agricultural cooperation, as well as entrepreneurship in rural areas. This approach can be implemented by increasing the efficiency of the economic potential of rural settlements in the agricultural sector and non-agricultural activities (Rural Development Concepts of the Republic of Kazakhstan for 2023-2027, 2023).

According to the Concept of development of the agro-industrial complex of the Republic of Kazakhstan for 2021-2030, the main priorities for the development of the agro-industrial complex are noted, such as the transition from raw materials to processed products, diversification of production with the transition to highly profitable crops, ensuring food independence of the country (Concepts of Development of the Agro-Industrial Complex of the Republic of Kazakhstan for 2021-2030, 2021).

The Government of the Republic of Kazakhstan has implemented several reforms in the field of agriculture. Following the results of the State Program for the Development of Productive Employment and Mass Entrepreneurship for 2017-2021 “Enbek”, several measures were implemented, such as improving the skills of future agricultural specialists by introducing the disciplines “Bioinformatics”, “Digital Agricultural Systems and Complexes”, “Agroinformatics”; a program was launched to introduce state support for agricultural enterprises in the following areas: purchase of equipment (The State Program for the Development of Productive Employment and Mass Entrepreneurship for 2017-2021 “Enbek,” 2017).

Thus, we conclude that the development of the agro-industrial complex is most relevant at present.

The choice of a topic is directly related to the relevance of the research. Many authors, both foreign and domestic, are interested in the problem of determining the factors affecting the financial result of an agro-industrial enterprise. As you can see from the diagram in Figure 1 the United States of America, China, and the United Kingdom are showing more interest. In the Republic of Kazakhstan, this topic is raised much less frequently, only 9 publications were found in the database www.scopus.com.

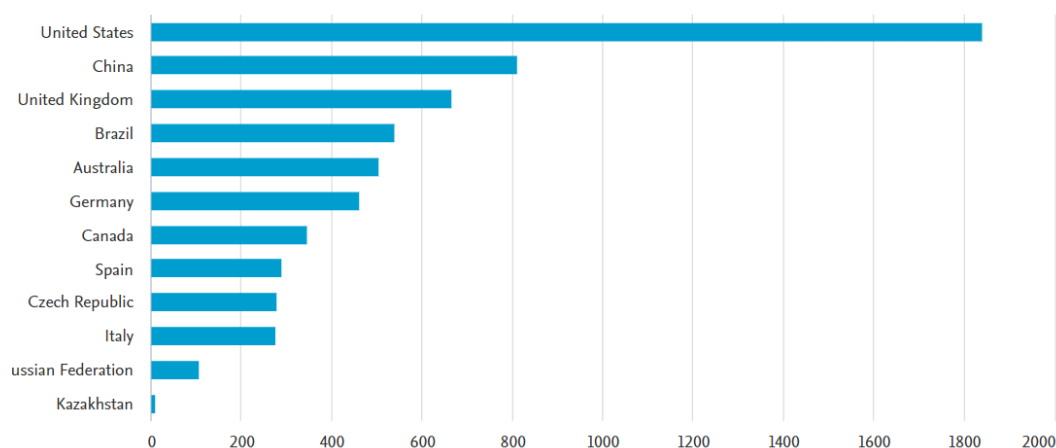


Figure 1 – The number of publications devoted to the financial results of the agro-industrial enterprise

Note: compiled by the author based on the source (Publication Statistics, 2023)

The purpose of the study is to determine the most significant factors affecting the financial result of the organization of an agro-industrial enterprise. To achieve this purpose, research tasks were formed:

- define the concept of “financial result”;
- determine the factors affecting the financial result of the enterprise;
- designate parameters for the construction of an econometric model;
- build an econometric model;
- test the constructed econometric model.

Stages of research:

- Data collection and processing for the construction of an econometric model;
- Choosing the most appropriate indicators;
- Definition of dependent and independent variables;

- Conducting correlation and regression analysis;
- Building an econometric model;
- Testing an econometric model;
- Application of the results in practice.

Literature review

The term “financial result” can be found in various studies and is mainly described by type: revenue, profit, loss, difference, total, and others. The most common definition of financial result is determined by the difference between the following indicators:” Financial result is the difference between the proceeds from the sale of products (works and services) in current prices excluding VAT and excise taxes, export duties and other deductions provided for by

law, and the costs of its production and sale, taking into account the balance of other income and expenses” (Kondrakov, 2017), (Hetman, 2015).

Other sources say that the concept of “financial result” is equivalent to the concept of “result”: “Financial result, as the final result of the organization’s activities, is expressed by the amount of profit (loss) by the ratio of income and expenses and is an indicator of successful activity, creates further prospects for the organization’s existence” (Uksumenko & Mishina, 2017; Kozlova, 2021; Zykova, 2021, Alieva, 2021).

Authors argue that the financial result can be determined after the sale of products or services: “The financial result can be determined after the sale of products by comparing the amount of revenue with the amount of costs for the production and sale of products, etc.” (Savitskaya, 2014).

In certain sources, the financial result is an indicator of the efficiency or productivity of an organization’s activities: “The financial result is a generalizing indicator of the analysis and evaluation of the efficiency of an economic entity at certain stages of its formation, consisting of the financial result from ordinary activities and other income and expenses, including tax sanctions” (Kardanova, 2021; Terekhova, 2019).

The question arises as to which indicator most characterizes the term “financial result”. Some authors believe that financial result include not only “total lose”, “total profit “, but also “profitability” (Dedov, 2021; Zolotar, 2021) and “profitability” (Urzov V.A. & Prokhorova A. A., 2021).

Another question arises: what are “total profit” and “total loss” and why are they so important in determining the financial result? Some authors give more specific definitions of the concept of “profit”, a clear example is Karl Marx: “Profit is modified, obscuring its essence surplus value, the source of which is exploitation, unpaid surplus labor of wage workers” (Marx, 2023). Rushailo I. C. defines profit through its reproduction function: “Profit is an effective lever and force of economic interaction between the interests of both economic entities and the state, and society as a whole” (Rushailo, 2020)

Summing up, we conclude that the financial result is an important indicator that characterizes the effectiveness of the organization’s activities; it is determined by finding the difference between income and expenses incurred in the reporting period.

“A factor is an indicator, that is studied to identify complex relationships between elements or a group of elements” (Shrestha, 2021).The change in profit is influenced by external (exogenous) and internal (endogenous) factors (Ryabets & Bondarenko, 2016).Which are shown in Figure 2 below.

Factors	Exogenous	Quality of legislation The level of development of the service sector Natural conditions Prices for production resources Inflation
	Endogenous	Quality of financial management Management competence Product and cost structure Cost of production Labor productivity

Figure 2 – Factors influencing the financial result of an enterprise

Note-compiled by the author based on the source (Poltaeva & Vakhrusheva, 2020)

Methodology

To determine the relationship between indicators, the method of constructing econometric models is widely used. The development of econometric models that affect the financial performance of an enterprise is an important stage of research. Because it allows you to assess the degree of influence of factors on the final result. Also, by finding the equation of the model under study, it is possible to predict changes in the constant under study. "Econometrics combines a set of methods and models that allow you to quantify qualitative dependencies based on economic theory, economic statistics, as well as mathematical and statistical tools" (Zelepukin, 2020). The founders of the science of econometrics are Ragnar Frisch and Irving Fischer. R. Frisch believed that econometrics includes statistics, economic theory, and mathematics.

Among the tasks of econometrics, there are

- building an econometric model,
- evaluation of its parameters,
- checking the quality of the model and its parameters,
- using the model in practice (Pochinkin et al., 2021).

Let's move on to the term regression. "Regression is the dependence of the average value of a random variable on some other value or several values" (Poltaeva & Vakhrusheva, 2020). In other words, this indicator indicates the relationship between the studied variables Y and X , which may be several. Multiple linear regression refers to a model in which the number of independent variables is two or more. The formula for multiple linear regression is presented below.

$$Y = a + b_1x_1 + b_2x_2 + \dots + b_mx_m + E \quad (1)$$

where,

Y -dependent variable.

X_1, x_2, \dots, x_n are independent variables.

a is a free term that defines the value of Y ,

B_1, b_2, \dots, b_m -vector of parameters to be determined,

E – random error (Kolenteev & Goncharova, 2021).

An econometric model can only be constructed after all stages have elapsed, such as:

- Setting a goal that reflects the relationship between the dependent and independent variables.
- Construction of an econometric model and analysis for multicollinearity of indicators.

- Testing the significance of the obtained parameter estimates and the estimated model as a whole based on Student's t-test and Fisher's F-test.

- Evaluation of the constructed econometric model.

- Building a forecast for the effective attribute (Pochinkin et al., 2021).

An econometric model is created to determine the effect of independent variables on the dependent one.

Hypothesis:

$H_1 (H_0)$ with an increase in cost of sales, the revenue of an agro-industrial enterprise decreases;

H_1' with an increase in cost of sales, the revenue of an agro-industrial enterprise increases;

$H_2 (H_0)$ with an increase in implementation costs, the revenue of an agro-industrial enterprise decreases;

H_2' with an increase in implementation costs, the revenue of an agro-industrial enterprise increases;

$H_3 (H_0)$ with an increase in general and administrative expenses, the revenue of an agro-industrial enterprise decreases;

H_3' with an increase in general and administrative expenses, the revenue of an agro-industrial enterprise increases;

$H_4 (H_0)$ with an increase in other income, the revenue of an agro-industrial enterprise decreases;

H_4' with an increase in other income, the revenue of an agro-industrial enterprise increases.

Results & Discussions

Agro-industrial enterprises are studied everywhere, the authors have made a number of attempts to determine the impact of various factors on both the financial result and the financial performance of the enterprise. Using regression analysis, the authors compared the impact of human capital, physical capital, financial capital and social capital on the financial result of an enterprise (Shi et al., 2023). The authors also find patterns between the impact on the insured area and the acreage, yield, gross harvest and the internal price of agricultural products (Skydan et al., 2023). When using correlation and regression analysis, the authors assumed that the financial results of competitive enterprises are influenced by such indicators as the size of enterprises, corporate governance, support for staff development, hiring qualified personnel, information technology and the use of e-commerce applications (Aydoğan, 2023). The authors also tried to determine the impact between the productivity of

the enterprise and the value and yield of food, the use of fertilizers, labor costs and mechanical costs (Ye et al., 2023). Some authors have suggested that the financial result is influenced by: transportation costs, farm size, sale price, experience, age, loans, etc (Mukaila et al., 2023). Based on previous research, we can conclude that many authors carefully study the agro-industrial sector, thereby confirming the relevance of this scientific article. In comparison with other authors, our article takes as a basis the profit and loss statement, which reflects the financial results of the enterprise.

In the course of the study, there was a monthly extract from the turnover balance sheet of AsiaAgroFood JSC, which reflects data on revenue, cost of sales, sales expenses, general and administrative expenses and other income. A total of 72 observations were taken. Since the financial result can be both intermediate and final, therefore, it was decided to make revenue a dependent variable, and the following became independent: cost of sales, sales expenses, general and administrative expenses and other income. Eventually we got one Y, and four X. Below is Table 1, which reflects the correlation analysis.

Table 1 – Correlation analysis of model parameters

	Revenue from contracts with customers -Y	Cost of sales - X ₁	Implementation costs - X ₂	General and administrative expenses - X ₃	Other income, net - X ₄
Revenue from contracts with customers -Y	1				
Cost of sales - X ₁	0,9944210	1			
Implementation costs - X ₂	0,8392530	0,7998181	1		
General and administrative expenses - X ₃	0,592569	0,5341040	0,714044	1	
Other income, net - X ₄	0,9596708	0,9562756	0,814891	0,4972185	1

Note – compiled by the author based on source (turnover balance sheet of JSC "AsiaAgroFood" 2017-2022)

According to this table 1, the dependent variable with X₁ has almost complete functional dependence, which is expected, since the cost of sales, especially in a manufacturing enterprise, plays a key role. There is also a very high connection with the revenue of X₄, which is quite logical, since the sale of wheat grain, corn grain, starch and sugar, that is, raw material, is among the other income in AsiaAgroFood JSC. X₂ has a strong connection with Y, which also does not contradict logic, because with an increase in sales, sales costs also increase. Also in this case, we can trace such a phenomenon as multicollinearity, when two independent variables have a high relationship with each other. In this case, such indicators are the cost of sales and other income. Thus, one of the parameters of the model can be ne-

glected, which has less connection with Y, but you should not rush to conclusions, since this model and its variables need to be checked for the Fisher criterion and t-statistics.

From Table 2, it can be noted that the correlation coefficient has a very strong relationship between the variables $R = 0.998$, which varies between 0.9-0.99. The R-square is the coefficient of determination equal to 0.995, which means the variance of the resultant feature Y is explained by regression by 99.5%, and other factors account for 0.5%. In our case, there are 72 observations in total, which is equivalent to the number of months studied. Table 3 below shows the analysis of variance, which indicates the statistical significance of the equation with the specified variables X and Y.

Table 2 – Regression analysis

Regression statistics	
Multiple R	0,998041645
R-square	0,996087126
Normalized R-square	0,995853521
Standard error	93,35929557
Observations	72

Note – compiled by the author based on source (turnover balance sheet of JSC "AsiaAgroFood" 2017-2022)

From Table 3, it can be noted that the actual value of Fischer's F-test is 7.669. Let's turn to the Fischer table,

$F_{\text{fact}}=2.5$, so $F_{\text{fact}}>F_{\text{tabl}}$, which means the equation with the selected variables is statistically significant.

Table 3 – Analysis of variance

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	4	148659047,2	37164762	4263,990432	7,66971E-80
Remains	67	583969,1907	8715,958		
Total	71	149243016,4			

Note – compiled by the author based on source (turnover balance sheet of JSC "AsiaAgroFood" 2017-2022)

From Table 4, it is worth noting the regression coefficients, on the basis of which it is already possible to make a four-factor linear regression equation, which has the form:

$$Y = -6.12 + 0,92x_1 + 0,64x_2 + 2,4x_3 + 1,08x_4 \quad (2)$$

This equation indicates the following:

– with an increase in the cost of sales by 1 tenge, revenue from contracts with buyers also increases by 92 tiyn;

– with an increase in implementation costs by 1 tenge, revenue from contracts with buyers increases by 64 tiyn;

– with an increase in general and administrative expenses by 1 tenge, revenue from contracts with buyers increases by 2 tenge 4 tiyn;

– with an increase in other income by 1 tenge, revenue from contracts with buyers increases by 1 tenge 8 tiyn.

The t-statistic of X_1 is 31.23 and does not belong to the interval between 0.868 to 0.987 to 58.0; therefore, H_1 ' is confirmed.

The t-statistic of X_2 is 3.66 and does not belong to the interval between 0.293 to 0.996; therefore, H_2 ' is confirmed.

The t-statistic of X_3 is 5.51 and does not belong to the interval between 1.54 to 3.29; therefore, H_3 ' is confirmed.

The t-statistic of X_4 is 2.68 and does not belong to the interval between 0.278 and 1.886; therefore, H_4 ' is confirmed.

It is also worth checking the significance of the model parameters by the t-test. $t_{\text{tab}}=3,466$, each criterion, except for t criterion X_4 above this value, we conclude that other incomes are statistically insignificant. Therefore, this indicator can be neglected.

Table 4 – Calculation of regression coefficients

	Coefficients	Standard Error	t-statistics	P-Value	Lower 95%	Upper 95%
Revenue from contracts	-6,12252213	32,16329147	-0,190357	0,849604635	-70,3207	58,07568
Cost of sales	0,928148034	0,029719319	31,23046	1,17881E-41	0,868828	0,987468

Implementation costs	0,645160246	0,176120228	3,663181	0,000493058	0,293623	0,996698
General and administrative expenses	2,420579056	0,438779213	5,516622	6,01003E-07	1,544772	3,296386
Other income, net	1,08284343	0,402768605	2,6885	0,009047099	0,278914	1,886773
Note – compiled by the author based on source (turnover balance sheet of JSC "AsiaAgroFood" 2017-2022)						

Thus, we come to a conclusion based on the discussion:

(H0) with an increase in cost of sales, the revenue of an agro-industrial enterprise decreases – this hypothesis has not been confirmed, we reject it;

H1' with an increase in cost of sales, the revenue of an agro-industrial enterprise increases – this hypothesis has been confirmed, we accept;

H2 (H0) with an increase in implementation costs, the revenue of an agro-industrial enterprise decreases – this hypothesis has not been confirmed, we reject it;

H2' with an increase in implementation costs, the revenue of an agro-industrial enterprise increases – this hypothesis has been confirmed, we accept;

H3 (H0) with an increase in general and administrative expenses, the revenue of an agro-industrial enterprise decreases – this hypothesis has not been confirmed, we reject it;

H3' with an increase in general and administrative expenses, the revenue of an agro-industrial enterprise increases – this hypothesis has been confirmed, we accept;

H4 (H0) with an increase in other income, the revenue of an agro-industrial enterprise decreases – this hypothesis has not been confirmed, we reject it;

H4' with an increase in other income, the revenue of an agro-industrial enterprise increases – this hypothesis has been confirmed, we accept.

The economic significance lies in the use of the results of a scientific article in order to improve the financial performance of an agro-industrial enterprise, which is one of the most important sectors of the economy of the Republic of Kazakhstan.

Conclusion

The study aimed to identify the factors that influence the financial performance of "JSC AsiaA-

groFood." In pursuit of this objective, the following tasks were successfully accomplished:

– Clear definitions of the concept of "financial result" were provided, ensuring a solid conceptual foundation for the study.

– The key factors impacting the financial performance of the enterprise were identified, offering valuable insights into the determinants of financial success.

– Parameters for the development of an econometric model were outlined, setting the stage for rigorous analysis.

– An econometric model was meticulously constructed, leveraging statistical methods to assess the relationships between various factors and financial results.

– The constructed econometric model was rigorously tested, further solidifying the study's findings.

The results of the analysis using the proposed model have yielded significant insights. It was found that as the cost of sales increases, revenue from contracts with buyers also tends to increase. Similarly, an increase in sales expenses was associated with higher revenue from contracts with buyers. Furthermore, an uptick in general and administrative expenses corresponded to increased revenue from contracts with buyers. Lastly, an increase in other income was found to be positively associated with higher revenue from contracts with buyers.

These findings underscore the interplay between these factors and financial performance, offering valuable guidance to stakeholders in optimizing financial results within the context of "JSC AsiaAgroFood." This research contributes to a deeper understanding of the dynamics affecting the financial outcomes of the enterprise, with practical implications for strategic decision-making and resource allocation.

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