UDC 338.1: 658.5
DOI: https://doi.org/10.37734/2409-6873-2025-2-2

TAXONOMIC ANALYSIS OF AGRIBUSINESS ENTERPRISE MANAGEMENT INDICATORS AND COMPETITIVENESS ASSESSMENT

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Annotation. The aim of the article *is to explore the management of activities of an export-oriented agribusiness enterprise and to conduct a comprehensive assessment of its competitiveness based on indicators with mutually incompatible units of measurement. The article substantiates the relevance of using a multidimensional comparative analysis method-taxonomy-as a tool for strategic decision-making in a dynamic and uncertain external environment.* ***The research methodology*** *includes analysis and theoretical interpretation of the role of a system of indicators reflecting the effectiveness of functional management areas of the enterprise: financial, operational, human resource, and resource-related domains. A set of stimulating and discouraging variables is proposed to construct the observation matrix and ensure further data standardization. The stages of calculating the taxonomic index are detailed: data normalization, determination of the benchmark vector, calculation of the Euclidean distance, and substantiation of the integrated development indicator. Calculations are synthesized using tabular methods. The modeling approach confirms the universality and suitability of the taxonomy method for comprehensive competitiveness assessment.* ***The results of the study****, based on the example of KERNEL during the 2020–2024 financial years, demonstrate the ability of the taxonomic method to identify the dynamics of the enterprise's competitive position over the selected period, pinpoint strengths and weaknesses in management, and offer analytical recommendations for future application of taxonomic analysis to operational and sustainable development indicators in order to maintain competitiveness.* ***The practical significance*** *of the study lies in its applied value for strategic planning, evaluation of management decision efficiency, and the development of adaptive models under conditions of environmental turbulence. The algorithm proposed for further research may be useful in navigating the uncertain prospects of future global changes.*

Keywords: *competitiveness, taxonomic analysis, enterprise performance management, Euclidean distance, observation matrix, indicator standardization.*

General statement of the problem and its connection with the most important scientific or practical tasks. Under current conditions of economic turbulence and high global uncertainty, enterprises require effective analytical tools that enable timely detection of key management indicators' dynamics and support the formulation of sound decisions to ensure competitiveness.

Full-scale military operations in Ukraine have caused a dramatic decline in the performance of the agro-industrial sector, one of the country's strategic industries. The physical destruction of agricultural enterprise assets, blockade of maritime exports, logistical disruptions, and occupation of part of the agricultural land have led to losses for even the most prominent companies.

Traditional approaches to assessing management effectiveness are generally limited to one-dimensional analysis of individual performance indicators based on financial results reporting. This does not allow for a comprehensive view of enterprise functioning or market positioning. For agro–enterprises, it is evident that no single indicator-even yield or profit-can fully reflect a company's competitiveness. A high grain yield does not guarantee a competitive advantage if the company's financial stability is threatened or its products fail to find markets on favorable terms. This necessitates the use of integral approaches.

The taxonomic analysis method is theoretically justified for agribusiness as it allows calculations involving a large number of indicators. The results, in the form of an integral index, can highlight strong and weak factors of enterprise competitiveness – even under today's complex developmental conditions.

Analysis of recent research and publications demonstrates the universality of taxonomic analysis in multidimensional economic evaluations. In scientific literature, this method is successfully applied across various domains. Contemporary scholars regard it as suitable for comparing and ranking objects, events, and processes using diverse indicators. For example:

The integrated efficiency criterion model developed by Hiryina O.B. and Merkt O.V. using taxonomic methods based on reporting data of SE "Yuzhny Port" evaluates the efficiency of production activities at sea trade ports [1].

Research by Shapurov O.O. confirms the benefits of taxonomic integral indices in assessing the potential of the metallurgical sector, enabling timely responses to changing analytical coefficients and external factors [2, pp. 91–95].

Krykhovetska Z.M., Shchypailo S.I., and Kropelnytska S.O. evaluated the overall dynamics of stimulators and de-stimulators of property status, liquidity, solvency, profitability, and business activity of Kalush Pipe Plant using taxonomic analysis [3, p. 95], while Lyzhnyk Yu.B. and Bocharova Yu.H. analyzed similar indicators to assess the dynamics of PJSC Kyivstar [4, pp. 22–27].

Further studies by Pryimak V.I., Vyshnevska S.M., and Trach A.I. applied taxonomic methods to assess human capital development in Ukraine's regions, leading to recommendations for better distribution of state financial resources [5, pp. 12–15]. Cherkashyna T.S. used this method to analyze the degree of economic inequality in EU countries, identifying Bulgaria, Latvia, and Lithuania as having the highest levels due to rapid intangible asset capitalization and financial capital concentration [6, p. 16].

Kamishnykova E.V., Vereskun M.V., and Verzylova K.S. used the method to determine a quantitative indicator of organizational effectiveness for PJSC Kamet-Stal [7, p. 85]. Yermakova R.R. and Korneva N.O. proposed a taxonomic coefficient for comprehensive evaluation of financial management efficiency at Mykolaivgaz JSC [8]. Strashynska L.V. and Mykhailyk O.M. demonstrated the practical utility of the taxonomic method in assessing national food security [9].

However, insufficient research has been conducted to assess the competitiveness of agro-industrial enterprises under martial law, especially considering asset losses and logistical disruptions.

Formulation of the objective of the article (task statement). The primary objective of this article is to develop and test a methodological framework for applying taxonomic analysis to evaluate the competitiveness of export-oriented agribusiness enterprises under conditions of uncertainty. The approach is based on integrating a diverse set of performance indicators whose units of measurement are inherently incompatible. By using a multidimensional comparative analysis method grounded in taxonomy, the proposed framework aims to offer a structured and objective decision-making tool for strategic management in volatile environments.

Presentation of the main research material with full justification of the scientific results obtained. Given Ukraine's leading role as one of the key exporters of agricultural products, ensuring the stable operation of its agri-food sector is of both national and international significance. Ukraine's agricultural potential contributes significantly to global food security, particularly for countries in Africa, Asia, and the Middle East that are strategically dependent on Ukrainian grain exports. Disruptions in production and logistics chains caused by the full-scale war have already led to global repercussions – including price increases for basic food products, raw material shortages, and heightened risks of famine in vulnerable regions.

In this context, the application of taxonomic analysis becomes a powerful analytical tool for supporting managerial decision-making based on a comprehensive, integral assessment. It enables the systematic organization of economic, resource-based, and environmental indicators of enterprise operations and allows the tracking of sectoral dynamics against defined benchmark criteria.

Applying taxonomic analysis to agribusiness indicators helps identify areas of managerial efficiency and risk, enabling the construction of predictive development scenarios for the agro-industrial sector. These scenarios may be used in the development of national and international food security strategies [10, p. 68].

We align with the theoretical framework developed by S. A. Klymchuk and N. S. Pedchenko, who emphasize the universality of the taxonomic approach in the study of enterprise management effectiveness. Their work outlines practical applications of taxonomic analysis for integrated competitiveness assessments at the firm and organizational level [11; 12, pp. 11–17].

The methodology is structured around several key stages that ensure an objective formulation of an integral development indicator – the taxonomic development coefficient. These include:

Observation Matrix Formation – The initial stage involves compiling a matrix that includes raw values of relevant enterprise performance indicators (e.g., profit, costs, production volumes, human capital metrics, etc.) over the selected time period or across multiple entities. These indicators typically differ in measurement scales, which makes direct comparison infeasible.

Data Standardization – The next step converts all indicators into dimensionless relative values through normalization. This step ensures uniformity across variables and enhances the reliability of further analysis. Common techniques include z-score normalization using the mean and standard deviation.

Reference Vector Determination – An ideal vector is constructed from the best possible values of normalized indicators, representing a hypothetical optimal state of the system. For stimulators (positive indicators), this involves selecting maximum values, and for destimulators (negative indicators), minimum values.

Distance Calculation Using the Euclidean Metric – At this stage, the Euclidean distance is used to measure how far each observation (e.g., a particular year or enterprise) deviates from the reference vector. This distance quantifies the proximity of each observation to the optimal benchmark. The smaller the distance, the closer the entity is to the ideal state, reflecting superior performance.

Taxonomic Development Coefficient Computation – This coefficient is inversely proportional to the Euclidean distance and serves as the final integrative competitiveness indicator. Observations with lower deviations from the reference vector receive higher taxonomic scores, indicating greater competitiveness or managerial effectiveness.

This approach is particularly applicable to complex economic systems such as agribusiness enterprises, where it is essential to balance revenues, costs, resources, efficiency, and environmental sustainability.

In the following section, the methodology is applied to the case of Kernel Holding S.A., using consolidated financial data for the period from July 1, 2019, to June 30, 2024 [13]. A detailed breakdown of selected indicators, their classification as stimulators or destimulators, and the rationale for their inclusion in the observation matrix will be presented. The results will demonstrate the effectiveness of taxonomic analysis in reflecting the dynamic competitive position of the company across turbulent economic conditions.

As stimulators, we select the following indicators:

Revenue (USD million): an increase in revenue reflects higher market activity of the enterprise and operational scaling, serving as a direct indicator of its competitive advantages;

EBITDA (USD million): earnings before interest, taxes, depreciation, and amortization, which reflects the real operational efficiency of the enterprise—the higher it is, the more stable the financial model becomes;

Net profit (USD million): an indicator of financial performance, whose growth signifies effective management of both expenses and income streams;

Net cash flow from operating activities (USD million): indicates the company's ability to generate liquidity from its core operations, which contributes to financial stability and resilience;

Equity (USD million): a higher level of equity demonstrates the enterprise's financial independence and its accountability to investors;

Number of employees (persons): represents a source of added value generation and social stability;

EBITDA / Interest expenses: a debt service coverage ratio, where higher values point to solid financial resilience and lower default risk;

Agricultural land under management (thousand hectares): a larger area implies greater production potential, operational scale, and market share, which constitutes a strategic advantage in the agricultural sector.

As destimulators, we select the following:

Net debt / EBITDA: a financial risk coefficient, where an increase reflects rising debt burden relative to earnings;

Net debt (USD million): the absolute growth of which, without corresponding increases in assets or profits, reduces enterprise flexibility and increases the cost of capital;

Total greenhouse gas emissions (thousand tonnes of CO_2): higher emissions decrease the environmental sustainability of the business and may pose reputational and regulatory risks;

Total energy consumption (thousand gigajoules): a measure of production energy intensity, which in the context of rising energy costs reduces profitability.

The taxonomic index constructed based on these indicators will reflect the integrated level of competitiveness of Kernel. It allows for the evaluation of economic efficiency (through profitability, revenue, and cash flows), financial stability (through capital and debt indicators), scale and growth potential (via land area and workforce size), as well as environmental and energy efficiency. The combination of stimulators and destimulators in this model provides a comprehensive assessment of Kernel's operations in terms of its competitive advantages, sustainability, and adaptability to a changing environment.

In the first stage, we construct the observation matrix (Table 1) using Kernel's indicators for the period from July 1, 2019, to June 30, 2024, and calculate Xij norm using formula (1) for each indicator Xi.

$$\overline{X} = \frac{\sum_{j=1}^{m} Xij}{m}, \quad (1)$$

$\overline{X}$ – average value of indicator X of row i for number of years j (table 1); i – number of indicators from i_1 to i_{12}; j – number of periods (years) from j_1 to j_5; m – number of periods (years) for which the research is conducted.

In the second stage, we standardize the KERNEL indicators from the observation matrix (Table 1) to dimensionless relative quantities according to formula (2).

$$Zij = \frac{\left(Xij - \overline{X}\right)}{Wi}, \quad (2)$$

(Xij, $\overline{X}$) – KERNEL indicators from table 1; i – number of indicators from i_1 to i_{12}; j – number of periods (years) from j_1 to j_5; Wi – standard deviation of indicators, calculated by formula (3)

$$Wi = \sqrt{\frac{\sum_{j=1}^{m}\left(Xij - \overline{X}\right)^2}{m}}, \quad (3)$$

(Xij,X) – KERNEL indicators from Table 1; i – number of indicators from i_1 to i_{12}; j – number of periods (years) from j_1 to j_5; m – number of periods for which the study is conducted.

Based on the results of the calculations, we will form a matrix of standardized values Zij and determine the reference vector Z0j with coordinates for each KERNEL indicator: the maximum value for stimulants and the minimum for destimulants (Table 3).

Table 1

KERNEL indicator observation matrix

Xij indicators as of June 30		2020	2021	2022	2023	2024	$\overline{X}$
		j_1	j_2	j_3	j_4	j_5	Xij
Revenue (USD million)	i_1	4107	5647	5332	3455	3581	4424,4
EBITDA (USD million)	i_2	443	929	220	544	381	503,4
Net profit (USD million)	i_3	118	513	-41	299	168	211,4
Net cash provided by / (used in) operating activities (USD million)	i_4	269	461	-305	716	472	322,6
Shareholders Equity (USD million)	i_5	1493	1946	1683	1742	1865	1745,8
Number of employees (persons)	i_6	11928	11256	10223	10733	10904	11008,8
EBITDA / Interest	i_7	3,0	6,6	1,8	4,4	5,5	4,3
Net debt /EBITDA	i_8	2,2	0,9	6,8	1,1	0,7	2,3
Net debt (USD million)	i_9	980	836	1488	595	281	836,0
Total GHG emission, thousand tons of CO_2 equivalent	i_{10}	1679	1462	1272	1056	195	1132,8
Total energy consumption, thousand gigajoules	i_{11}	6998	7391	6881	8146	8689	7621,0
Agricultural land under Kernel management, thousand hectares	i_{12}	514	506	363	359	358	420,0

Source: compiled by the author based on materials [13]

Table 2

Arithmetic calculation of KERNEL indicator standardization

Indicators Xij	Indicator number	Calculation of the average deviation of indicators Xij for period m	
		$\frac{\sum_{j=1}^{m}\left(Xij-\overline{X}\right)^2}{m}$	$\sqrt{\frac{\sum_{j=1}^{m}\left(Xij-\overline{X}\right)^2}{m}}$
Revenue (USD million)	i_1	814 058,2	902,3
EBITDA (USD million)	i_2	56 345,8	237,4
Net profit (USD million)	i_3	34 589,8	186,0
Net cash provided by / (used in) operating activities (USD million)	i_4	118 598,6	344,4
Shareholders Equity (USD million)	i_5	24 431,0	156,3
Number of employees (persons)	i_6	322 113,4	567,6
EBITDA / Interest	i_7	2,9	1,7
Net debt /EBITDA	i_8	5,2	2,3
Net debt (USD million)	i_9	162 389,2	403,0
Total GHG emission, thousand tons of CO_2 equivalent	i_{10}	262 290,2	512,1
Total energy consumption, thousand gigajoules	i_{11}	480 975,6	693,5
Agricultural land under Kernel management, thousand hectares	i_{12}	5 409,2	73,5

Source: calculated by the author based on materials [13]

Let us calculate the distance Ci0 according to the formula (4) between the individual elements of the matrix of standardized values Zij and the vector – the standard Z0j and calculate the average distance $\overline{C}$ between observations according to the formula (5) with the calculation results shown in Table 4.

$$Ci0=\sqrt{\sum_{i=1}^{n}\left(Zij-Z0j\right)^2}. \quad (4)$$

$$\overline{C}=\frac{\sum_{j=1}^{m}Ci0}{m}. \quad (5)$$

The next step is to calculate:
standard deviation S0 according to formula (6)

$$S0=\sqrt{\frac{\sum_{j=1}^{m}\left(Ci0-\overline{C}\right)^2}{m}}, \quad (6)$$

and the maximum possible deviation C0 according to formula (7)

$$C0=\overline{C}+2*S0 \quad (7)$$

with the algorithm and calculation results displayed in Table 5.

Table 3

Matrix of standardized values Zij and vector – standard Z0j KERNEL

Zij indicators as of June 30		2020	2021	2022	2023	2024	vector – standard
		j_1	j_2	j_3	j_4	j_5	**Z0j**
Revenue (USD million)	i_1	-0,35	**1,36**	1,01	-1,07	-0,93	**1,36**
EBITDA (USD million)	i_2	-0,25	**1,79**	-1,19	0,17	-0,52	**1,79**
Net profit (USD million)	i_3	-0,50	**1,62**	-1,36	0,47	-0,23	**1,62**
Net cash provided by / (used in) operating activities (USD million)	i_4	-0,16	0,40	-1,82	**1,14**	0,43	**1,14**
Shareholders Equity (USD million)	i_5	-1,62	**1,28**	-0,40	-0,02	0,76	**1,28**
Number of employees (persons)	i_6	**1,62**	0,44	-1,38	-0,49	-0,18	**1,62**
EBITDA / Interest	i_7	-0,74	**1,37**	-1,44	0,08	0,72	**1,37**
Net debt /EBITDA	i_8	-0,06	-0,63	1,95	-0,54	**-0,72**	**-0,72**
Net debt (USD million)	i_9	0,36	0,00	1,62	-0,60	**-1,38**	**-1,38**
Total GHG emission, thousand tons of CO_2 equivalent	i_{10}	1,07	0,64	0,27	-0,15	**-1,83**	**-1,83**
Total energy consumption, thousand gigajoules	i_{11}	-0,90	-0,33	**-1,07**	0,76	1,54	**-1,07**
Agricultural land under Kernel management, thousand hectares	i_{12}	**1,28**	1,17	-0,78	-0,83	-0,84	**1,28**

Source: calculated by the author based on materials [13]

Table 4

Calculation of the distance Ci0 between the elements of the matrix of standardized values Zij and the vector – the KERNEL standard Z0j and the average distance $\overline{C}$ between observations

Zij indicators as of June 30	2020	2021	2022	2023	2024
	$(Zij – Z0j)^2$				
Revenue (USD million)	2,93	0,00	0,13	5,93	5,27
EBITDA (USD million)	4,18	0,00	8,90	2,62	5,32
Net profit (USD million)	4,50	0,00	8,86	1,32	3,43
Net cash provided by / (used in) operating activities (USD million)	1,68	0,54	8,78	0,00	0,50
Shareholders Equity (USD million)	8,39	0,00	2,83	1,70	0,27
Number of employees (persons)	0,00	1,40	9,03	4,44	3,26
EBITDA / Interest	4,43	0,00	7,87	1,66	0,42
Net debt /EBITDA	0,43	0,01	7,12	0,03	0,00
Net debt (USD million)	3,02	1,90	8,99	0,61	0,00
Total GHG emission, thousand tons of CO_2 equivalent	8,39	6,11	4,42	2,82	0,00
Total energy consumption, thousand gigajoules	0,03	0,55	0,00	3,34	6,81
Agricultural land under Kernel management, thousand hectares	0,00	0,01	4,22	4,45	4,51
$\sum_{i=1}^{n}(Zij - Z0j)^2$	37,99	10,53	71,14	28,92	29,78
$Ci0 = \sqrt{\sum_{i=1}^{n}(Zij - Z0j)^2}.$	6,16	3,25	8,43	5,38	5,46
$\overline{C}$ = (6,16 + 3,25 + 8,43 + 5,38 + 5,46) / 5 = 5,74					

Source: calculated by the author based on materials [13]

The aggregate dynamic development indicator di is calculated by the formula (8)

$$di = \frac{Ci0}{C0}. \quad (8)$$

At the final stage, we calculate the taxonomy coefficient Ki of the KERNEL competitiveness level for the studied period using formula (9), with the calculations shown in Table 5.

$$Ki=1 – di \quad (9)$$

Based on the conducted research and calculations performed using Microsoft Excel software by Microsoft, it was determined that the maximum possible deviation from the benchmark for KERNEL, C_0, amounts to 9.08. This indicates that despite the COVID-19 pandemic, the smallest deviation from the benchmark was achieved by the company in the

Table 5

Calculation of the taxonomic competitiveness coefficient KERNEL for the studied period

Algorithm and calculation results according to formulas (6) – (9)	2020	2021	2022	2023	2024
$(Ci0 - \overline{C})$	0,43	-2,49	2,70	-0,36	-0,28
$(Ci0 - \overline{C})^2$	0,18	6,20	7,28	0,13	0,08
$\sum_{j=1}^{m}\left(Ci0-\overline{C}\right)^2/m$ = (0,18 + 6,20 + 7,28 + 0,13 + 0,08) / 5 = 2,78					
$S0=\sqrt{2,78}=1.67$					
C0 = 5,74 + 2*1,67 = 9,08					
di0 = Ci0 / C0	0,680	0,358	0,930	0,593	0,602
Ki = 1 – di0	0,320	0,642	0,070	0,407	0,398

Source: calculated by the author based on materials [13]

2021 fiscal year, which ended on June 30, 2021 (K_{2021} equals 0.642). During this period, the company demonstrated a high level of development compared to 2020 and 2022–2024. The lowest taxonomic index corresponds to the 2022 fiscal year, which ended on June 30, 2022 (K_{2022} equals 0.070), primarily due to the full-scale attack across the entire territory of Ukraine. It was during this period that KERNEL recorded a net loss of USD 41 million. The company's net debt reached nearly USD 1.5 billion, which was almost seven times higher than its earnings before taxes, interest, and depreciation.

For further analysis of competitiveness, it is recommended that KERNEL incorporate the Business Expectations Index of Ukrainian enterprises, calculated by the National Bank of Ukraine [14], which remains highly relevant under the current conditions of uncertainty.

Conclusions from these problems and prospects for further research in this area. Taxonomic analysis of agri-enterprise indicators provides a systematic approach to assessing their development level and competitiveness based on multidimensional data. The study revealed the essence of the main stages of this method: formation of the observation matrix (structuring of independent operational indicators of the enterprise), standardization of values (normalization of heterogeneous indicators and consideration of stimulating/destabilizing factors), identification of the reference vector (creation of a benchmark for best-achieved values), calculation of Euclidean distances (quantitative evaluation of deviation of each object from the benchmark), and computation of the integral taxonomic indicator (final comprehensive assessment of the development level).

The importance of each stage has been demonstrated. The objectivity of further conclusions depends on the quality of the source data and the correctness of their standardization. The choice of the benchmark sets the scale for development assessment. Distance calculation transforms a multitude of characteristics into a convenient format for comparison, and the integral index allows drawing final conclusions regarding competitiveness.

The application of the taxonomic method on the example of KERNEL in 2020–2024 confirmed its ability to reflect the dynamics of enterprise development, identifying periods of growth and decline. The taxonomy methodology has proven its universality and suitability for a comprehensive assessment of competitiveness. This approach is easily adaptable to different sets of indicators and conditions. Overall, the taxonomic indicator is a generalized measure of competitiveness that reflects the success or decline of an export-oriented agri-enterprise within a multidimensional indicator space. Therefore, its application is justified and useful for both academic analysis and practical management of agricultural business development in Ukraine.

A promising direction for further discussion could involve the need to incorporate an uncertainty index in the taxonomic analysis of enterprise development, based on the Business Expectations Index for Ukrainian enterprises, proposed by the National Bank of Ukraine.

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Жиляков С.В., *Полтавський університет економіки і торгівлі.* ***Таксономічний аналіз показників управління діяльністю агропідприємства та оцінка конкурентоспроможності.***

Анотація. Мета статті полягає *у дослідженні управління діяльністю експорторієнтованого підприємства агробізнесу та комплексній оцінці його конкурентоспроможності на основі показників, одиниці виміру яких несумісні між собою, з обґрунтуванням доцільності використання багатовимірного порівняльного аналізу на основі методу таксономії у контексті прийняття стратегічних управлінських рішень в умовах динамічного зовнішнього середовища та невизначеності.* ***Методика дослідження*** *включає аналіз, теоретичну інтерпретацію ролі системи показників, які відображають ефективність функціональних сфер управління підприємством: фінансової, виробничої, кадрової, ресурсної. Запропоновано набір стимулюючих та дестимулюючих складових для формування матриці спостережень та подальшої стандартизації даних. Деталізовано етапи розрахунку таксономічного індексу: нормалізація даних, визначення еталонного вектору, обчислення евклідової відстані, обґрунтування інтегрального показника розвитку. Розрахунки* *синтезовані табличним методом. Методом моделювання підтверджено універсальність та придатність таксономії до комплексної оцінки конкурентоспроможності.* ***Результати дослідження*** *дозволили на прикладі КЕРНЕЛ у 2020–2024 фінансових роках продемонструвати здатність таксономічного методу виявити динаміку конкурентного становища підприємства за обраний період, ідентифікувати слабкі та сильні місця в управлінні та надати аналітичні рекомендації щодо подальших кроків у застосуванні методики таксономії показників господарської діяльності та сталого розвитку задля збереження конкурентних позицій у майбутньому.* ***Практична значущість результатів дослідження*** *має прикладну цінність для стратегічного планування, оцінки ефективності управлінських рішень, формування адаптивних моделей розвитку в умовах турбулентності зовнішнього середовища. Запропонований до подальших досліджень алгоритм може бути корисним в невизначених перспективах майбутніх глобальних змін.*

Ключові слова: *конкурентоспроможність, таксономічний аналіз, управління діяльністю підприємства, евклідова відстань, матриця спостережень, стандартизація показників.*