The object of this study is the process of interaction and further synchronization of marketing strategies of enterprises during restructuring changes. The problem addressed is the lack of a systematic approach to the synchronization of marketing strategies in the processes of enterprise restructuring.

The main results reported here include methodological principles that were formed aimed at the synchronization of marketing strategies in the process of enterprise restructuring, which harmonizes marketing with increasing the level of market competitiveness of the enterprise; and a methodological approach that was devised to apply cluster analysis and Kohonen maps to assess the strength of synchronization of marketing strategies in the processes of restructuring; as well as a conceptual model of synchronization of marketing strategies in the processes of enterprise restructuring that was built considering measures to optimize marketing approaches for enterprises in different clusters, taking into account the strategic priorities of their further market development.

Innovative methodological approaches to the implementation of marketing strategies in the mechanisms of enterprise restructuring have been substantiated and explained in detail. The application of cluster analysis based on Kohonen maps made it possible to identify three typological groups of enterprises according to the criterion of depth of application and direction of strategic development for each of the selected clusters.

The results could be used in the processes of devising strategies for the transformation of enterprises in various domains of economic activity, in particular in the planning and implementation of restructuring measures aimed at increasing the level of competitiveness, digital modernization, development of production, and environmental responsibility. The proposed model of cluster analysis using Kohonen maps could be implemented in the activities of enterprises in various realms of economic activity to diagnose the level of marketing maturity and form targeted strategic decisions taking into account the specificity of the industry

Keywords: marketing strategy, Kohonen maps, business adaptation, enterprise development, competitive advantage

UDC 658.8:658.16
DOI: 10.15587/1729-4061.2025.326377

SYNCHRONIZATION OF MARKETING STRATEGIES WITH COMPANY RESTRUCTURING

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Received 27.01.2025
Received in revised form 06.03.2025
Accepted 31.03.2025
Published 22.04.2025

How to Cite: *Makedon, V., Myachin, V., Sokol, P., Hordiichuk, S. (2025). Synchronization of marketing strategies with company restructuring. Eastern-European Journal of Enterprise Technologies, 2 (13 (134)), 71–81. https://doi.org/10.15587/1729-4061.2025.326377*

1. Introduction

The issue of marketing strategies in the processes of enterprise restructuring is becoming increasingly relevant, as enterprises are forced to adapt to rapid changes in the market environment, global competition, and the growth of digital technologies. The combination of marketing strategies and enterprise restructuring processes is gaining particular importance in the context of the rapid development of the digital economy, globalization of markets, and the strengthening of the competitive environment. Modern enterprises face numerous challenges, such as changes in consumer behavior, rapid technological innovation, instability of economic and political conditions, which complicates their adaptation and effective functioning. Under such economic conditions, restructuring becomes a necessary tool for ensuring the viability and growth of the level of competitiveness of the enterprise.

The issue of synchronization of marketing strategies in the restructuring process deserves special attention. Conventionally, marketing approaches are considered as a way to achieve short-term commercial goals, but their role in the strategic provision of enterprise restructuring remains underestimated. At the same time, marketing is an important mechanism for shaping the image of an enterprise, strengthening relationships with customers, identifying new market opportunities, and stimulating innovation. Thus, the integration of marketing strategies into restructuring processes makes it possible to ensure not only operational efficiency but also create long-term value for the enterprise [1].

In addition, in current realities, the processes of restructuring enterprises often occur under the influence of economic, social, and political factors related to the consequences of war, the instability of the domestic market, and the need to enter international markets. Under such conditions, the integration of marketing strategies could become a fundamental tool for improving interaction with stakeholders, expanding sales markets, forming new business models, and strengthening consumer trust [2].

Therefore, it is a relevant task to carry out studies on marketing strategies in the processes of restructuring an enterprise aimed at solving key problems that modern orga-

nizations face under conditions of rapid change and highly competitive stability.

2. Literature review and problem statement

In [3], the key role of marketing in ensuring the successful implementation of restructuring is discussed, but the context of optimizing internal business processes and marketing planning, increasing competitiveness, and developing new products and services is not defined. In [4], the development of strategic planning under conditions of market turbulence is considered, but the lack of specification is noted as regards the aspects of marketing strategies decisive for optimizing business processes in the company's work.

In paper [5], it is indicated that marketing in the context of enterprise restructuring plays not only a supporting but also a strategic role. Thus, marketing strategies should be oriented specifically to the long-term perspective and be flexible to take into account changes in consumer needs and market conditions. But there is no specific justification for why the flexibility of marketing strategies is critical in the context of enterprise restructuring. In another paper [6], the emphasis is on the fact that the restructuring of companies and their production structures should be accompanied by an analysis of market segments and communication channels. At the same time, it is not specified which elements of the analysis of market segments or changes in consumer behavior are the most important for ensuring further transformation processes and programs. In work [7], the relationship between the transformation of business models and marketing strategies is highlighted; the authors note that successful restructuring is possible with an understanding of market needs and the ability of the enterprise to respond quickly through changes in the business structure. But the researchers do not talk about the issue of devising innovative approaches to product management, pricing, and communications after the completion of restructuring actions.

Work [8] considers the practical principles of using the method of enterprise restructuring for various industries. In particular, it is highlighted that strategic changes become the basis for integrating the marketing strategy into the enterprise management system. But it is not specified what metrics or results are used to assess the effectiveness of these changes in the enterprise.

Studies reported in [9] show that the level of effectiveness of marketing strategies in restructuring processes largely depends on the industry specificity of the enterprise. The studies are limited to the analysis of specific industries (manufacturing and services) without taking into account the possibility of applying the results obtained in other sectors of the economy. Work [10] reports the study of marketing tasks in restructuring projects of manufacturing enterprises, where the key task is to adapt the product portfolio to modern standards and implement innovative solutions. But all the work is based on general theoretical conclusions without providing detailed empirical studies confirming the effectiveness of synchronization of marketing strategies. At the same time, study [11] is based on the role of marketing strategies in the service sector, where restructuring involves not only process optimization but also changing the ways of interacting with the market and its subjects. The study does not take into account the influence of macroeconomic, political, or social factors on the integration of marketing strategies into restructuring processes.

In addition to classical approaches to marketing, the integration of modern data analysis tools, such as Kohonen maps, has received considerable attention in the scientific field. From work [12], it is concluded that Kohonen Maps (Self-Organizing Maps (SOM) are one of the most effective methods for processing multidimensional data, which makes it possible to visualize complex relationships between marketing indicators and find patterns in large amounts of information. But the authors do not reveal the question of how Kohonen maps are integrated into marketing strategies for restructuring processes. As, in turn, paper [13] notes that the use of Kohonen maps makes it possible to cluster data, identify key customer segments, analyze the market structure, and determine potential directions for restructuring. But there is no convincing detail on which marketing indicators are analyzed using the SOM model.

In [14] it is emphasized that Kohonen maps could be used to identify weaknesses in the structure of the enterprise, analyze consumer behavior, and predict changes in market dynamics. Although at the same time it is not highlighted which specific weaknesses in the structure of the enterprise could be identified using Kohonen maps. In [15], an illustrative analysis between consumer behavior and strategic decision-making in the restructuring process is presented. But scientists have not demonstrated how Kohonen maps could be integrated into the processes of enterprise restructuring. In [16] it is discussed that the use of neural networks, such as SOM, is promising for the analysis of marketing strategies. The authors have not elaborated on the issue of building multi-level models that would take into account both internal and external factors influencing the marketing strategy of the enterprise.

Our review of the literature [6, 9, 12, 14, 16, 17] reveals that further research should be aimed at devising methodological tools that would allow for the most effective integration of Kohonen maps into restructuring processes, taking into account the specificity of marketing strategies. All the scientific justifications and searches provided indicate that the integration of Kohonen maps and marketing strategies into the restructuring processes of an enterprise is a promising area of scientific research that make it possible to ensure the production and growth potential of an enterprise.

3. The aim and objectives of the study

The purpose of our study is to devise methodological principles for coordinating marketing strategies with the processes of enterprise restructuring to ensure its competitiveness and effective functioning in the face of changing market environments.

To achieve this goal, the following tasks were defined:

– to determine the impact of marketing on the choice of directions for enterprise restructuring;

– to perform clustering of enterprises using Kohonen Maps;

– to evaluate the results of clustering of a sample of enterprises based on Kohonen Maps.

4. The study materials and methods

The object of our study is the process of synchronizing marketing strategies of enterprises during restructuring changes.

The hypothesis of the study assumes that the use of Kohonen maps as a tool for analyzing and visualizing multidimensional data could enable effective synchronization of marketing strategies in the processes of planned restructuring of enterprises.

Assumptions are that each of the components that determine the effectiveness of synchronizing marketing strategies in the process of restructuring an enterprise can be assessed individually, taking into account industry characteristics, the specificity of the market environment, and the business model of the enterprise. This component is an advantage of using Kohonen maps but requires significant costs for collecting, processing, and verifying data:

1. The study used the structural modeling method to analyze marketing strategies in the processes of restructuring an enterprise. This method provided an opportunity to consider the interaction of various structural elements in the process of business transformation. On the example of the model shown in Fig. 1, we demonstrate how two separate systems ("System 1" and "System 2"), which do not have a primary relationship, can form a new integrated system ("System 3") with new structural characteristics and a common marketing strategy.

In the case of restructuring, the set of structural elements within one of the systems (systems 1 or 2) changes, as well as the structure of the output elements (Y_3), which form the results of the enterprise's work after application. At the same time, the factors of the marketing environment (X_3) are adapted, which may include reformatting marketing strategies aimed at optimizing the market activities of enterprises.

2. The second method chosen is Kohonen's self-organizing maps (Self-Organizing Maps, SOM) for visualization and clustering of multidimensional data by mapping them onto a two-dimensional model.

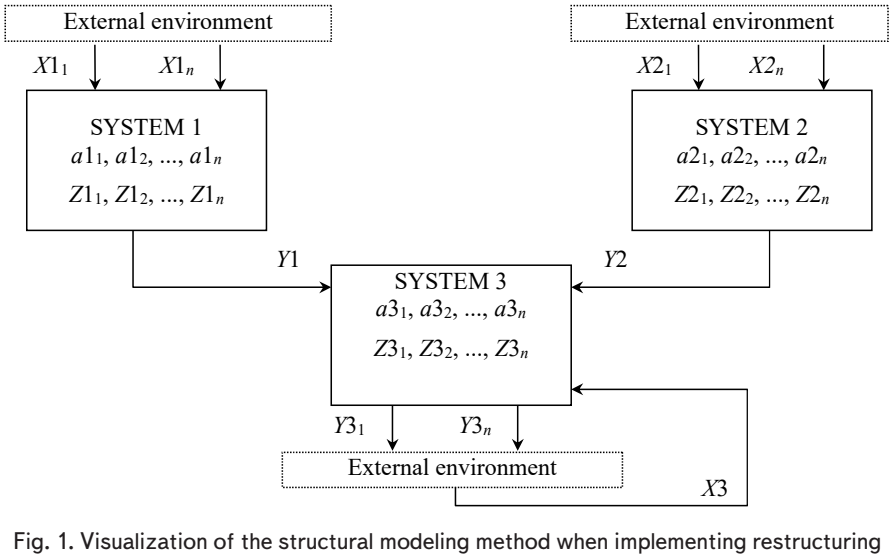

Fig. 1. Visualization of the structural modeling method when implementing restructuring

Kohonen SOMs provide the ability to transform multidimensional feature vectors into two-dimensional heat maps, where each feature value is displayed as shades of a color palette (Fig. 2).

Heat maps, combined into a single system, form a topographic atlas that provides a holistic view of the structure of multidimensional data. In the context of marketing strategies, this makes it possible to visualize customer segments, evaluate the effectiveness of marketing campaigns, or analyze changes in consumer behavior due to restructuring. During clustering, objects whose feature vectors are as close as possible to the weights of a particular neuron are placed in the corresponding cell.

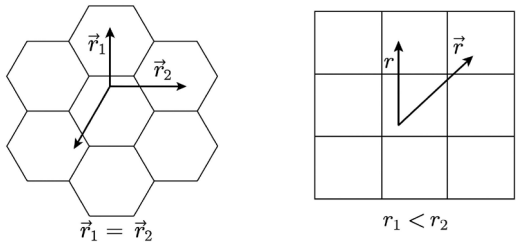

Fig. 2. Kohonen maps: *a* — hexagonal model; *b* — rectangular model

5. Results of investigating the combination of marketing strategies and leading processes of enterprise restructuring

5. 1. The influence of marketing on the choice of directions of enterprise restructuring

Synchronization of marketing strategies in the process of enterprise restructuring involves a certain sequence of stages that form the general structure of this process, aimed at adapting the business to modern challenges and changes in the market environment. The combination of marketing strategies with enterprise restructuring processes is carried out at several levels, ensuring effective transformation. The main processes that interact with marketing approaches are organizational, financial, production, and strategic restructuring:

1. Organizational restructuring includes changes in the management structure, optimization of internal business processes and increasing the efficiency of communications when marketing strategies contribute to the implementation of a customer-oriented management model, brand development, and improvement of market positioning [5].

2. Financial restructuring is aimed at ensuring the sustainability of the enterprise through cost optimization, attracting investments, and increasing liquidity. Marketing strategies help increase revenues by expanding sales markets, implementing pricing policies and adapting the product portfolio.

3. Production restructuring focuses on the modernization of technologies, automation, and increasing the efficiency of operations. Marketing ensures the development of new products in accordance with consumer needs, identifies promising market segments, and improves logistics processes.

4. Strategic restructuring involves changes in the business model, expansion, or diversification of activities. Marketing strategies determine competitive advantages, adapt the enterprise to changes in the macroeconomic environment and form a long-term development strategy [9].

Having studied the content of enterprise restructuring, which is reflected in [18], it can be determined that this process generally consists of four stages: assessing the need for restructuring, preparing for implementation, implementing changes, and evaluating results (Fig. 1).

At the first stage, which includes an analysis of the external and internal environment of the enterprise, an in-depth market study is carried out. An important aspect of this stage is the use of marketing tools to identify key market trends, identify weaknesses and opportunities for development.

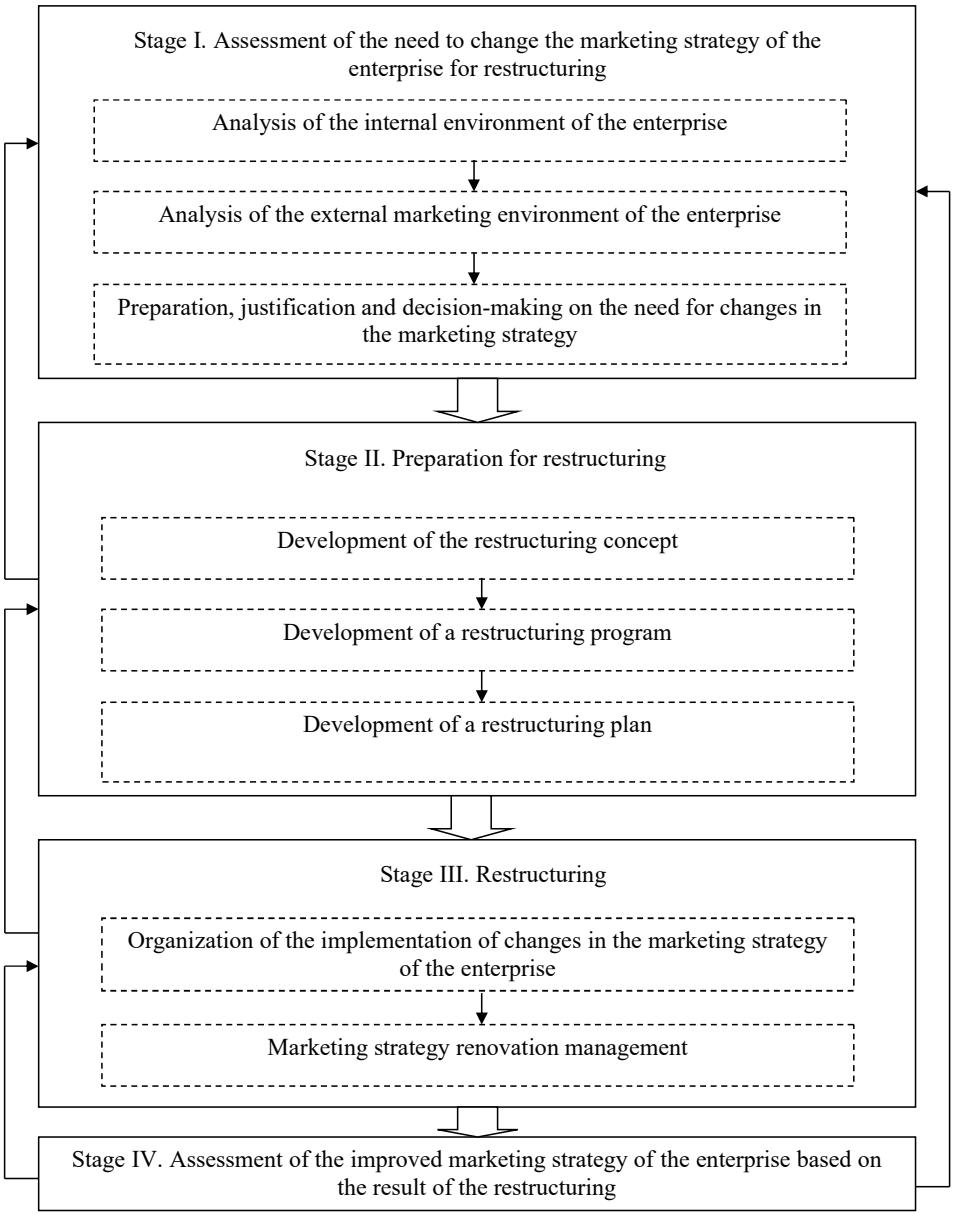

Fig. 3. Stages of the enterprise restructuring process based on marketing assessment

Based on the results of the analysis, a decision is made on the necessity and expediency of restructuring. If the study shows that the changes are justified, the enterprise proceeds to the next stage – preparation for restructuring.

The second stage involves the development of a concept, program, and restructuring plan, which includes the integration of marketing strategies into the general structure of changes. The formed concept becomes the basis for the development of a restructuring program, which defines specific goals, directions, and ways to implement changes. In the process of developing the program, the task of finding internal unused reserves, such as hidden marketing opportunities, is solved. Of particular importance is the integration of marketing strategies into all stages of restructuring. At the preparation stage, the restructuring program should include such marketing tasks as optimizing sales channels, improving the product portfolio, strengthening the brand, and creating a unique value proposition for customers [19].

In the process of synchronizing marketing strategies in the process of restructuring the enterprise, an important stage is the development of a clear and detailed plan that covers all aspects of transformation processes. It will determine the goals and objectives to be achieved, the methods of their achievement, as well as technical and economic indicators that take into account both the internal potential of the enterprise and the conditions of the external environment [20].

The approved plan determines marketing strategies, specifies a set of measures that will be implemented within the framework of restructuring, ensuring a harmonious combination of goals, resources, methods, sequence, and timing of work [21]. This fact makes it possible to take into account changes in market demand, adaptation to the competitive environment, and efficient use of resources.

The next stage involves organizing and managing the implementation of the developed restructuring plan, where the key role is played by the implementation of marketing tools aimed at achieving the specified goals. The implementation of marketing strategies makes it possible to quickly respond to changing market conditions, thereby adapting approaches to product management, communications and market strategy in accordance with the current needs of consumers [22].

The final stage is the assessment of the results achieved in the process of restructuring the enterprise, which serves the function of determining the level of achievement of the set goals and the effectiveness of the marketing strategies used.

5. 2. Using Kohonen Maps for the synchronization of marketing strategies during enterprise restructuring

In the process of synchronization of marketing strategies during enterprise restructuring, it is necessary to take into

account the most effective directions of business transformation, which determine the key points of intersection between marketing and management decisions. An important aspect is the assessment of the level of possible application, which is given in Table 1, which makes it possible to structure and systematize the process of interaction of marketing strategies and restructuring measures. The proposed VSS matrix takes into account the main vectors of application of marketing components in enterprise restructuring at three levels: virtual (Virtual), socially inclusive (Socio-inclusive), and sustainable (Sustainable). The levels are formed on the basis of a system of indicators that cover the economic, organizational, informational, and innovative aspects of ensuring enterprise restructuring [23]. The developed approach to analyzing the level of marketing strategies in restructuring processes makes it possible to determine how effectively a company combines marketing tools with key areas of change in its structure and operational activities [24].

Table 1

VSS-matrix of indicators of synchronization of marketing strategies in the process of enterprise restructuring

Development directions of enterprise restructuring	Indicators for evaluating marketing components and directions of enterprise restructuring			
	Economic	Organizational	Information	Innovative
Business virtualization	NP	BPA	DSL	ATD
Social-inclusive transformation	AP	SPP	DI	SNP
Sustainable development	RW	RE	ES	GT

In Table 1, the indicators have the following interpretation: NP – Net Profit to increase the net profit of the enterprise due to the implementation of virtual tools (%); AP – Accessibility of Products, ensuring the accessibility of products for consumers with special needs (%); RW – Waste Reduction, the share of waste reduction (%); BPA – Business Process Automation, increasing the level of automation of business processes using business virtualization technologies (%); SPP – Social Partnership Program, the share of company partners involved in social partnership programs (%); RE – Renewable Energy, the use of energy consumed at the enterprise coming from renewable sources (%); DSL – Data and Security Level, ensuring the accessibility and security of electronic data and information thanks to virtualization tools at the enterprise (%); DI – Diversity and Inclusion, the share of people with special needs who participated in socially-oriented programs (events) of the company (%); ES – Energy Saving, the share of energy saved due to the implementation of an energy saving system at the enterprise (%); ATD – Virtual Product Development, development and implementation of new virtual products and services that meet consumer needs (%); SNP – Special Needs Products, share of products designed specifically for people with special needs (%); RW – share of waste reduction (%); GT – Green Technologies, share of technologies used at the enterprise that are considered "green" or environmentally friendly (%) [25, 26]. The results of the evaluation of restructuring directions with a combination of marketing components for the sample were formed on the basis of the initial data (Appendix A) and are given in Table 2.

Below, we consider the clustering of 30 enterprises in the garment industry by 12 indicators given in Table 1. The results of clustering using Kohonen maps are shown in Fig. 4.

Table 2

Results of evaluating the restructuring directions of a sample of studied enterprises using the replication model

No.	Companies and brands	NP	BPA	DSL	VPD	AP	SPP	DI	SNP	RW	RE	ES	GT
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	LLC "Elita"	0.001	0.000	0.143	0.075	0.408	0.436	0.002	0.007	0.011	0.000	0.012	0.008
2	LLC "Kalyna"	0.000	0.014	0.000	0.100	0.822	0.010	0.014	0.014	0.007	0.012	0.000	0.005
3	LLC "Edelvika"	0.004	0.009	0.048	0.132	0.764	0.092	0.003	0.012	0.000	0.000	0.017	0.007
4	LLC "Kremteks"	0.031	0.009	0.058	0.001	0.766	0.014	0.003	0.002	0.055	0.000	0.042	0.042
5	PJSC "Kremenchutsk TC"	0.001	0.009	0.104	0.221	0.528	0.486	0.021	0.021	0.037	0.000	0.019	0.007
6	LLC "LLC "Mriya"	0.005	0.041	0.091	0.173	0.724	0.037	0.005	0.005	0.040	0.000	0.020	0.013
7	PJSC "Novovolynska ShF"	0.005	0.028	0.128	0.159	0.682	0.016	0.011	0.011	0.009	0.005	0.027	0.023
8	PJSC "Rivnenska FNM"	0.007	0.005	0.096	0.101	0.665	0.041	0.001	0.001	0.000	0.000	0.003	0.055
9	LLC "Prylutska ShF"	0.000	0.006	0.040	0.132	0.756	0.082	0.002	0.002	0.024	0.004	0.029	0.009
10	LLC "Balistics"	0.009	0.004	0.141	0.141	0.704	0.076	0.003	0.001	0.000	0.016	0.006	0.006
11	LLC "Kozak"	0.031	0.010	0.078	0.089	0.078	0.012	0.002	0.006	0.071	0.000	0.041	0.032
12	LLC "Strigeks"	0.002	0.012	0.024	0.064	0.656	0.050	0.004	0.004	0.001	0.003	0.032	0.030
13	LLC "Teteriv"	0.000	0.012	0.059	0.893	0.898	0.000	0.005	0.005	0.007	0.000	0.009	0.000
14	LLC "Elegant"	0.036	0.036	0.132	0.036	0.012	0.000	0.000	0.000	0.026	0.000	0.001	0.035
15	LLC "Lilya"	0.000	0.005	0.013	0.061	0.890	0.004	0.000	0.006	0.003	0.000	0.010	0.009
16	Branch of LLC "H&M Ukraine"	0.019	0.007	0.007	0.128	0.926	0.129	0.080	0.129	0.064	0.058	0.129	0.086
17	Branch of "Inditex" Ukraine	0.036	0.010	0.036	0.051	0.153	0.095	0.075	0.082	0.075	0.071	0.118	0.075
18	TM "Benetton"	0.036	0.006	0.096	0.118	0.032	0.007	0.082	0.155	0.046	0.156	0.055	0.075
19	TM "Zalando"	0.052	0.017	0.152	0.097	0.041	0.052	0.148	0.079	0.036	0.080	0.071	0.097
20	TM "G-Star Raw"	0.014	0.123	0.133	0.056	0.007	0.087	0.151	0.088	0.065	0.100	0.132	0.132
21	TM "Triumph International"	0.120	0.016	0.151	0.050	0.050	0.063	0.151	0.066	0.151	0.068	0.060	0.098
22	TM "Vistula"	0.144	0.021	0.044	0.044	0.112	0.087	0.086	0.068	0.082	0.065	0.133	0.096
23	TM "Calzedonia"	0.047	0.047	0.147	0.151	0.066	0.093	0.142	0.152	0.080	0.070	0.106	0.089

Continuation of Table 2

1	2	3	4	5	6	7	8	9	10	11	12	13	14
24	TM "Desigual"	0.046	0.020	0.130	0.145	0.058	0.093	0.142	0.142	0.032	0.069	0.129	0.126
25	TM "S.Oliver"	0.039	0.061	0.122	0.118	0.104	0.053	0.114	0.114	0.045	0.100	0.126	0.089
26	TM "Impetus"	0.023	0.155	0.132	0.056	0.088	0.089	0.140	0.079	0.035	0.143	0.075	0.127
27	TM "Promod"	0.060	0.045	0.132	0.056	0.098	0.089	0.140	0.081	0.032	0.081	0.128	0.071
28	TM "Silvano Fashion"	0.014	0.043	0.111	0.034	0.031	0.051	0.140	0.140	0.046	0.067	0.138	0.089
29	TM "Utenos Trikotažas"	0.012	0.034	0.118	0.144	0.009	0.095	0.146	0.146	0.067	0.071	0.140	0.130
30	TM "LPP"	0.142	0.034	0.044	0.103	0.047	0.086	0.097	0.079	0.097	0.064	0.130	0.072

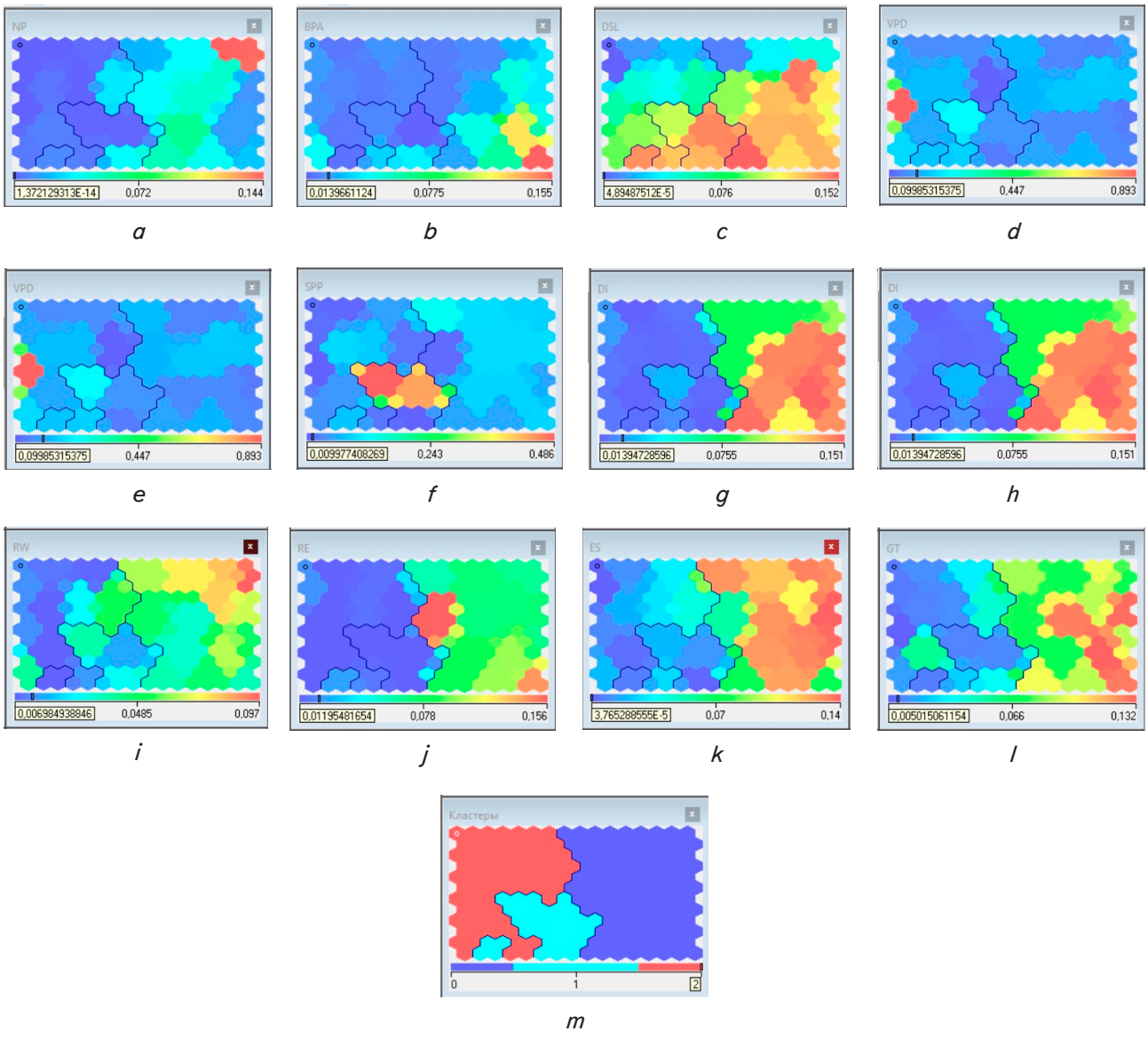

Fig. 4. Kohonen map based on the results of clustering enterprises into three clusters: *a* — increasing the net profit of the enterprise due to the introduction of virtual tools in the activity (NP); *b* — increasing the level of automation of business processes using business virtualization technologies (BVA); *c* — ensuring the availability and security of electronic data and information thanks to virtualization tools in the enterprise (DSL); *d* — development and implementation of new virtual products and services that meet the needs of customers and the market (VPD); *e* — ensuring the availability of products (AP); *f* — creating a social partnership program (SPP); *g* — participation in events for people with special needs (DI); *h* — development of products for people with special needs (SNP); *i* — reducing the amount of waste (RW); *j* — intensity of use of renewable energy (RE); *k* — implementation of an energy saving system (ES); *l* — implementation of green technologies (GT); *m* — clusters of input values [27]

The results of clustering of enterprises in the garment industry using Kohonen maps allow us to identify three main clusters that differ significantly in the level of integration of marketing strategies into restructuring processes, which is confirmed by the distribution of the values of key indicators visualized on heat maps. Examining Fig. 4, we can conclude

that the enterprises of the first cluster, which are marked in red, demonstrate the highest values of indicators characterizing the level of automation of business processes. The use of virtual tools, ensuring data security, developing social partnership programs, as well as inclusiveness and environmental responsibility, which indicates their high adaptability to modern market conditions and the use of effective marketing strategies in business transformation processes. The second cluster, depicted by yellow-green zones, includes enterprises that have an average level of integration of marketing strategies into restructuring processes, which is expressed in a moderate level of implementation of innovative marketing tools, average values of business automation and the gradual application of technologies to increase competitiveness. In such companies, there is a partial use of marketing strategies to improve the management of financial, production and social processes, but they have not yet reached the optimal level of digital transformation, which is an important factor for successful restructuring in the modern business environment. Finally, the enterprises of the third cluster, which are mainly represented by blue zones, demonstrate the lowest level of use of marketing strategies in restructuring processes. This is manifested in insufficient automation of business processes, low values of digitalization, weak integration of social partner programs, limited use of virtual marketing tools and lack of effective environmental initiatives. Enterprises of this cluster need significant improvement of marketing strategies, which will contribute to increasing their market efficiency, financial stability under conditions of growing market turbulence. Direct division by sample of studied enterprises is given in Table 3.

Table 3 shows clustering according to certain criteria, which makes it possible to identify their common characteristics and differences. Three clusters are distinguished: the first includes international companies (trademarks), the second – mixed enterprises, and the third – local Ukrainian companies. Such a division may indicate a different level of development.

15 enterprises fell into the cluster with the conditional number 0, which is 50.0 % of the total. 5 enterprises fell into the cluster with the conditional number 1, which is 16.7 %. 10 enterprises fell into the cluster with the conditional number 2, which is 33.3 %. Enterprises in cluster 0 are represented by well-known international brands, such as the Branch of LLC "H&M Ukraine", the Branch of "Inditex" Ukraine", TM "Zalando", TM "Desigual", TM "LPP". These are large companies and recognized trademarks that actively implement innovations, production automation, and environmental technologies. They are focused on the global market and have stable financial performance.

Cluster 1 consists mainly of Ukrainian enterprises, such as "LLC "Elita", LLC "Kremchutska TK", LLC "Ballistics", LLC "Kozak". These companies operate mainly in the national market and have limited opportunities to implement global practices. They may be inferior to international brands in terms of automation, but their advantage is flexibility and the ability to quickly adapt to local market conditions. Cluster 2 contains both Ukrainian and international companies, which suggests their average level of development. These may be enterprises that have partially integrated modern technologies or are in the process of digital transformation. They may combine traditional management methods with innovative approaches, which gives them certain competitive advantages.

Table 3

Results of the distribution of enterprises involved in the study into three clusters (national enterprises of Ukraine and enterprises from EU countries)

Cluster title number	Title number of the enterprise	Business name/Trademark
0	16	Branch of LLC "H&M Ukraine"
0	17	Branch of "Inditex" Ukraine
0	18	Branch of "Benetton"
0	19	TM "Zalando"
0	20	TM "G-Star Raw"
0	21	TM "Triumph International"
0	22	TM "Vistula"
0	23	TM "Calzedonia"
0	24	TM "Desigual"
0	25	TM "S.Oliver"
0	26	TM "Impetus"
0	27	TM "Promod"
0	28	TM "Silvano Fashion"
0	29	TM "Utenos Trikotažas"
0	30	TM «LPP»
1	1	LLC «Elita»
1	5	PJSC «Kremenchutska TK»
1	10	LLC «Balistika»
1	11	LLC «Kozak»
1	14	LLC «Elegant»
2	2	LLC «Kalyna»
2	3	LLC «Edelvika»
2	4	LLC «Kremteks»
2	6	LLC «Mriya»
2	7	PJSC «Novovolynska ShF»
2	8	PJSC «Rivnenska FNM»
2	9	LLC «Prylutska ShF»
2	12	LLC «Strigeks»
2	13	LLC «Teteriv»
2	15	LLC «Lileya»

5. 3. Evaluation of clustering results

In general, clustering helps to identify the main trends and the level of ensuring the restructuring of the enterprise. It makes it possible to assess their opportunities for growth, adaptation to international standards, and improvement of business processes. Ukrainian enterprises included in cluster 1 can use the experience of companies from cluster 0 to increase their competitiveness and implement a marketing strategy [28]. The average values of all 12 indicators in general for all enterprises, the average values of indicators for each cluster, and the deviation of the average values of indicators for each cluster from the average values in the general population are given in Table 4.

Analysis of our data reveals that enterprises belonging to cluster 0 demonstrate significantly higher average values for most key indicators compared to the overall average values for the entire sample. This indicates that these companies are actively implementing modern marketing strategies in the restructuring processes, which, in turn, contributes to the effective use of digital technologies, automation of business processes and the application of innovative approaches in their activities. The high

value of NP (net profit) indicates that such enterprises were able to increase their operational efficiency due to cost optimization and the use of advanced solutions in the field of marketing and business management. The BPA (business process automation) indicator, which exceeds the average values, confirms that these companies effectively use digital platforms, integrated marketing systems and automated customer interaction management algorithms to reduce costs and increase productivity.

Table 4

Average values of indicators in the general population, average values of indicators for each of the clusters, and deviations of average values of indicators for each cluster from average values in the general population

Indicator	Average for all businesses	Average for cluster 0	Average for cluster 1	Average for cluster 2	Deviation for cluster 0	Deviation for cluster 1	Deviation for cluster 2
NP	0.0190	0.0421	0.0086	0.0062	+0.0231	–0.0104	–0.0128
BPA	0.0161	0.0342	0.0080	0.0061	+0.0181	–0.0081	–0.0100
DSL	0.0996	0.1044	0.0968	0.0977	+0.0048	–0.0028	–0.0019
VPD	0.1198	0.1043	0.1274	0.1273	–0.0155	+0.0076	+0.0075
AP	0.4693	0.5988	0.5988	0.7050	+0.1295	+0.1295	+0.2357
SPP	0.0198	0.0168	0.0416	0.0525	–0.0030	+0.0218	+0.0327
DI	0.0118	0.0790	0.0181	0.0263	+0.0672	+0.0063	+0.0145
SNP	0.0086	0.0970	0.0148	0.0153	+0.0884	+0.0062	+0.0067
RW	0.0131	0.0970	0.0154	0.0148	+0.0839	+0.0023	+0.0017
RE	0.0120	0.0082	0.0082	0.0153	–0.0038	–0.0038	+0.0033
ES	0.0130	0.0120	0.0172	0.0233	–0.0010	+0.0042	+0.0103
GT	0.0100	0.0074	0.0074	0.0107	–0.0026	–0.0026	+0.0007

The significant growth of DSL and VPD, which reflect the level of digital product adoption and data security, indicates the active use of digital marketing strategies to expand the market presence and protect the information assets of the enterprise. High indicators of AP (product availability) and SPP (social partnership) confirm that the enterprises of this cluster are focused not only on increasing profitability. They are also focused on creating a socially responsible business, expanding interaction with partners and implementing corporate responsibility programs [29]. High values of DI (inclusivity) and SNP (creation of products for people with special needs) demonstrate the desire of companies to adapt marketing strategies to expand the availability of products for a wide range of consumers. At the same time, high RW, RE, ES, and GT confirm that such companies are actively integrating environmentally responsible business models that involve the use of renewable energy sources, reducing waste and implementing energy-efficient technologies.

In contrast, cluster 1 is characterized by lower average values for most key indicators, which may indicate insufficient integration of marketing strategies into the restructuring processes of enterprises in this segment. In particular, low NP (net profit) values may be a consequence of limited efficiency of business processes, insufficient use of modern marketing technologies or inefficient resource management. The reduced level of BPA (business process automation) confirms that companies in this cluster only partially implement digital technologies and marketing automation, which complicates their adaptation to modern market conditions [30].

Insufficiently high DI (inclusivity) and SNP (product development for people with special needs) indicators may indicate that these enterprises have not yet formed a clear marketing strategy. This strategy is aimed at meeting the needs of different categories of consumers, which, in turn, may limit their market opportunities. Similarly, lower values of RW (waste reduction), RE (renewable energy use), and ES (energy saving) demonstrate the slow implementation of environmentally responsible strategies in the restructuring processes of enterprises in this cluster.

At the same time, the values of AP (product availability) and SPP (social partnership) exceed the average overall indicators, which may indicate active development in the direction of expanding access to products and strengthening cooperation with partners and social organizations. This indicates that enterprises in cluster 1 can use marketing strategies to increase the effectiveness of interaction with consumers, but to achieve a comprehensive effect, it is necessary to integrate these strategies into the overall structure of enterprise restructuring.

Analysis of our data reveals that cluster 2 has certain differences from the general average values of indicators, while demonstrating some common features with enterprises in cluster 1. In particular, lower than average values of NP (net profit), BPA (automation of business processes), RE (use of renewable energy sources), and GT (technological modernization) may indicate that enterprises from this cluster are facing financial constraints. They also have a lower level of application of digital solutions in their activities and have not yet paid sufficient attention to the implementation of environmentally responsible strategies. A decrease in the level of NP may indicate high production costs or insufficient profitability due to weak diversification of the business model. At the same time, a low level of BPA indicates that process automation and the use of digital technologies are not a strategic priority, which may negatively affect the efficiency of operational activities and the speed of adaptation of enterprises to changes in the market environment.

However, it is worth noting that cluster 2 demonstrates significant advantages in the context of expanding market presence and active partnerships, as evidenced by high values of AP (product availability) and SPP (social partnership). This means that companies in this cluster are actively expanding their sales channels, using marketing strategies to strengthen cooperation with other market participants and applying socially oriented approaches to brand development. High indicators of DSL (digital services) and VPD (virtual products) indicate that enterprises in the cluster are effectively implementing new forms of digital products and technologies, which improves information accessibility and contributes to an increase in the level of customer orientation.

A detailed analysis of other indicators is provided: DI (inclusivity), SNP (creation of products for people with special needs), RW (waste reduction), RE (renewable energy sources), and ES (energy conservation). The results show that enterprises are at a transitional stage of applying environmentally and socially responsible strategies. Although the level of implementation of such initiatives has not yet reached high indicators, these companies have the potential for active development in this direction.

In general, the analysis of the average values of key indicators makes it possible to conclude that enterprises in cluster 0 are the most developed in terms of marketing strategies in restructuring processes. They have the highest indicators in the areas of digital transformation, innovative development, and environmental responsibility. Cluster 1, in turn, demonstrates strong positions in social partnership and product accessibility, but lags behind in the level of digitalization and environmental development, which requires deeper synchronization of marketing strategies to increase the efficiency of the business model. Cluster 2 occupies an intermediate position, with the potential to improve financial performance, automate business processes, and actively implement marketing strategies aimed at environmental modernization and digitalization. Thus, for enterprises in cluster 0, the main priority should be to scale production and reduce costs through deeper automation and digital technologies. Cluster 1, which is in the transformation phase, needs to combine traditional business approaches with modern technological solutions, in particular, marketing analytics, personalized communications, and consumer trend forecasting tools. Cluster 2 can focus on strategic development, in particular, strengthening environmental responsibility, expanding market presence through innovative marketing strategies, and using analytical platforms to improve the efficiency of management decisions.

6. Discussion of results based on investigating the synchronization of marketing strategies in the process of enterprise restructuring

The resulting contribution of the enterprise restructuring model based on marketing assessment (Fig. 3) is the implementation of a phased mechanism for synchronizing the marketing strategy with restructuring processes, which ensures not only adaptation to market changes, but also increases the strategic flexibility of the enterprise. A clear logic of the sequence of actions makes it possible to avoid chaotic changes, minimize risks, and ensure the integrity of management decisions in the context of business model transformation.

The implemented clustering of enterprises made it possible to identify three groups of companies characterized by different levels of marketing strategies in the restructuring processes. Enterprises of cluster 0 demonstrate a high level of digitalization of business processes, the use of innovative marketing technologies, active development of new virtual products, as well as the integration of environmentally responsible strategies, which contributes to their high financial stability and operational efficiency (Tables 1, 2). Cluster 1 companies, although focused on expanding the availability of their products and social partnership, demonstrate lower indicators of business process automation, which complicates their ability to quickly adapt in the context of digital transformation. At the same time, cluster 2 companies are at a transitional stage of implementing marketing strategies, have certain advantages in the field of interaction with partners, but lag behind in terms of environmental responsibility and the use of modern marketing tools (Fig. 4). Although the clustering methodology used allowed us to identify the main trends, it does not fully take into account the multidimensionality of the processes of synchronization of marketing strategies in the process of enterprise restructuring. The factors influencing these processes may be more dynamic and interconnected than predicted in the current analysis.

Unlike advancements reported in [11, 12, 14, 16], the model proposed in our study for using Kohonen maps to analyze marketing strategies in the processes of enterprise restructuring makes it possible to quantitatively assess the level of adaptation of companies to changes in the market environment. It also identifies key areas of their transformation and devises effective strategies for further development (Table 4).

The proposed model of synchronization of marketing strategies in the process of enterprise restructuring helps assess its impact on the efficiency of companies. The key scientific result of the study is the construction of VSS matrix, which systematizes the integration of marketing approaches through economic, organizational, informational, and innovative vectors. This tool makes it possible to assess the level of marketing maturity of enterprises during restructuring and propose optimization of their business processes.

The main challenge was the lack of a systematic approach to the implementation of marketing strategies in restructuring, which complicated the adaptation of enterprises to market changes. Our results prove that cluster analysis and Kohonen maps effectively segment enterprises by the level of marketing application, identifying factors of successful restructuring. This should enable the formation of a substantiated assessment of the potential of certain enterprises and the correction of their marketing strategies taking into account the identified features.

Our results have a number of limitations that should be taken into account:

a) the model is based on static data while real processes may change under the influence of economic fluctuations, technological changes, or transformation of consumer preferences;

b) the analysis is focused on the textile industry, which may limit the application of the model in other sectors;

c) the effectiveness of Kohonen maps depends on the correctness of the algorithm settings and the number of clusters.

The identified shortcomings of the study are as follows:

a) the clustering criteria are selected based on expert assessments, which may affect the interpretation of the results;

b) the study does not take into account macroeconomic and political factors that may significantly affect restructuring;

c) although the model is tested on textile enterprises, its universality needs to be verified on more diverse samples.

Prospects for further development of the research can be realized through improving the methodological tools by involving advanced clustering algorithms, such as deep learning or artificial intelligence methods. This creates an opportunity to build adaptive models of synchronization of marketing strategies with the processes of organizational transformations of enterprises, in particular by expanding the sample of studied business entities and identifying previously unaccounted factors of influence on restructuring processes.

However, the implementation of these tasks is associated with a number of methodological challenges, in particular with the difficulties of processing additional variables within the framework of the analytical model, which requires the development of unified criteria for their quantitative and qualitative assessment. It is also necessary to take into account the risk of subjectification of clustering results due to the heterogeneity of the approaches used, which can lead to contradictions in the interpretation of data and a decrease in the predictive validity of models. In addition, empirical difficulties lie in the need for long-term monitoring of the effectiveness of implemented marketing strategies in the context of enterprise restructuring. The very assessment of their impact on organizational sustainability, financial performance, and market

position requires multi-stage data collection, which makes it difficult to obtain operational conclusions, test research hypotheses, and iteratively improve the proposed approaches.

7. Conclusions

1. It has been found that the synchronization of marketing strategies in the process of enterprise restructuring is critically important for adapting to changes in the market environment and increasing competitiveness. The key stages of restructuring have been studied, which include the analysis of market conditions, the preparation of transformation programs, the implementation of changes, and the assessment of their effectiveness. The impact of marketing strategies on the choice of restructuring directions was assessed, in particular in the context of adapting the product portfolio, changing business models, and increasing customer loyalty. It has been substantiated that the use of modern approaches to data analysis, such as Kohonen maps, contributes to the identification of key market segments and the formation of effective restructuring strategies. A structural model of the process of synchronization of marketing strategies in the process of enterprise restructuring has been built, which takes into account industry specificity and market needs. Management measures were proposed to increase the effectiveness of management decisions through the systematic use of marketing tools at all stages of restructuring.

2. A system of indicators has been identified that determine the level of marketing strategies in the processes of enterprise restructuring. It has been determined that enterprises that actively implement digital marketing technologies and automate business processes demonstrate higher rates of profitability, resource efficiency, and socio-economic impact. At the same time, enterprises with a low level of digitalization and marketing application face limitations in scaling their business, which requires further development of digital transformation strategies.

A conceptual model of using Kohonen maps to analyze the level of marketing strategies in restructuring processes has been built, which makes it possible to systematize approaches to business adaptation, determine the most effective directions of transformation, and assess potential risks. A VSS matrix of marketing strategies in restructuring processes has been proposed, which makes it possible to assess the level of implementation of digital technologies, social initiatives, and environmental modernization of business. The use of the clustering method provides a comprehensive analysis of the effectiveness of management decisions aimed at increasing the competitiveness of enterprises in a dynamic market environment.

3. The main differences between the three clusters of enterprises in terms of the level of synchronization of marketing strategies in restructuring processes have been highlighted. It was determined that enterprises in cluster 0 demonstrate the highest indicators of digitalization, innovation, and social responsibility, while enterprises in clusters 1 and 2 have significant reserves for improving their strategic approaches to business transformation. A conceptual model for assessing the results of enterprise clustering based on key marketing indicators has been built, which allows for a comprehensive analysis of the effectiveness of restructuring measures. The proposed model is aimed at systematizing approaches to the synchronization of marketing strategies in the business processes of enterprises and their adaptation to changes in the market environment.

Recommendations have been suggested for using the results of clustering to form strategic directions for enterprise development depending on the level of their application in modern marketing processes. For enterprises in cluster 0, scaling production, further automation of business processes, and the introduction of environmentally friendly technologies are recommended. For enterprises in cluster 1, it is advisable to expand the use of digital marketing platforms, develop strategies for a personalized approach to consumers, and strengthen cooperation with partners. Enterprises in cluster 2 are invited to direct their efforts to the implementation of modern environmental initiatives, strengthening business social responsibility, and developing marketing communications, which could contribute to increasing their competitiveness.

Conflicts of interest

The authors declare that they have no conflicts of interest in relation to the current study, including financial, personal, authorship, or any other, that could affect the study, as well as the results reported in this paper.

Funding

The study was conducted without financial support.

Data availability

The manuscript has associated data in the data warehouse.

Use of artificial intelligence

The authors confirm that they did not use artificial intelligence technologies when creating the current work.

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