

Managerial Aspects of Forming Enterprises' Competitive Advantages: The Case of Agri-food Sector

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ABSTRACT

This study develops a methodological approach to evaluating the competitive advantages of agri-food companies in Ukraine. The materials used within the examination process were taken from 15 Ukrainian agri-food enterprises. The research methods were a multivariate linear regression model and cluster analysis. As a result of the regression model formation, a close relationship was revealed between firms' competitiveness, potential, financial status, and production output and sales. Determination of the values of independent variables allowed predicting changes in the competitiveness of the studied agri-food enterprises for the next five years.

Keywords: *competitiveness; agribusiness; potential; performance; management.*

1 Introduction

Strengthening integration processes has a notable impact on all spheres of public life. These processes are reflected in the activities of national enterprises, especially those engaged in foreign economic relations. The same applies to agri-food producers characterized as powerful players in foreign markets (have leading positions in the export of corn, wheat, barley, honey, and other products) (Mohammadi *et al.*, 2020). International agricultural trade provides high foreign exchange earnings to state and local budgets and allows solving socio-economic problems at the regional, state, and global levels (Zhang *et al.*, 2018). The formation of an agri-food producer's competitiveness is considerably affected by the state policy, features of world markets' functioning in a certain period, and the actions of competitors and consumers. Apart from this, an agri-food producer's competitiveness in a specific market is positively influenced by its ability to timely and effectively respond to challenges of its business environment (Aničić *et al.*, 2018). Changes in the state integration vectors force agricultural producers to choose new directions, forms, and types of foreign economic activity; they necessitate the search for new markets and consumers. At the same time, the poor provision of some economic entities in rural areas with financial, material, and technical resources, insufficiently developed agricultural market infrastructure, and other factors substantially reduce the ability of agri-food companies to form benefits allowing them to consolidate and develop in the international competitive environment (Iizuka and Gebreyesus, 2018). Therefore, there is a need to rethink the existing situation and form qualitatively new approaches to understanding, interpreting the essence, and studying methodological and applied aspects of agri-food producers' competitive advantages formation.

The desire for the openness of national economies and continuous development of international integration processes leads to the elimination of barriers between markets, countries, regions, and enterprises (Dzwigol *et al.*, 2020). In such conditions, the ability to compete in the global market successfully is determined by the presence of competitive advantages. In view of the foregoing, the present study aims to form a methodological approach to assessing agri-food enterprises' competitiveness and determining the benefits that actually serve as reserves for its provision and enhancement in the future.

2 Literature review

In modern reality, more attention should be given to effective management strategies that enable companies to be competitive. Competitiveness characterizes the ability of a company to adapt in the fast-changing competitive environment (Ni *et al.*, 2021). It is understood as the real and potential ability to design, produce and sell goods, the price and non-price characteristics of which are more attractive than those offered by competitors (Falcicola *et al.*, 2020). The basis of competitiveness is a competitive advantage, a set of product qualities that are superior to other goods in the target market (Casolani *et al.*, 2019). The competitive advantage of an enterprise is an element in the system of competitive relations that characterizes the ability to stay ahead of competitors and achieve competitiveness (Ferreira *et al.*, 2021).

Enterprises operating in the current business environment are interested in gaining sustainable competitive advantages. These long-term benefits come with the use of unique internal resources and rely on the state of the external environment (Feng *et al.*, 2020). Competitive advantage is a complex category with multiple properties that should be considered from a systemic comprehensive perspective. Therefore, the assessment system for competitive advantages should have the aggregate potential of economic structures (Muhandhis *et al.*, 2021). For efficient management, it is crucial to generate a system of primary indicators, criteria and methods for assessing competitive advantages. This system will make it possible to determine the reserves for competitiveness leap and competitive advantage opportunities required for competition in the international market (Carbone *et al.*, 2020).

Competition in the agricultural sector is referred to as the process of managing competitive advantages by agri-food producers. These advantages are formed and constantly changing under the influence of innovative development, legislation, and characteristics of a particular market (Sadowski and Baer-Nawrocka, 2018). When substantiating the characteristics of competition in agriculture, one should note agri-food production features. Since the land is simultaneously a tool and means of production, geographical location and natural and climatic conditions directly affect the quantity and quality of products grown. The supply of a specific crop in a specific region will also depend on the biological characteristics of this crop and the chemical and biological characteristics of the soil (Fan *et al.*, 2018). Another important point to consider is that competition in agriculture is directly affected by the size of agricultural holdings and focuses rather on the most favorable economic activity conditions and financial results. Today, it may occur both between farms of various ownership and management forms (its rate remains insignificant these days) and between all producers in general (Abate, 2018; Kocsis and Major, 2018).

Sustainable economic growth is impossible without the development and support of a full-fledged competitive environment within which economic entities operate. The level of competition development defines the

opportunities for improving the economic growth of both the whole country and individual economic entities, as well as the degree of their participation in the international division of labor. For this reason, competition has been a constant object for research by international experts for more than 200 years (Rezaei-Moghaddam and Izadi, 2019). Notwithstanding this unflagging attention, there are a number of challenging issues, such as the definition of the essence of competition, aspects of its manifestation in specific industries, and its evolution depending on the development of the country's economy and society, which need to be regularly elaborated and then adapted to the current economic systems and decisions.

Researchers' views on the essence, factors, and sources of competitive advantages can be divided into the following main areas:

- Matching a specific advantage of an enterprise with available resources (Mudambi *et al.*, 2018; Lee, 2020);
- Equalization of competitive advantages of an enterprise with the competitive advantages of the products it offers (Dias *et al.*, 2019);
- Ratio of the competitive advantage of an enterprise and the financial result of its activities (Shaimardanovich and Rustamovich, 2018; Frey *et al.*, 2018);
- Association of the competitive advantage with an enterprise's management (Lorincová *et al.*, 2018);
- Equalization of competitive advantage and innovative activity (Thornton *et al.*, 2018).

At the same time, scholars are more inclined to study only some aspects of agri-food enterprises' activity within the domestic and foreign markets. Yet, no comprehensive approach was introduced to theoretically generalize the challenges connected with the formation of agri-food producers' competitive advantages. Therefore, the present study aims to fill this gap in the scientific literature and create a methodological approach to assessing the impact of competitiveness components on competitive advantages development of Ukrainian agri-food companies.

To do this, the following tasks were set:

- Determine the level of competitiveness of Ukrainian agri-food companies according to three components: their potential, financial state, and product output and sales;
- Define the level of interdependence between these components and agri-food businesses' competitiveness;
- Build a multivariate linear regression model to make future predictions concerning the competitiveness of the companies under study;
- Carry out cluster analysis of the studied agri-food enterprises with reference to the forecasted competitiveness indicators;

Based on cluster analysis results, identify three groups of companies in terms of their competitive advantages and give recommendations for their strengthening.

3 Materials and methods

Determination of the competitive advantages of individual agri-food enterprises is based on ensuring the competitiveness of the whole business sector. The level of competitiveness (CC) is proposed to be determined as follows:

$$CC_i = \sqrt{PC_i + FC_i + EC_i}, \quad (1)$$

where PC_i – the potential of an i -th enterprise;

FC_i – the financial status of an i -th enterprise;

EC_i – the product output and sales of an i -th enterprise.

This methodological approach made it possible to assess the competitive position of an enterprise under the following main stages: (1) evaluation of an enterprise's potential in the context of its structural-functional areas and elements of the labor process; (2) evaluation of the financial position of an enterprise; (3) determination of

the product output and sales of the agricultural sector (Mikhailushkin et al., 2018).

In order to assess key factors of production (labor, land, and capital), it was crucial to determine an enterprise's potential (PC_i) according to the formula (2):

$$PC_i = \sqrt{TC_i + ELC_i + SBC_i + LRC_i + EIC_i} \quad (2)$$

where TC_i – ratio of technical equipment of an enterprise;

ELC_i – coefficient of efficiently used land resources;

SBC_i – soil bonitet coefficient;

LRC_i – labor supply coefficient;

EIC_i – coefficient of employees' material interest;

The calculation of financial status of an enterprise (FC_i) was performed using the formula (3):

$$FC_i = \sqrt{Liqc_i + EFC_i + FIC_i + CAC_i}, \quad (3)$$

where $Liqc_i$ – current liquidity ratio (coefficient);

EFC_i – enterprise financing coefficient;

FIC_i – financial independence coefficient;

CAC_i – capital turnover coefficient.

The assessment of agri-food products output and sales (EC_i) was carried out under the equation (4):

$$EC_i = \sqrt{ROS_i + ROP_i + SPC_i + PQC_i + PDC_i}, \quad (4)$$

where ROS_i – return on sales coefficient;

ROP_i – return on production coefficient;

SPC_i – coefficient of sales prices;

PQC_i – product quality coefficient;

PDC_i – product differentiation coefficient.

The study was based on materials from 15 Ukrainian agricultural enterprises: Zoloty Kolos, Ahrolatinvest, Sad, Kompaniia Farmko, Ahrodar, Ahrokon, Suziria, Druzhba, Osнова-Ahro, Dukra Ahro, Maiak, Ranok, Zelena Brama, Astoriia, Olimp. The main criteria for selecting these companies were limited liability form of ownership, up to 200 people employed, up to 20 million USD of annual revenues, and more than five years of operation. The study sample consists of limited liability companies operating in agri-business, the top management of which is interested in good results. The representatives of the top management were contacted directly to invite the target companies. The limited liability form of business was selected because it is the most common form of business in Ukraine. The general characteristics of the participating companies are depicted in Table 1.

The companies provided all the information necessary for this study and were assured their trade secrets will not be disclosed. The information platform for calculations includes financial statements and additional data required to describe the special focus of the industry. The input data for modeling and forecasting are depicted in Table 2.

Table 1.
General information about the participating companies

Company	Revenue, thousand U.S. dollars	Year of foundation	Area under cultivation, ha	Employees	Sales abroad, %
Zoloty Kolos	14.179	2001	5.800	94	65
Ahrolatinvest	6.540	2006	2.100	74	12
Sad	2.792	2000	1.745	45	36
Kompaniia Farmko	5.178	2008	3.620	66	48
Ahrodar	12.046	2001	4.380	104	62
Ahrokon	9.681	2003	5.910	78	35
Suziria	2.253	2006	1.800	42	25
Druzhba	1.748	2006	1.360	54	39
Osnova-Ahro	8.531	2001	2.750	92	56
Dukra Ahro	11.297	2000	3.200	77	70
Maiak	9.425	2007	1.580	45	15
Ranok	13.108	2001	3.782	112	23
Zelena Brama	10.012	2003	1.419	74	38
Astoriia	0.692	2005	1.285	57	44
Olimp	6.388	2007	2.600	71	53

Source: developed by the authors based on data from participating companies

Table 2.
The input data for modeling and forecasting operations

Company	Potential	Financial status	Product output & sales	Level of competitiveness
Zoloty Kolos	1.24	1.17	1.16	2.06
Ahrolatinvest	1.15	1.02	1.14	1.91
Sad	1.65	4.20	1.28	4.69
Kompaniia Farmko	2.04	6.10	1.45	6.59
Ahrodar	1.06	1.06	1.13	1.88
Ahrokon	1.03	1.05	1.06	1.81
Suziria	1.09	1.03	1.07	1.84
Druzhba	1.56	3.48	1.24	4.01
Osnova-Ahro	1.76	3.80	1.25	4.37
Dukra Ahro	1.15	1.08	1.12	1.93
Maiak	1.05	1.12	1.08	1.88
Ranok	1.84	5.60	1.45	6.07
Zelena Brama	1.17	3.20	1.25	3.63
Astoriia	1.97	6.10	1.45	6.57
Olimp	2.10	5.80	1.44	6.33

Source: developed by the authors based on data from participating companies

With the aim of identifying the influence of activity factors on agri-food businesses' competitiveness in the formation of their sustainable competitive advantages, the methods of economic and statistical modeling for the group of enterprises under study and each of them individually were used (Shaimardanovich and Rustamovich, 2018; Filipiski and Belton, 2018).

In order to form a multiple regression model, the following variables were identified:

y – level of an agri-food enterprise's competitiveness;

x_1 – coefficient of an enterprise's potential;

x_2 – coefficient of an enterprise's financial status;

x_3 – coefficient of the product output and sales;

x_4 – total funding for innovation;

x_5 – internal costs for research and development.

In order to identify the factors that have the greatest impact on the competitiveness of Ukrainian agricultural enterprises, a correlation matrix has been built (matrix showing pairwise correlation coefficients between the variables). At the same time, the calculations revealed a low level of relationship (below 0.25) between the dependent variable y , the total amount of funding for innovation, and the internal costs of research and development. Therefore, it was inappropriate to include them in the model.

Based on the developed model, predictions concerning the level of competitiveness of Ukrainian agricultural enterprises were made. In order to determine the competitive advantages of the companies under consideration, a cluster analysis was carried out. It gave the possibility to distinguish three groups of companies clustered by their competitive advantages.

4 Results

To determine the relationship between the level of competitiveness of the studied agricultural enterprises, a regression model was formed on the basis of the variables listed above. As indicated by the results obtained ($r_{yx1} = 0.992$, $r_{yx2} = 0.954$, $r_{yx3} = 0.981$), there is a fairly strong relationship between the effective variable y (competitiveness level) and the factorial variables x_1 , x_2 and x_3 (an enterprise's potential, financial status, and product output and sales). Therefore, the forms of dependence between the endogenous variable y and exogenous x_1 , x_2 and x_3 are to be estimated. The correlation diagram of the relationship between agri-food enterprises' competitiveness and potential is shown in Fig. 1.

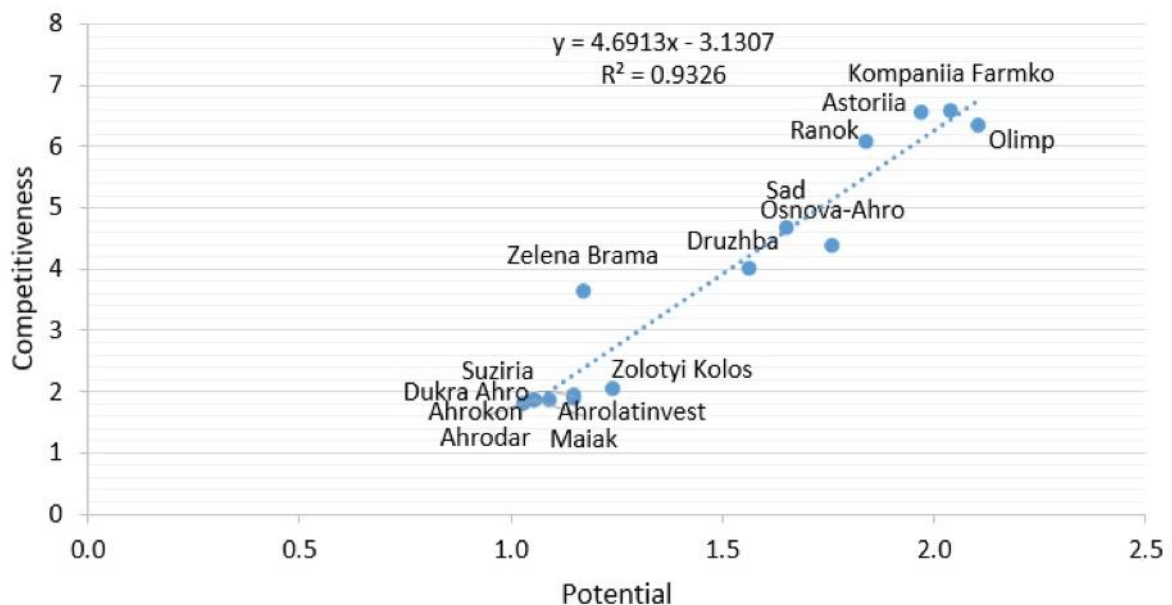


Figure 1. Linear dependence between Ukrainian agricultural companies' competitiveness and potential (for 2015-2019)
Source: developed by the authors

The preceding calculations allow one to argue that the variation in the level of competitiveness of the reviewed agricultural enterprises for 93.26% depends on their production volume. The process of checking the generated econometric model for data adequacy unveiled that $F_{fact} = 476.3$, whereas the tabular value determined for a given level of significance is $\alpha = 0.05$, the numbers of degrees of freedom $k_1 = 2 - 1 = 1$ and $k_2 = 8 - 1 = 7$, and $F_{tabl} = 5.47$. Considering that $F_{fact} > F_{tabl}$, it can be inferred that with a probability $p = 0.95$, the formed econometric model is adequate and applicable for analyzing Ukrainian agri-food companies' competitiveness.

Figure 2 presents the relationship between the competitiveness of the analyzed agri-food companies and their financial status. As can be seen, variation in the level of competitiveness of Ukrainian agri-food businesses for 99.82% depends on their budgetary position. Confirmation for the formed econometric model's agreement with the actual data is the value of F_{fact} (72.5). The tabular value for a given significance level $\alpha = 0.05$, whereas for the numbers of degrees of freedom $k_1 = 2 - 1 = 1$ and $k_2 = 8 - 1 = 7$. In this case, the value of F_{tabl} equals 5.54. Given that $F_{fact} > F_{tabl}$, the formed econometric model can be asserted as relevant with a given probability $p = 0.95$. Consequently, this model can also be used to analyze the competitiveness of agricultural enterprises in Ukraine.

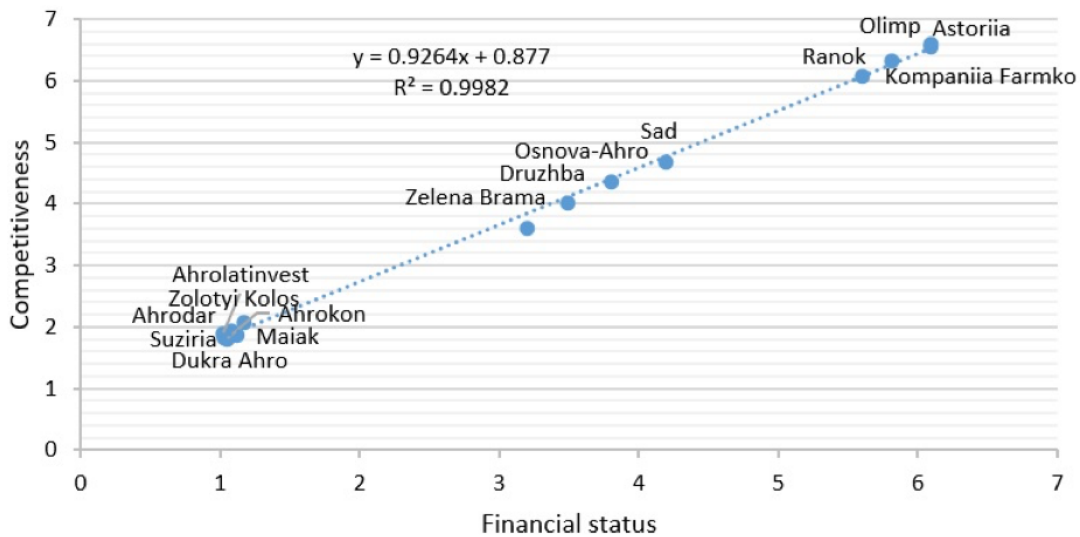


Figure 2. Linear dependence between competitiveness and financial status of agricultural companies in Ukraine (for 2015-2019) Source: developed by the authors

The calculations, results of which are presented in Fig. 3, indicate that variation in the level of competitiveness of Ukrainian agri-food companies for 96.26% depends on the product output and sales.

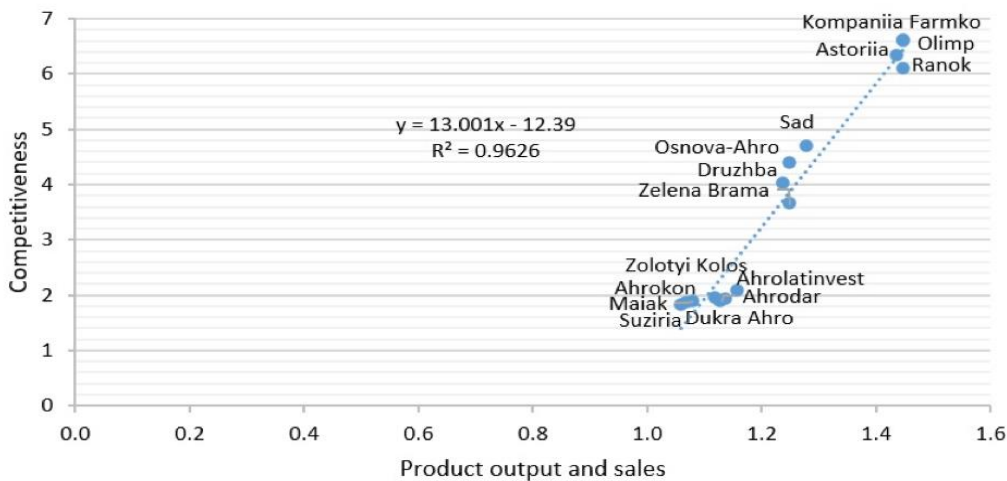


Figure 3. Linear dependence between Ukrainian agricultural companies' competitiveness and product output and sales (for 2015-2019) Source: developed by the authors

When checking the generated econometric model for adequacy to the actual data, it was found that $F_{fact} = 103.62$. The tabular value for a given level of significance $\alpha = 0.05$, whereas the numbers of degrees of freedom $k_1 = 2 - 1 = 1$ and $k_2 = 8 - 1 = 7$. At the same time, $F_{tabl} = 5.52$. Since $F_{fact} > F_{tabl}$, with a given probability $p = 0.95$, this econometric model can be considered adequate to the actual data. Therefore, it is applicable for analyzing the competitiveness of the considered Ukrainian agri-food companies.

In such a manner, there is a possibility of building a multivariate linear regression model to study the dependence of Ukrainian agri-food companies' competitiveness on enterprise potential (x_1), financial status (x_2), and product output and sales (x_3). The ultimate formula of this model is as follows:

$$y = 0.42x_1 + 2.34 x_2 + 8.73 x_3 - 11.26$$

Coefficients a_1, a_2, a_3 show how many units on average y will change when x_1, x_2 , and x_3 change by one. At the same time, a_1, a_2 , and a_3 provide an opportunity to assess the average efficiency of x_1, x_2 , and x_3 since they reflect an average increase in the final result, which is the level of competitiveness of companies per unit of a specific component. This information helps identify the strongest factors of competitiveness when justifying a managerial decision. The resulting model allows planning the level of competitiveness based in changes in its key indicators and choosing the best path to competitiveness among alternatives. Management thus leads to flexibility and adaptability.

The multivariate correlation coefficient is a measure of the linear relationship of a dependent variable with all the independent variables. For this particular model, its value constitutes 0.9924, which characterizes a fairly strong correlation between the considered socio-economic indicators. From here it follows that variations in potential, financial status, product output, and sales determine the variation in competitiveness levels of the studied agri-food companies by 99.24%.

Determining independent variables through time series forecasting and their use in the developed multivariate linear regression model provides the possibility of predicting the competitiveness of the studied agri-food enterprises for the period up to 2024. Corresponding data are shown in Fig. 4.

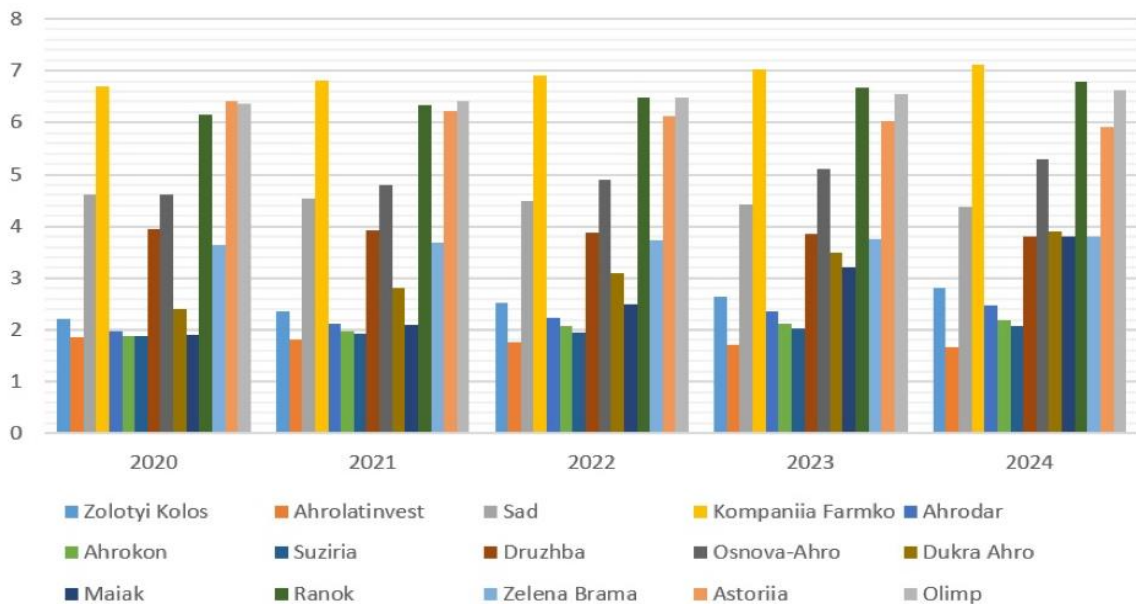


Figure 4. Competitiveness indicators of Ukrainian agri-food enterprises: estimates for 2020-2024
 Source: developed by the authors

According to the calculations performed, maintenance of independent variables' development may increase the competitiveness of the studied agri-food enterprises to the average level of 4.18 already in 2024, which exceeds the indicator of 2019 by 13%. The accuracy check of this econometric model using the average relative error of approximation resulted in the value $\bar{\varepsilon} = 3.48\% < 10\%$, which indicates the high model's quality. A competitiveness forecast serves as a motivational driver to capture competitive advantages and reach or exceed the predicted level of competitiveness.

Based on the values of the constituent components of agri-food companies' competitiveness, a cluster analysis was carried out. The distance matrix is given in Table 1. For the sake of more convenient record of these enterprises in tables and diagrams, their names were assigned the following codes: A – Zoloty Kolos, B – Ahrolatinvest, C – Sad, D – Kompaniia Farmko, E – Ahrodar, F – Ahrokon, G – Suziria, H – Druzhba, I – Osnova-Ahro, J – Dukra Ahro, K – Maiak, L – Ranok, M – Zelena Brama, N – Astoriia, O – Olimp.

Table 1.
Distance matrix between clustering objects (agri-food enterprises)

Enterprise	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
A	0	0.175	3.058	4.994	0.211	0.242	0.205	2.332	2.681	0.127	0.196	4.47	2.031	4.984	4.709
B	0.175	0	3.219	5.157	0.099	0.124	0.061	2.494	2.846	0.06	0.141	4.632	2.18	5.146	4.873
C	3.058	3.219	0	1.94	3.195	3.21	3.219	0.726	0.415	3.16	3.138	1.413	1.109	1.927	1.662
D	4.994	5.157	1.94	0	5.134	5.15	5.158	2.664	2.317	5.098	5.077	0.539	3.028	0.07	0.306
E	0.211	0.099	3.195	5.134	0	0.0316	0.042	2.471	2.828	0.092	0.061	4.607	2.143	5.121	4.853
F	0.242	0.124	3.21	5.15	0.032	0	0.063	2.487	2.845	0.124	0.073	4.622	2.155	5.137	4.869
G	0.205	0.061	3.219	5.158	0.042	0.0632	0	2.495	2.85	0.078	0.098	4.631	2.171	5.146	4.876
H	2.332	2.494	0.726	2.664	2.471	2.487	2.495	0	0.377	2.435	2.414	2.138	0.48	2.652	2.382
I	2.681	2.846	0.415	2.317	2.828	2.845	2.85	0.377	0	2.788	2.772	1.802	0.841	2.31	2.029
J	0.127	0.06	3.16	5.098	0.092	0.124	0.078	2.435	2.788	0	0.108	4.572	2.12	5.087	4.815
K	0.196	0.141	3.138	5.077	0.061	0.0728	0.099	2.414	2.772	0.108	0	4.549	2.083	5.064	4.796
L	4.47	4.632	1.413	0.539	4.607	4.622	4.631	2.138	1.802	4.572	4.549	0	2.492	0.517	0.328
M	2.031	2.18	1.109	3.028	2.143	2.155	2.171	0.48	0.841	2.12	2.083	2.492	0	3.008	2.761
N	4.984	5.146	1.927	0.07	5.121	5.137	5.146	2.652	2.31	5.087	5.064	0.517	3.008	0	0.327
O	4.709	4.873	1.662	0.306	4.853	4.869	4.876	2.382	2.029	4.815	4.796	0.328	2.761	0.327	0

Source: developed by the authors

Graphical representation of the results obtained is given in Figure 5. The clusterization outcomes made it possible to distinguish three groups of enterprises divided by their competitiveness. Clustering helps identify companies that have similar levels of competitiveness. It allows gearing managerial decision-making toward the indicators of the market leaders and monitoring the market positions of competitors.

The first group is characterized by the least pronounced competitive advantages and includes such enterprises as Zoloty Kolos, Ahrolatinvest, Dukra Ahro, Ahrodar, Ahrokon, Suziria, and Maiak. In view of the fact that they are outsiders among the companies under study, they are recommended to step up their competitiveness development. The second group encompasses Sad, Druzhba, Osnova-Ahro, and Zelena Brama. These enterprises should focus on the most developed components of their competitiveness to form sustainable competitive advantages and be transited to the third group. Failure to do this may worsen their positions and cause their subsequent shift into the 1st group. The third group includes leaders with the highest competitiveness levels in all constituent components. These are Kompaniia Farmko, Astoriia, Olimp, and Ranok. In order to maintain their competitive advantages, these enterprises are recommended to take all efforts possible to increase their potential, strengthen financial status, and enhance the effectiveness of product output and sales.

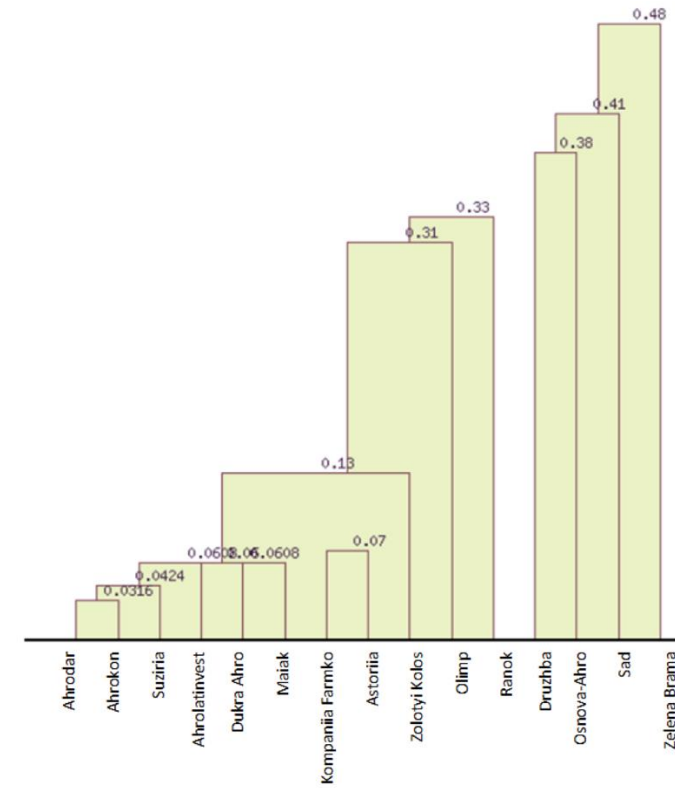


Figure 5. Dendrogram of cluster analysis
 Source: developed by the authors

5 Discussion

The strong point of this study lies in modeling the influence of several specific determinants on the enterprises' competitiveness level (Atnafu and Balda, 2018). This allows not only highlighting the factors of most significant influence but also identifying the strongest competitive advantages compared to other companies. Aside from that, the proposed methodological approach can assist in elaborating the most effective proposals for the development of competitive areas (Sheng and Chancellor, 2019; Boichenko *et al.*, 2020).

The study showed that modeling the influence of certain factors on the level of competitiveness of agri-food enterprises is actually possible since real indicators are considered that have already taken the components reviewed in this work into consideration (Feng *et al.*, 2019). Hence, modeling results can be used both in theoretical developments and practical attempts to make managerial decisions focused on forming sustainable competitive advantages (Hanrahan *et al.*, 2018).

The proposed implementation of cluster analysis makes it possible to single out groups of companies with a similar level of competitiveness with reference to all the constituent elements (Lorenzo *et al.*, 2018; Markina, 2018). It was this fact that enabled identifying the competitive advantages of the studied enterprises (Haseeb *et al.*, 2019). Furthermore, the chosen methodology provides an opportunity to determine the strengths and prospects of increasing competitiveness, as well as threats eliminating competitive advantages (Zhang *et al.*, 2020).

A major source of unreliability in this study is that the development of agri-food producers' competitive advantages is directly dependent on these entities' cooperation with government authorities and non-governmental organizations (Björklund, 2018). Such cooperation is especially relevant for small and medium-sized agri-food enterprises. They often require additional funds to conduct, for example, innovative activities, and independent search for an investor is usually a too tough challenge for them (Manikas *et al.*, 2019). Thus, the proposed methodological approach is limited to ex post facto enterprises' indicators and ignores the integrated relationships with other organizations and long-term investment projects.

The limitations of this study stem from the assumption that institutional changes affect the competitiveness level of participating companies to the same extent. This assumption was made because the companies in point operated in the same industry.

However, if the sample encompasses organizations with different institutional characteristics of performance, the calculations will include a set of institutional compliance indicators.

Modeling the competitive advantages of agri-food companies in the foreign markets is a rather difficult task since the growth of agricultural exports is influenced by a number of factors that tend to be insufficiently investigated while implementing investment and innovation activities (Cosentino *et al.*, 2020). These include changes in exchange rate trends, the presence of tariff and non-tariff barriers in Ukraine and in importing countries, trade relations with Ukraine, the presence of international agreements on cooperation and on the conditions for export and import of agri-food products and goods for agri-food production (Uskov *et al.*, 2014; Vdovenko *et al.*, 2020). Therefore, in the future, this study can be expanded in the direction of comparing the competitive advantages of Ukrainian and foreign agri-food companies operating in the international markets.

The proposed methodological approach can also be applied by enterprises in other industries. However, at the same time, it is necessary to form a system of key indicators used to assess the factors influencing business competitiveness with respect to the specific features of a company's functioning.

6 Conclusion

The proposed approach to assessing the impact of competitiveness components on competitive advantages of agri-food companies in Ukraine provides an opportunity to substantiate managerial decisions for higher competitiveness. The components of this approach constitute a management platform for planning, motivating, organizing and monitoring the formation of competitive advantages. The said approach suggests measuring the level of competitiveness and identifying opportunities to strengthen the company's competitive position in the foreseeable future.

The developed regression model revealed a strong link between the competitiveness of enterprises, their potential, financial status, and product output and sales. The adequacy of the formed econometric model was confirmed by the corresponding criteria for its applicability. The multivariate correlation coefficient constituted 0.9924, which characterizes a fairly high correlation between the analyzed socio-economic indicators. This fact confirms its applicability for analyzing the competitiveness of the examined Ukrainian agri-food enterprises.

By determining independent variables through time series forecasting and their use in the developed multivariate linear regression model, five-year estimates of the studied agri-food companies' competitiveness were made. According to the modeled forecasts, maintenance of independent variables' development will lead to a 13% increase in competitiveness of the analyzed agri-food companies. The accuracy of this econometric model was confirmed by the indicator of the average relative error of approximation.

The modeled values of the constituent variables of agri-food companies' competitiveness made it possible to conduct cluster analysis on their basis. Distance matrix between the values of agri-food enterprises' competitiveness allowed distinguishing three groups of companies classified by their competitiveness. The first group had the least pronounced competitive advantages and included such enterprises as Zoloty Kolos, Ahrolatinvest, Dukra Ahro, Ahrodar, Ahrokon, Suziria, and Maiak. These enterprises were recommended to focus precisely on their competitiveness development to strengthen their market positions. The second group combined such enterprises as Sad, Druzhba, Osnova-Ahro, and Zelena Brama. They were proposed to concentrate on the most developed components of their competitiveness to form sustainable competitive advantages and become more successful in the market. Failure to do so may result in ending up in a group of outsiders. The third group included leaders among the surveyed enterprises: Kompaniia Farmko, Astoriia, Olimp, and Ranok. Even though they had the highest competitiveness levels in all constituent components, these enterprises were recommended to continue developing their potential, strengthening financial status, and enhancing product output and sales effectiveness in order not to lose their positions in a constantly changing business environment.

Future studies could fruitfully explore this issue further by comparing the competitive advantages of Ukrainian and foreign agri-food companies operating in the international markets. The results achieved may be of interest to those responsible for the development of individual agri-food companies and their associations. On top of that, the work can be useful for individuals involved in the formation of government programs on improving the competitiveness of business structures, as well as for determining the directions of the current competition policy or defining appropriate mechanisms and parameters to ensure regional and global competitive advantages of agri-food companies.

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