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MARKETING MANAGEMENT OF THE BIOECONOMIC POTENTIAL OF ENTERPRISES AND THE QUALITY OF THEIR INNOVATIVE PRODUCTS IN THE POST-WAR RECOVERY STRATEGY

ABSTRACT

The scientific article explores the importance of marketing management in harnessing the bioeconomic potential of enterprises and the quality of their innovative products in the context of post-conflict recovery strategies. It emphasizes the importance of adapting marketing strategies to the challenges and opportunities that arise after the conflict when businesses must focus on market changes and the transformation of consumer needs. The study focuses on how the integration of sustainable practices and innovations can increase the competitiveness and sustainability of bioeconomy enterprises. It also emphasizes the need for an integrated approach that combines marketing strategies with technological innovations to stimulate growth and support the sustainable development of the bioeconomy in conditions of rapid economic change. Tools for assessing the marketing management of the bioeconomic potential of enterprises are proposed and tested on the example of food industry enterprises. The scientific article aims to expand the understanding of how marketing can become a driving force for the successful recovery and long-term sustainability of enterprises operating in the bioeconomy.

Keywords: marketing management, advertising, strategies, post-war recovery, product portfolio, product quality, innovation, financial results, bioeconomy

JEL Classification: O32, Q14

INTRODUCTION

Marketing management of the bioeconomic potential of enterprises is an important tool for the effective use of natural resources and the development of innovative products that meet the requirements of sustainable development. In the context of post-war recovery, when the economy is faced with new challenges, in particular, the need to adapt to market changes and innovative changes, marketing strategies for bioeconomic enterprises are of particular importance. Enterprises focused on the bioeconomy must have the ability to respond quickly to changes in demand, introduce the latest technologies and products based on environmentally friendly and renewable resources, while simultaneously forming strategies that meet the specific conditions of post-conflict recovery. Analysis of modern scientific research in the field of bioeconomy allows us to understand the general trends and main directions of development of this sector. However, an important aspect remains the lack of attention to specific marketing approaches that take into account the peculiarities of the post-war context. In this context, it is necessary to pay attention to the connection between strategic marketing and innovation processes in the bioeconomy, as well as the importance of adapting existing models to new economic realities. Therefore, research aimed at developing marketing strategies for bioeconomy enterprises is extremely relevant, as they help to form a sustainable business potential in the post-conflict period and support the development of innovative products that meet modern requirements for quality and sustainable development.

LITERATURE REVIEW

There is a lot of research that examines innovation and economic processes in the context of sustainable development, food security and agrarian economy, in particular in the context of bioeconomy, global production chains and agricultural efficiency. The research concerns the management of innovations in the bioeconomy and their open implementation, which is important for the development of sustainable ecosystems in the EU countries and Ukraine. It also analyzes structural changes in production and trade in the context of global production networks, which helps peripheral economies catch up with more developed countries. Other aspects of the research focus on the requirements for food quality and safety of livestock products in Ukraine, as well as on the environmental efficiency of dairy farming systems.

The study by Van Lancker, J. et al. (2016) is devoted to the management of innovations in the bioeconomy and considers them in the context of open innovation. The authors propose approaches to the effective implementation of innovation processes in industries related to biomass and bioenergy, which is of great importance for countries that seek to develop their economies through sustainable development, taking into account environmental challenges. The scientific work Kuzior, A. et al. (2022) analyzes the innovation ecosystems of the EU and Ukraine from the perspective of sustainable development. The study assesses the level of innovation activity in different countries and explores ways to increase the sustainability and competitiveness of national economies. The work makes a significant contribution to understanding innovation challenges and opportunities for Ukraine and other countries that seek to integrate into the European innovation space.

The review Rodriguez-Amaya, D. B., & Amaya-Farfan, J. (2023) examines the development of the food industry in the context of growing social needs and demands. The work emphasizes the importance of meeting the needs of society through the use of new technologies, in particular blockchain, to ensure sustainability and traceability in food production. Such research contributes to the understanding of how modern technologies can help the food industry respond to the challenges of modernity. The study by Kyryliuk, I. et al. (2021) focuses on organizational and economic factors for ensuring the safety and quality of livestock products in Ukraine. The authors identify key drivers that contribute to improving production standards in the livestock industry, increasing product safety. This work is important for Ukrainian producers who seek to ensure that their products meet international quality standards.

Scientific work Taube, F. K. D. et al. (2023). examines environmental performance in dairy farming systems, particularly the use of forage crops (Leis) in such systems. The authors consider how optimized use of Leis can reduce the environmental impact of livestock farming, which is important for sustainable agricultural practices and reducing emissions in dairy production. Landesmann, M. A., & Stöllinger, R. (2019) focus on structural changes in production and trade in global production networks. The authors explore policy issues that could support peripheral and catching-up economies in the context of globalization. The research is relevant for economies seeking to improve their position in world trade by adapting to the demands of international production networks and economic transformations.

The study by Koval, V. et al. (2023) is devoted to sustainable resource management for national economic development. The authors analyze approaches to the efficient use of natural resources in the context of sustainable development and propose policy solutions that contribute to achieving economic and environmental stability, which is important for long-term resource conservation and economic growth. The scientific work by Khodakivska, O. et al. (2022) focuses on modeling the management of economic security of innovative entrepreneurship as a basis for sustainable development of regions. The authors emphasize the need to support innovative enterprises to ensure the stability of regions, which is important for increasing competitiveness and economic security at the regional level. The study by Hryhoriv, Y. et al. (2022). is devoted to the optimization of sweet corn cultivation from the point of view of economic efficiency and nutrition management. The authors analyze how optimal fertilizer application affects yield and product quality, which is important for the agricultural sector and increasing profitability in agriculture.

Some authors emphasize the importance of environmental education for managers working in the bioeconomy sectors, which will contribute to the implementation of sustainable practices. Thus, Ciriminna, R. et al. (2022) consider the role of education in training managers for the bioeconomy. This approach to education will help new managers effectively manage processes that take into account the principles of sustainable development. The authors consider how different types of innovations affect production processes and contribute to the transition to more environmentally responsible practices in production. In particular, Bröring, S. et al. (2020) focuses on the types of innovations in the bioeconomy, in particular on their classification and impact on the development of industries related to biotechnology.

Some authors investigate how social initiatives can stimulate economic and social development, increasing the competitiveness of regions, which is especially relevant for countries with economies in transition, where social entrepreneurship can become an important driver of sustainable development. As an example, Shestakova, A., et al. (2019). consider social

entrepreneurship as one of the factors of innovative development of regions. Let us pay attention to the study by Salvador, R. et al. (2021), which explores the main aspects of creating business models for a circular bioeconomy that contribute to the efficient use of resources and the creation of sustainable business models. In the context of post-war recovery, such approaches can help enterprises build sustainable businesses with an emphasis on environmental responsibility and economic profitability.

Some authors analyze state regulation of employment in connection with the innovative development of entrepreneurship. The results of the work of Vasylchak, S. et al. (2022) are important for the recovery of the economy after the war, as enterprises need state support and effective management of labor resources to develop innovative potential. Some scholars emphasize the role of scientific research in the development of competitive and sustainable products. The research of Brandão, A. S. et al. (2021) focuses on strategies for the commercialization of innovations in the circular bioeconomy, which is important for enterprises seeking to bring new products of post-war recovery to the market. The study by Dmytryshyn, L. & Blahun, I. (2014) helps to improve financial planning and management processes in conditions of instability. In turn, the scientific assumptions of Hryhoriv, Y. et al. (2021) focus on the economic efficiency of oilseed cultivation, which can contribute to the development of the agricultural sector and ensure food security in the post-war period. The implementation of the policies discussed by Ramcilovic-Suominen, S. & Pülzl, H. (2018) can promote environmental development and help enterprises integrate into the global bioeconomy. The study examines sustainable development policies within the EU bioeconomy.

Some authors investigate the security aspects of digitalization in financial management and accounting, which is important for post-war reconstruction, where digitalization can contribute to increasing the efficiency of management processes, in particular, Zhyvko, Z. et al. (2022). Näyhä, A. (2020) examines the transition of Finnish forest companies to a circular bioeconomy. A similar approach may be useful for Ukrainian enterprises seeking to integrate circular business models into their post-war strategies. The study by Boccia, F. et al. (2019) analyzes the problem of food waste in the Italian tomato sector. Implementing such solutions in Ukraine's bioeconomy strategy could help reduce waste, increase resource efficiency, and create new markets. Interesting are the scientific findings that explore the management of the spatial organization of eco-clusters, which can contribute to the development of environmentally responsible entrepreneurship in Ukraine, providing support for regional initiatives, as emphasized in the scientific work of Ovcharenko, I. et al. (2022). Interesting is the work devoted to the bioeconomic strategy of Italy, which Fava, F. et al. (2021) aims to increase the country's competitiveness, and a similar approach could be useful for developing a policy for the recovery of the Ukrainian economy with an emphasis on the bioeconomy.

Research by individual scholars highlights the role of bioproducts in the development of sustainable bioenergy enterprises, in particular the findings of Budzianowski, W. M. (2017), relevant for post-war recovery, where such enterprises can help Ukraine achieve energy independence. Gryshchenko, I. et al. (2021) discuss the competitive advantages of innovative educational clusters that can contribute to the training of qualified personnel for the recovery of the bioeconomy. Egea, F. J. et al. (2018) analyze an efficient agro-industrial complex in Spain, which can become a model for the development of sustainable bioeconomy enterprises in post-war Ukraine. Carraresi, L. et al. (2018) focuses on new value chains in the bioeconomy, such as phosphate recovery. Such approaches can help enterprises in resource recovery and cost reduction. Important are the works discussing the effectiveness of bioeconomy policy to support new technologies, which can be useful in creating conditions for the development of innovative enterprises in Ukraine after the war, which is described in the scientific conclusions of Maes, D. & Van Passel, S. (2019).

The authors Stolyarov, V. et al. (2022) investigate the optimization of the material and technical support of industrial enterprises, which is important for the restoration of the national economy. The work of de Vriend, H. & Stemerding, D. (2011) examines the prospects for the development of bioeconomy as a driving force for sustainable development, which can contribute to the restoration of the Ukrainian economy in the direction of environmentally responsible development. The study is devoted to the modeling of a green innovative economy, which is described in the work of Kowalska-Styczeń, A. et al. (2023), is relevant for the restoration of an environmentally oriented economy of Ukraine. The authors Bell, J. et al. (2018) consider the EU's ambitions to become a global leader in the bioeconomy, which could serve as an example for Ukraine in implementing innovative solutions and achieving sustainability.

Overall, the presented works are useful for marketing management of the bioeconomic potential of enterprises. They offer various approaches to resource management, increasing economic efficiency, developing innovative business models, and adapting to a circular bioeconomy. Such studies cover key aspects of sustainable development, including waste reduction, commercialization of scientific developments, economic security management, and the role of state support, which is critically important for rebuilding the economy on the basis of the bioeconomy and implementing innovative solutions in industry and agriculture. In this context, the studies provide a valuable theoretical and practical basis for developing

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marketing strategies aimed at improving product quality and environmental performance. The disadvantage of these works is that the research is often fragmented and focuses on individual aspects of the bioeconomy, such as individual types of products, waste management, or specific regional approaches, which creates a fragmented picture that is not always suitable for comprehensive application in post-war economic recovery, where national needs and scales need to be taken into account. In addition, the limitation of many studies lies in their theoretical focus without a deep analysis of practical challenges and risks that may arise in the post-war period, as well as without a detailed analysis of market mechanisms for promoting bioeconomy products on the global market.

AIMS AND OBJECTIVES

The purpose of the scientific article is to investigate approaches to the assessment and in-depth analysis of marketing management of the bioeconomic potential of enterprises and to assess the quality of their innovative products, developing recommendations for increasing the competitiveness and sustainability of enterprises in the process of post-war recovery.

Objectives of the article:

- to analyze modern approaches to marketing management in the field of bioeconomy, in particular in the context of post-war economic recovery;
- to investigate the main methods and tools for assessing marketing management in the field of bioeconomy;
- to determine the criteria for assessing and managing the quality of bioeconomic products in the context of increasing requirements for environmental safety and sustainability;
- to propose tools and methods for assessing marketing management of the bioeconomic potential of enterprises;
- to identify promising areas for the development of marketing management of the bioeconomic potential of enterprises and the quality of their innovative products in the post-war recovery strategy.

METHODS

The scientific article uses a system of methods that allowed to reveal the topic of the research. In particular, the McKinsey matrix method in the management of marketing of the bioeconomic potential of enterprises and the quality of their innovative products in the strategies of new recovery is an approach capable of structuring and assessing opportunities and risks in various areas of the company's activity. In the conditions of post-war recovery, this tool of the enterprise helps to determine priority areas of development, which is especially relevant for branches with high bioeconomic potential.

By changing the matrix, enterprises can analyze their strategic positions taking into account two key parameters: market attractiveness and competitiveness of their products and technologies, which helps to concentrate efforts in those innovative areas where the potential of bioproducts is greatest, and its quality meets high standards of sustainable development. During the recovery period, the matrix helps to identify areas for strategic investments and areas where it is necessary to increase competitive advantages, which allows for effective allocation of resources and reduction of risks.

The next method is the comparative analysis of a diversified product portfolio, which allows optimizing approaches to the management of innovative products in the conditions of post-war recovery. This method contributes to the effective assessment of product positions in the market, taking into account the diversity of its assortment and competitiveness, which is critically important for enterprises focused on sustainable growth. Thanks to comparative analysis, enterprises have the opportunity not only to assess the current positions of their products but also to determine which of them need modernization or strengthening to meet the requirements of the recovering economy. When developing a strategy for recovery from conflicts, this approach allows identifying the most promising market segments for innovative bioproducts, taking into account the level of demand, the adaptability of products to new conditions, as well as ensuring their compliance with environmental standards. The use of comparative analysis in this context contributes to a better understanding of market trends and allows orienting the diversification of the product portfolio in such a way as to maximize the competitive advantages of the enterprise in the conditions of economic recovery.

In the study of marketing management of the bioeconomic potential of enterprises, the method of analysis of evaluation indicators plays a key role, as it allows to assess the effectiveness of decisions and strategies for managing the quality of innovative products in the conditions of economic recovery. The method contributes to a deeper understanding of the extent to which products and marketing efforts meet market requirements and consumer expectations, helps to identify weaknesses and develop competitive advantages. Analysis of indicators makes it possible to objectively assess the current

state of the company's market positions and determine which marketing tools work most effectively to increase the value of bioeconomic products and strengthen consumer confidence. In the post-war recovery strategy, this method of marketing management becomes even more important, as it allows not only to improve products but also to adapt them to new market conditions, including environmental standards that are gradually becoming necessary. A comprehensive assessment of marketing indicators helps enterprises maintain sustainability by using the strengths of the bioeconomy to form a stable demand for innovative products, reduce the ecological footprint, and increase overall competitiveness in the recovered market.

The rating evaluation method in marketing management allows you to objectively assess the quality level of innovative products and identify the most promising areas for further development in the post-war recovery. Using the method, companies can rank their products and services based on key performance indicators, such as environmental sustainability, innovative component, compliance with market trends and consumer expectations. Rating evaluation helps identify the strengths and weaknesses of products, allowing you to focus on improving those aspects that are most valued by consumers and have the greatest potential for growth in the recovery market. In addition, this method allows enterprises to navigate a competitive environment and strengthen their market positions by improving the quality and environmental safety of products. In the post-war recovery strategy, such tools are important for forming a reliable image of the company, strengthening trust from consumers and partners, as well as ensuring sustainable demand for innovative bioproducts that meet modern environmental and social standards.

RESULTS

In the study, research, analysis, and modeling of the marketing management system of the bioeconomic potential of enterprises and the quality of their innovative products in the post-war recovery strategy, we selected food industry enterprises that are competitive with an established marketing and management system, the direction of their activity is the production of low-alcohol beverages and mineral waters: PJSC "Firma Poltavapyvo," PrJSC "Obolon" and the foreign enterprise LLC "Coca-Cola Beverages Ukraine Limited." The study and research of the marketing management system of the bioeconomic potential of enterprises and the quality of their innovative products in the post-war recovery strategy will be carried out in several stages: financial and economic situation of the business entity, analysis of marketing and management tools, graphical representation of indicators, use of the McKinsey matrix and economic and mathematical methods and models to determine the state of marketing activities of business entities. Thus, we will conduct a comparative analysis of the diversified product portfolio of the studied enterprises and their graphical representation (Figures 1-3).

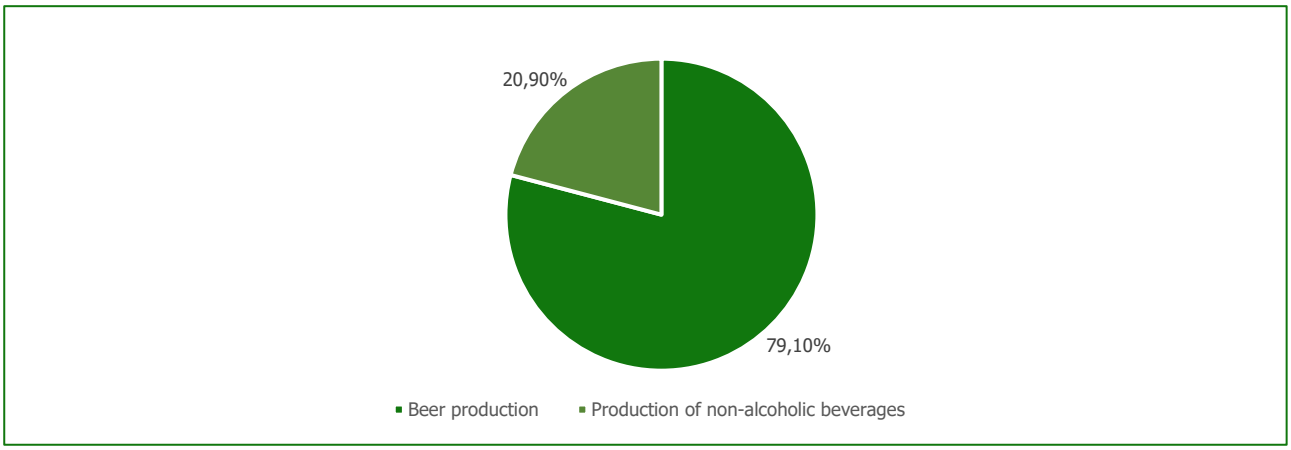

Figure 1. The diversified product portfolio of PJSC "Firma Poltavapyvo," 2024. *(Source: summarized by the authors using analytical data [33-37])*

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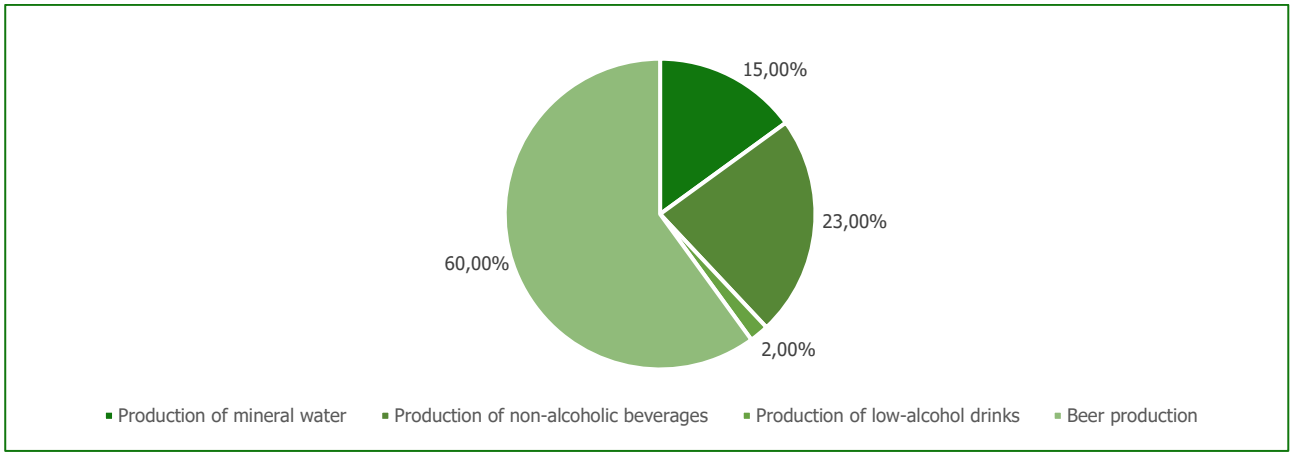

Figure 2. The diversified product portfolio of Obolon PJSC, 2024. *(Source: summarized by the authors using analytical data [33-37])*

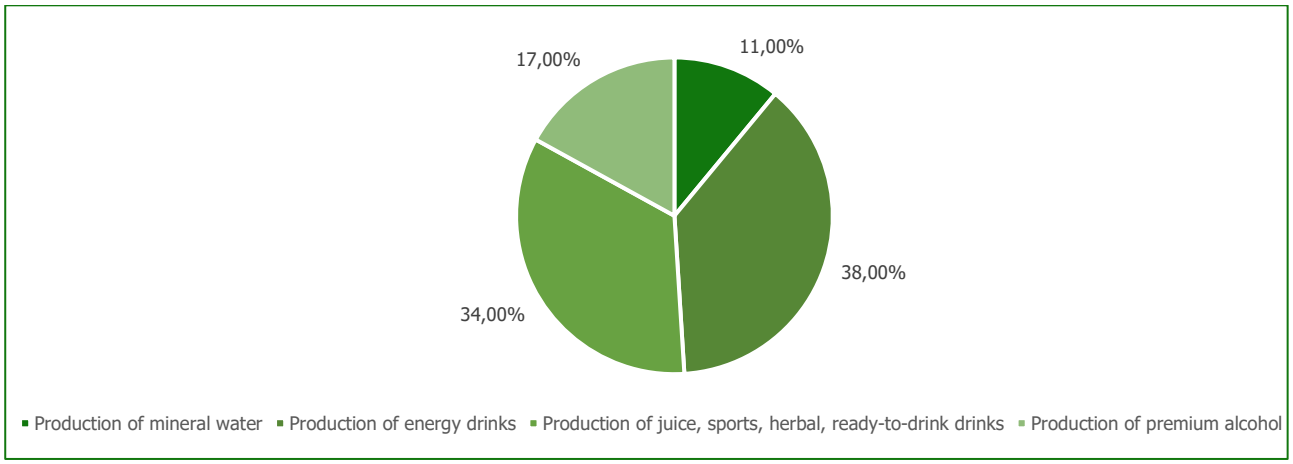

Figure 3. The diversified product portfolio of Coca-Cola Beverages Ukraine Limited, 2024. *(Source: summarized by the authors using analytical data [33-37])*

Analyzing the product portfolio data, we can conclude that all three companies have different degrees of diversification of their product portfolios, focusing on different market segments. PJSC "Firma Poltavapyvo" largely specializes in the production of beer, which occupies almost 80% of its portfolio. The remaining 20.9% is accounted for by soft drinks, which indicates a relatively narrow product portfolio with a focus on the main product - beer. PJSC "Obolon" demonstrates a more diversified approach, having in its portfolio both beer (60%) and mineral water, soft and low-alcohol drinks, which indicates an attempt to cover different market segments, but beer still remains the dominant part of the portfolio. Coca-Cola Beverages Ukraine Limited LLC has the most diverse portfolio, in which there is no dominant product. Its portfolio includes energy drinks, juice products, sports and herbal drinks, as well as premium alcohol. This strategy shows the company's desire to cover a wide range of markets, focusing on various tastes and preferences of consumers. Thus, the comparison shows different approaches to diversification: Poltavapyvo has limited diversification with an emphasis on beer; Obolon - moderate diversification with an advantage of beer; and Coca-Cola demonstrates flexible, broad diversification aimed at different categories of beverages. Based on the accounting financial statements Balance sheet form No. 1 and Financial statements form No. 2, which are freely available on the Internet on the website Prozzoro.ua, we will conduct a comparative analysis of the indicators of the assessment of marketing management of the enterprise's bioeconomic potential and the quality of innovative products of the studied food industry enterprises over the last five years. We will graphically present a comparative analysis of the indicators of the assessment of marketing management of the enterprise's bioeconomic potential and the quality of innovative products of the studied food industry enterprises over the last five years (Figures 4-6).

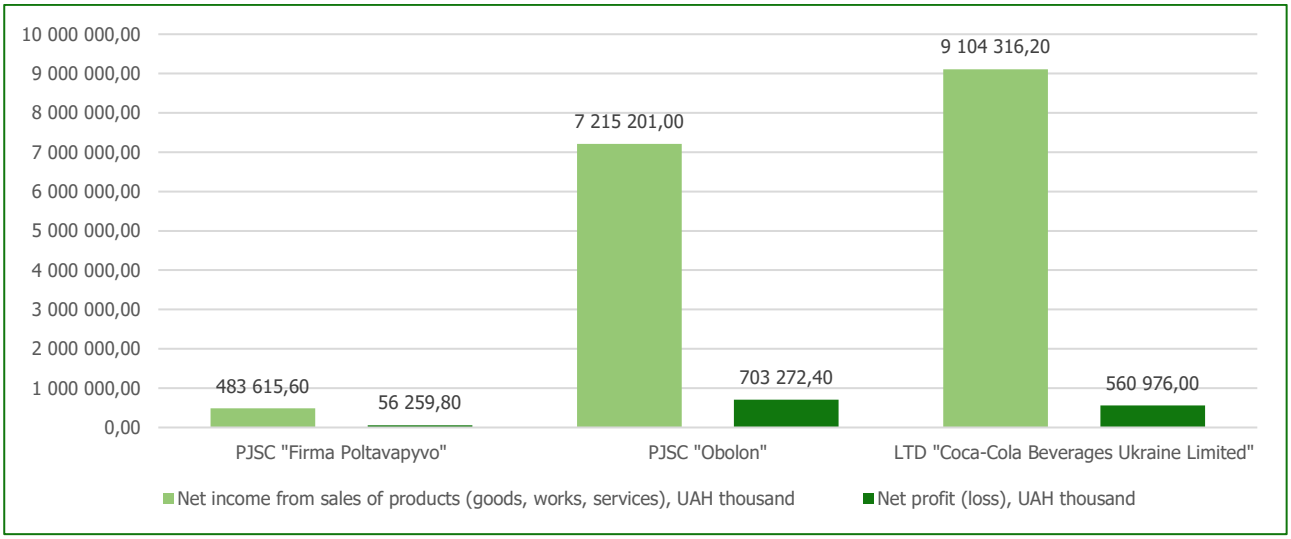

Figure 4. Dynamics of indicators of assessment of marketing management in the bioeconomic potential of the enterprise and the quality of innovative products of the studied food industry enterprises, 2019-2023. *(Source: summarized by the authors using analytical data [38-42])*

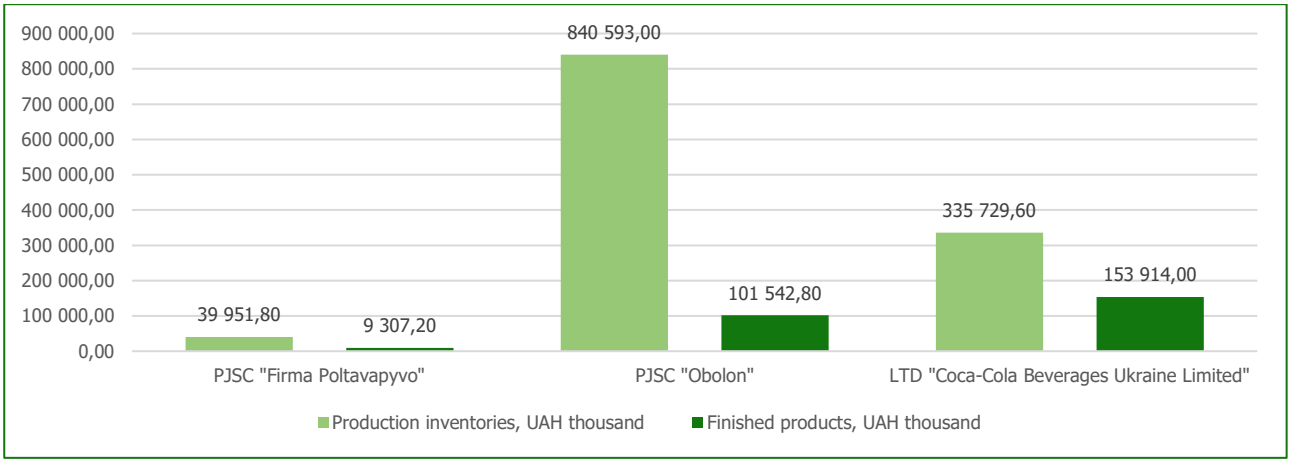

Figure 5. Dynamics of indicators of assessment of marketing management of the bioeconomic potential of the enterprise and the quality of innovative products of the studied food industry enterprises, 2019-2023. *(Source: summarized by the authors using analytical data [38-42])*

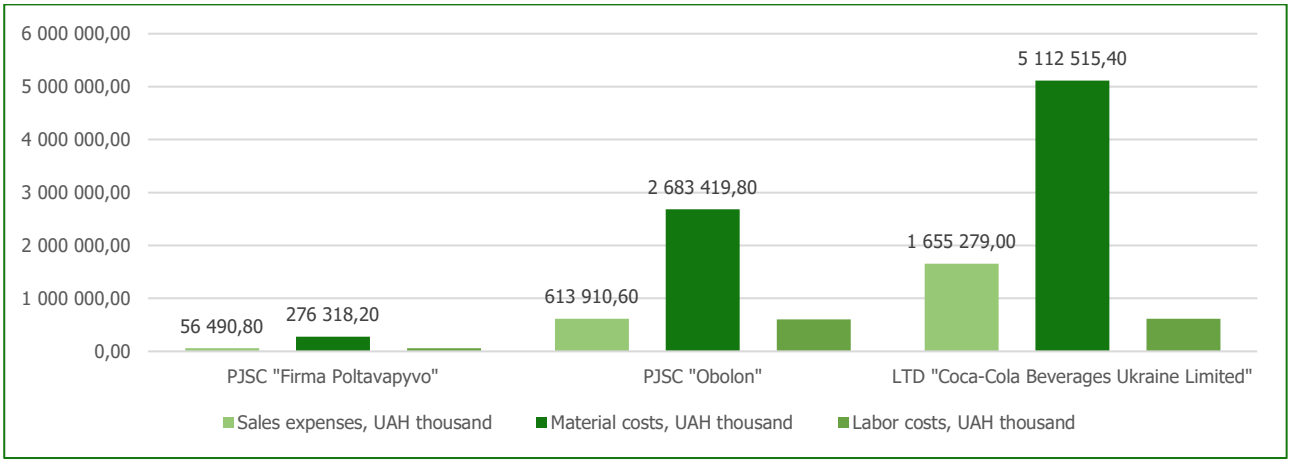

Figure 6. Dynamics of indicators of assessment of marketing management of the bioeconomic potential of the enterprise and the quality of innovative products of the studied food industry enterprises, 2019-2023. *(Source: summarized by the authors using analytical data [38-42])*

Analyzing the data, we can conclude that there are differences in the financial indicators, scale of activity, and cost structures of the three food industry enterprises under study, which affects their bioeconomic potential and the effectiveness

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of marketing management. Coca-Cola Beverages Ukraine Limited LLC has the highest net income and a significant level of sales expenses, which indicates the scale of its marketing investments and emphasis on product promotion. The high level of material costs and labor costs confirms its significant resource base and the intensity of production processes. Obolon PJSC ranks second in terms of income and net profit, having significant volumes of production inventories and finished products. This indicates stable production processes with a large stock of products ready for sale. The enterprise also invests significantly in sales and labor costs, which reflects its focus on supporting production and sales.

PJSC "Firma Poltavapyvo" has relatively lower income and profit indicators, as well as more limited sales and material resources, which indicates a more modest scale of production and limited opportunities for investment in marketing. Despite this, the company maintains a stable income, adapting its strategy in accordance with available resources. Thus, the cost structure and financial indicators indicate the different financial and operational capabilities of these enterprises. Coca-Cola invests significantly in marketing and sales, which strengthens its competitive position in the market. Obolon has a balanced cost structure, focusing on effective inventory and production management. Poltavapyvo operates within a more modest budget, focusing efforts on maintaining profitability with limited resources. In the next block of this study, we will determine the rating of indicators for assessing the marketing management of the enterprise's bioeconomic potential and the quality of innovative products of these food industry enterprises. The enterprises we study use two-level product promotion channels with two intermediaries. Two-level product promotion channels, involving two intermediaries, are of strategic importance for enterprises in the context of marketing management of bioeconomic potential and ensuring the quality of innovative products. In the post-war recovery strategy, such channels contribute to faster and more efficient delivery of products to the end consumer, which is critically important in a period when markets require rapid adaptation. Involving two levels of intermediaries helps to reduce logistics costs and increase distribution flexibility, which allows enterprises to respond quickly to changes in demand, which is especially important in the context of economic recovery. Two-level promotion channels also contribute to strengthening the marketing management of bioeconomic potential, as they allow for more active interaction with the market and increase the value of products through the rapid introduction of innovations. Such channels not only improve the quality of consumer service, but also allow enterprises to more effectively realize bioeconomic potential by increasing the volume of products on the market.

For food industry enterprises in Ukraine operating in the bioeconomy sector and planning further development, two-level channels are becoming an important tool for maintaining competitiveness and ensuring sustainable growth in conditions of economic uncertainty and recovery. At the same time, advertising activities are of great importance in the marketing management system, which we calculate as follows:

$$AA(mm) = \frac{Pmm}{AC_{mm}} \cdot 100\% \quad (1)$$

where $AA(mm)$ – advertising activities in the marketing management system, %; Pmm – profit obtained in the marketing management system, UAH; AC_{mm} – advertising costs in the marketing management system, UAH.

Thus, for the studied enterprises, the profitability of advertising in the marketing management system is depicted in Figures 7-9.

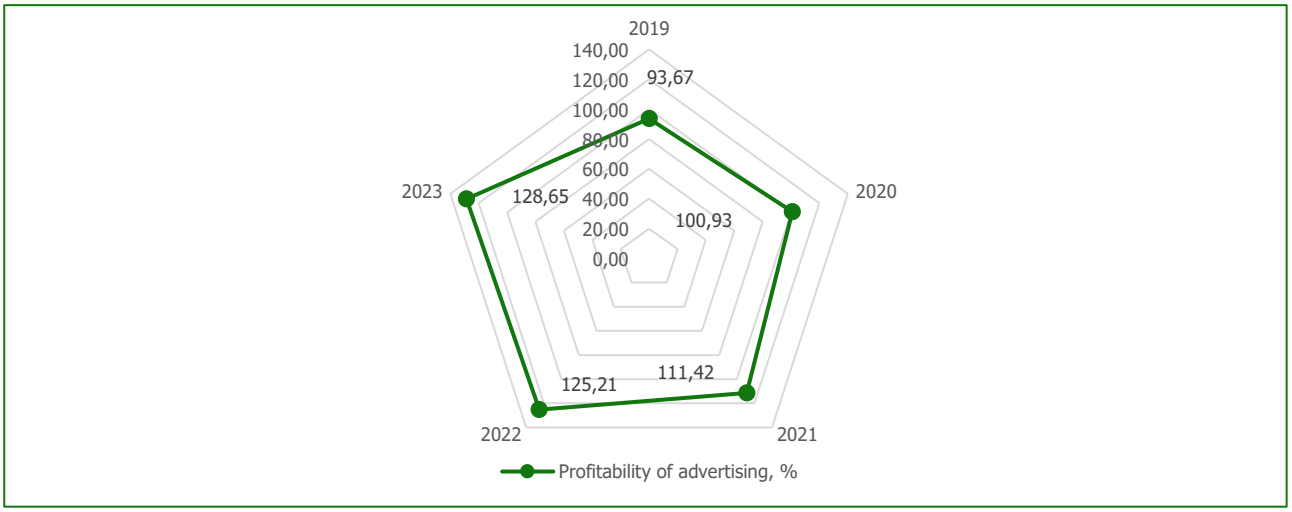

Figure 7. Advertising profitability of PJSC "Firma Poltavapyvo," 2019-2023.

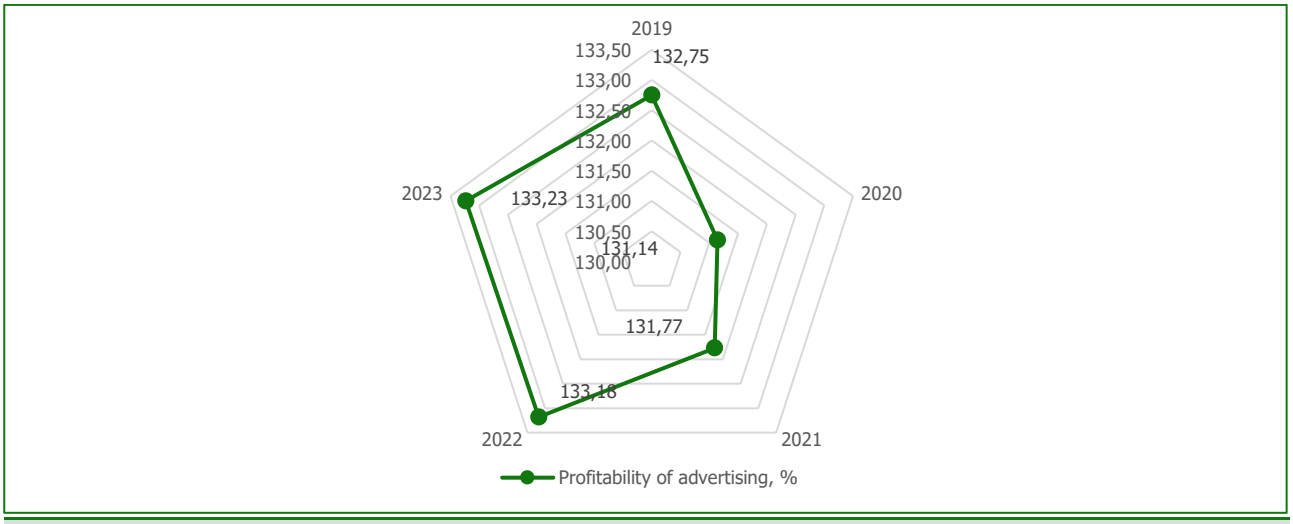

Figure 8. Advertising profitability of Obolon PJSC, 2019-2023.

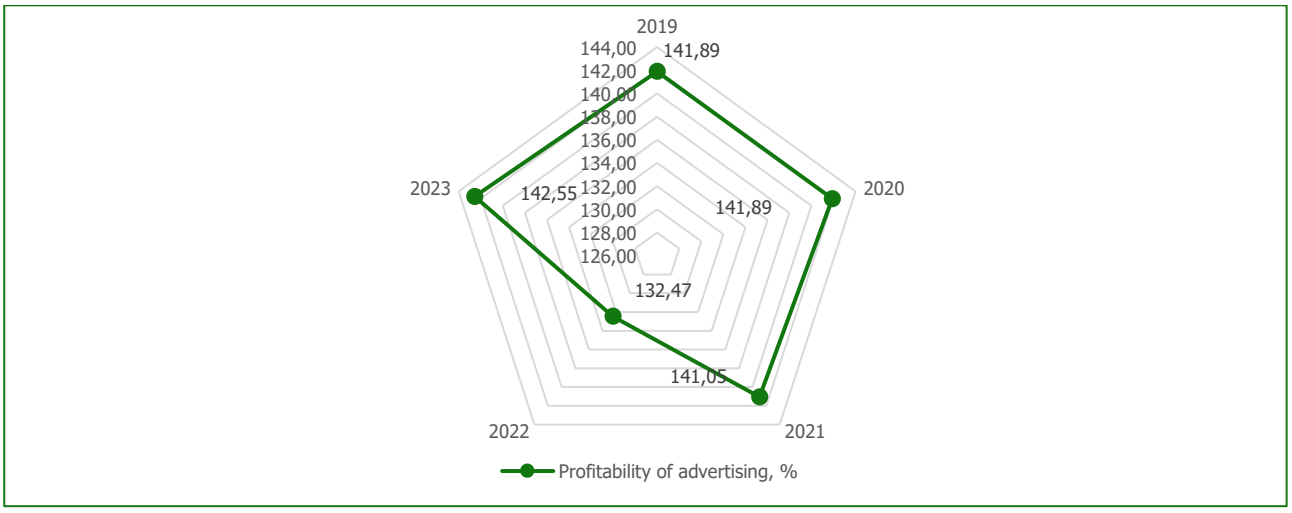

Figure 9. Advertising profitability of Coca-Cola Beverages Ukraine Limited, 2019-2023.

The next stage of the study of the marketing management system of the bioeconomic potential of enterprises and the quality of their innovative products will be the matrix method using the McKinsey matrix. Next, we build the McKinsey matrix for the studied indicators of the studied food industry enterprises over the past five years. Graphically, the McKinsey matrix of enterprises over the past five years is presented in Figures 10-12.

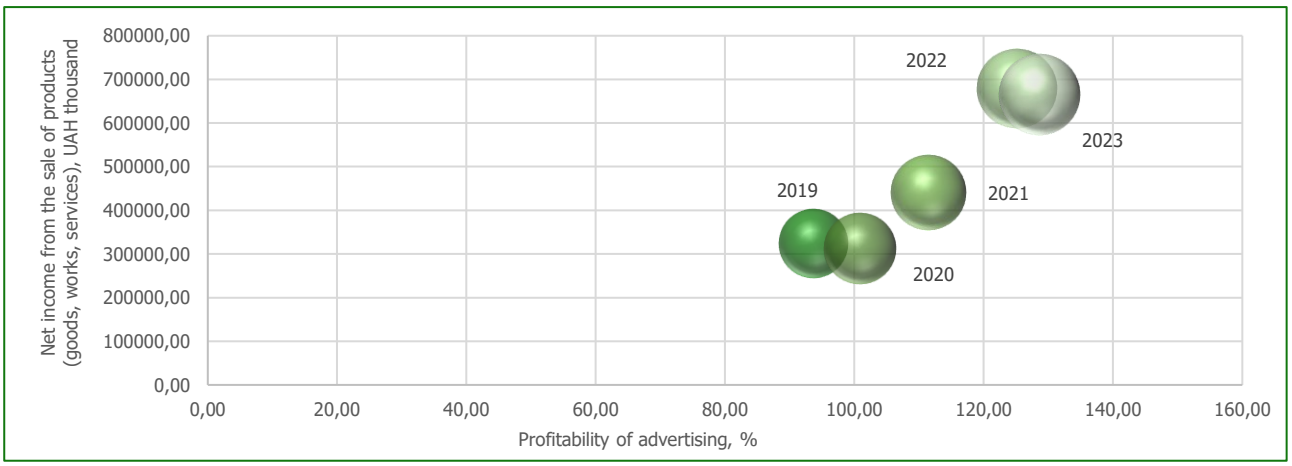

Figure 10. Dynamics of advertising profitability and net income from sales of products (goods, works, services) of PJSC "Firma Polta-vapyvo," 2019-2023, using the McKinsey matrix.

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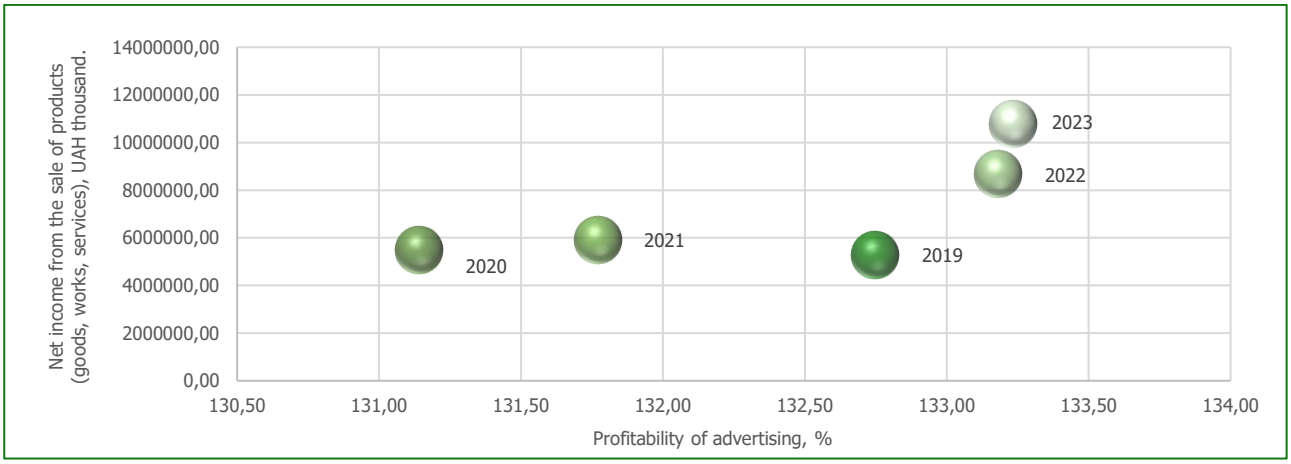

Figure 11. Dynamics of advertising profitability and net income from sales of products (goods, works, services) of Obolon PJSC, 2019-2023 using the McKinsey matrix.

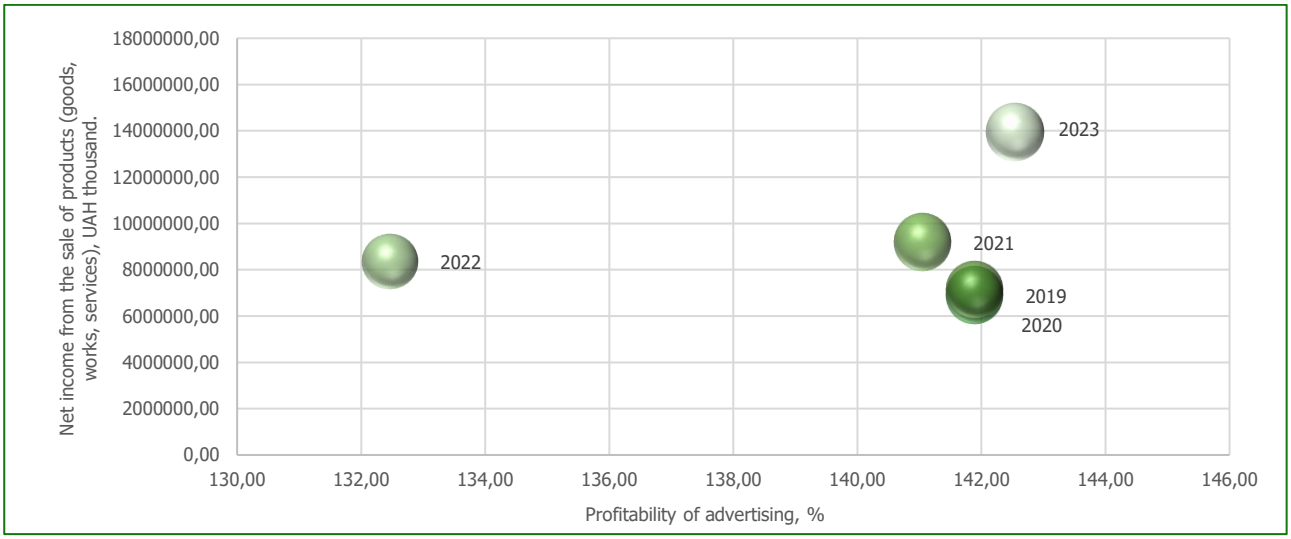

Figure 12. Dynamics of advertising profitability and net income from sales of products (goods, works, services) of Coca-Cola Beverages Ukraine Limited LLC, 2019-2023, using the McKinsey matrix.

From the visualization of the profitability of advertising and net income from the sale of products (goods, works, services) using the McKinsey matrix, we can conclude about the interdependence of these factors and proportional growth over the last studied period. At this stage of the study, we will determine the rating of indicators for assessing the marketing management of the bioeconomic potential of the enterprise and the quality of innovative products of these food industry enterprises. There is an increase in the main financial indicators for assessing the marketing management of the studied food industry enterprises over the last five years, which indicates successful effective production, sales and marketing activities. We will rank the main financial indicators for assessing the marketing management of the bioeconomic potential of the enterprise and the quality of innovative products of the studied enterprises. As we can see, from the ranking of the main financial indicators for assessing the marketing management of the bioeconomic potential of the enterprise and the quality of innovative products of food industry enterprises over the last five years, the leading place is occupied by the value of net income from the sale of products (goods, works, services), followed by the second and third cost of assets and material costs. A graphical ranking of the main financial indicators of the assessment of marketing management, bioeconomic potential of the enterprise and the quality of innovative products of food industry enterprises over the last five years is presented in Figures 13-15.

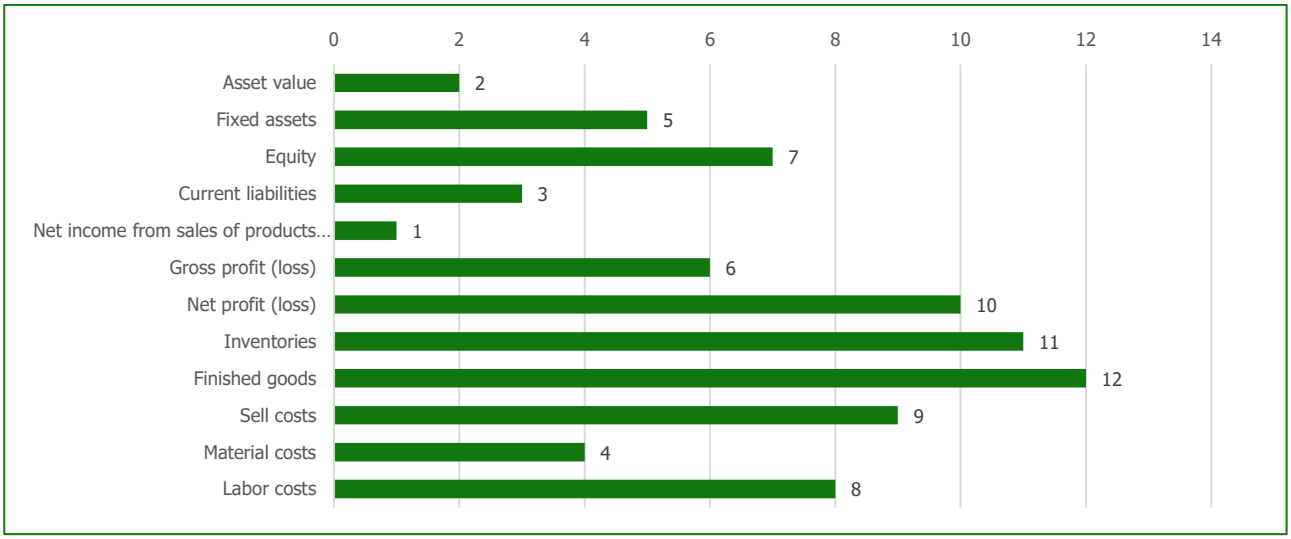

Figure 13. Ranking of marketing management assessment of the bioeconomic potential of the enterprise and the quality of innovative products of PJSC "Firma Poltavapyvo," 2019-2023.

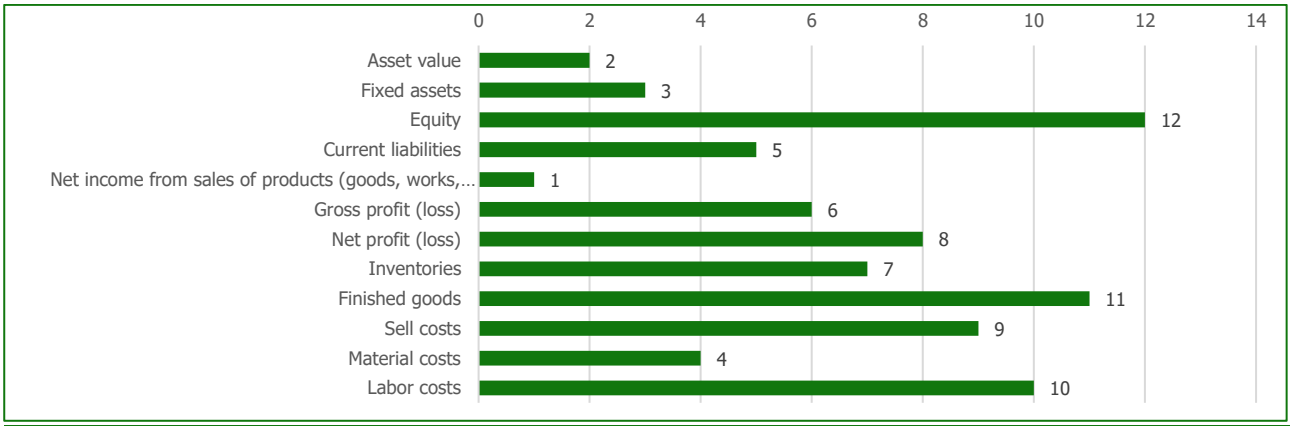

Figure 14. Ranking of marketing management assessment of the bioeconomic potential of the enterprise and the quality of innovative products of PrJSC "Obolon," 2019-2023.

Figure 15. Ranking of marketing management assessment of the enterprise's bioeconomic potential and innovative product quality of Coca-Cola Beverages Ukraine Limited, 2019-2023.

Analyzing Figures 13-15, we can see how food industry enterprises differ in key financial indicators that are key to assessing the marketing management of bioeconomic potential and the quality of their innovative products. For PJSC "Firma Poltavapyvo," the highest ranks belong to net income from sales of products, which indicates a stable sales volume. A significant role in expenses is played by material costs, as well as expenses for current liabilities, which indicates active work in conditions of limited equity. Lower ranks by indicators such as finished products and production inventories indicate a

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smaller production scale compared to other enterprises. PJSC "Obolon" demonstrates the highest net income among the studied companies, which puts it in first place in this indicator. Fixed assets and material costs also occupy high ranks, which indicates a significant level of investment in production facilities and resources. High ranks in production inventories and current liabilities indicate a significant volume of production activity and the ability to maintain stable financing of its operating needs. LLC "Coca-Cola Beverages Ukraine Limited" ranks first in net income, demonstrating the highest sales volume among enterprises. High ranks also have indicators such as material costs and gross profit, which indicate the efficient use of resources to ensure high profitability. Equity, as well as sales expenses, have noticeable indicators, which indicate significant investments in business financing and marketing to expand the market. Thus, the ranking structure of indicators demonstrates different approaches of enterprises to managing bioeconomic potential. LLC "Coca-Cola Beverages Ukraine Limited" actively invests in marketing and resources for large-scale sales. PrJSC "Obolon" uses high production capacities to ensure stable production volumes. PJSC "Firma Poltavapyvo" operates on a smaller scale, focusing on the stability of income while optimizing resources. Next, we will analyze the variation series of the main financial indicators of the assessment of the marketing management of the bioeconomic potential of the enterprise and the quality of innovative products of food industry enterprises over the past five years using the economic and mathematical method. Previously, the initial data and ranking of features for the analysis of the variation series of the main financial indicators of the assessment of the marketing management of the bioeconomic potential of the enterprise and the quality of innovative products of food industry enterprises over the past five years were presented. To calculate the analytical characteristics of the variation series, we use the initial calculations in Table 1.

Table 1. Initial calculations for calculating the analytical characteristics of the variation series of the three studied enterprises, 2019-2023.

Indicators	On average, by ranking 2023 to 2019	Marketing Management Evaluation Y-level Indicator	Y- Yc	(Y- Yc)^2	(Y- Yc)^3	(Y- Yc)^4
PJSC "Firma Poltavapyvo"						
Asset value	2	345301.60	178504.47	31863844619.95	5687838589833910.00	1015304593964390000000.00
Fixed assets	5	159511.00	7286.13	53087738.95	-386804344362.99	2818308026941320.00
Equity	7	67416.00	99381.13	9876609662.62	-981548661761906.00	97547418427714800000.00
Current liabilities	3	298003.00	131205.87	17214979447.75	2258706298091040.00	296355517386493000000.00
Net income from sales of products (goods, works, services)	1	483615.60	316818.47	100373940821.02	31800318024205600.00	10074927995941200000000.00
Gross profit (loss)	6	152656.20	14140.93	199965995.54	-2827705811833.34	39986399371414400.00
Net profit (loss)	10	56259.80	110537.33	12218502060.44	-1350600635089370.00	149291792601085000000.00
Inventories	11	39951.80	126845.33	16089738588.44	-2040908254497430.00	258879687844478000000.00
Finished goods	12	9307.20	157489.93	24803079101.34	-3906235274131080.00	615192732907219000000.00
Sell-in costs	9	56490.80	110306.33	12167487173.44	-1342150895983020.00	148047744115935000000.00
Material costs	4	276318.20	109521.07	11994864043.80	1313690304599110.00	143876763429353000000.00
Labor costs	8	56734.40	110062.73	12113805268.80	-1333278518952350.00	146744278090514000000.00
Total	78.00	2001565.60	1472099.73	248969904522.11	30102616466158300.00	12946211329415800000000.00
Average		166797.13				
PJSC "Obolon"						
Asset value	2	5744183.60	3567718.25	12728613511383.10	45412106721757900000.00	162017601922163000000000000.00
Fixed assets	3	3788679.80	1612214.45	2599235432788.80	4190524923694110000.00	675602483506479000000000.00
Equity	12	65344.00	2111121.35	4456833354425.82	-9408916047920470000.00	198633635491225000000000000.00
Current liabilities	5	1880451.40	296013.95	87624258594.60	-25938002902409800.00	7678010694253790000000.00
Net income from sales of products (goods, works, services)	1	7215201.00	5038735.65	25388856950580.90	127927738629642000000.00	64459405725706100000000000.00
Gross profit (loss)	6	1875933.20	300532.15	90319573183.62	-27143935515956500.00	8157625300071760000000.00
Net profit (loss)	8	703272.40	1473192.95	2170297467929.70	-3197266929156890000.00	4710191099302080000000000.00
Inventories	7	840593.00	1335872.35	1784554935494.52	-2383937595383170000.00	3184636317797860000000000.00
Finished goods	11	101542.80	2074922.55	4305303588498.50	-8933171500371460000.00	1853563898913810000000000000.00
Sell costs	9	613910.60	1562554.75	2441577346747.56	-3815098280652800000.00	5961299940150870000000000.00
Material costs	4	2683419.80	506954.45	257002814374.80	130288720409830000.00	6605044659656900000000000.00
Labor costs	10	605052.60	1571412.75	2469338030862.56	-3880349265757320000.00	6097630310664200000000000.00
Amount	78.00	26117584.20	21451245.60	58779557264864.50	145988837437844000000.00	87180233030305600000000000000.00
Average		2176465.35				

LLC "Coca-Cola Beverages Ukraine Limited"						
Asset value	3	4894849.40	2240135.80	5018208402441.64	11241468294170300000.00	2518241557033590000000000000.00
Fixed assets	8	1593351.60	1061362.00	1126489295044.00	-1195612931166490000.00	1268978131848730000000000.00
Equity	5	2426629.20	228084.40	52022493523.36	-11865519221779400.00	270633983238803000000.00
Current liabilities	6	2271127.80	383585.80	147138065961.64	-56440072742348600.00	216496104549320000000000.00
Net income from sales of products (goods, works, services)	1	9104316.20	6449602.60	41597373697926.80	268286529555320000000.00	173034149856497000000000000000.00
Gross profit (loss)	4	3135094.80	480381.20	230766097313.44	110855694746747000.00	532529916692759000000000.00
Net profit (loss)	10	560976.00	2093737.60	4383737137653.76	-917839527362205000.00	192171512920448000000000000.00
Inventories	11	335729.60	2318984.00	5377686792256.00	-12470769628253000000.00	289195152356046000000000000.00
Finished goods	12	153914.00	2500799.60	6253998639360.16	-15639997295712400000.00	391124989811187000000000000.00
Sell costs	7	1655279.00	999434.60	998869519677.16	-998304758850735000.00	997740317340081000000000.00
Material costs	2	5112515.40	2457801.80	6040789688083.24	14847063768792400000.00	364911400556528000000000000.00
Labor costs	9	612780.20	2041933.40	4169492010035.56	-851382499632475000.00	173846636217504000000000000.00
Amount	78.00	31856563.20	23255842.80	75396571839276.70	246420706837136000000.00	189899321071262000000000000000.00
Average		2654713.60				

As a result of data processing, a number of analytical characteristics were obtained that characterize the assessment of the marketing management of the enterprise's bioeconomic potential and the quality of innovative products of the studied food industry enterprises, 2019-2023. Analysis of financial indicators of food industry enterprises, such as PJSC "Firma Poltavapyvo", PrJSC "Obolon" and LLC "Coca-Cola Beverages Ukraine Limited", makes it possible to assess their marketing management and bioeconomic potential, which is reflected in their ability to invest in innovative products and strategies. The main analytical characteristics were the average value, range of indicators, variability, asymmetry and kurtosis, which reflect fluctuations, distribution and stability of financial data.

For "Poltavapyvo," the average level of values is moderate, with a large range of variation and a significant coefficient of variation, which indicates significant fluctuations in financial indicators and increased instability. The presence of right-sided skewness and high kurtosis indicates a concentration of most indicators in the lower range with a few high values, which creates an uneven distribution.

Obolon demonstrates a higher average level of indicators with an expanded range of variation, indicating a wide amplitude of financial results compared to other companies. The high coefficient of variation and right-sided skewness indicate an uneven distribution with a predominance of large values, which may indicate the efficient use of assets and capital to maximize income.

Coca-Cola Beverages Ukraine Limited has the highest average level of indicators with the largest range of variation, which confirms its position as a large player in the market with high volumes of income and capital investments. High dispersion and standard deviation indicate large fluctuations in values, but this may be part of a strategy of large-scale growth and investment in marketing. The values of asymmetry and kurtosis reflect the concentration of data around high values, which indicates the company's focus on the best financial indicators.

In general, the analysis shows that all three companies use different financial and marketing strategies to increase their efficiency in the market. As a result of the research and study of the marketing management system of the bioeconomic potential of enterprises and the quality of their innovative products of the studied food industry enterprises, it can be concluded that the use of modeling tools of variation series and the McKinsey matrix allows you to assess the state of the financial and economic situation of the enterprise, their variability and compare them in dynamics.

DISCUSSION

The research we reviewed provides important theoretical and policy foundations for understanding the bioeconomy, but it does not provide enough specific recommendations on marketing strategies for bioeconomy enterprises, particularly in the context of post-conflict recovery. Salvador et al. (2021) focuses on designing business models for a circular bioeconomy, but they are more oriented towards theoretical aspects and general principles of creating business models than on practical recommendations on marketing strategies for bioeconomy enterprises in post-conflict recovery. The issue of adapting these models to the real conditions of the post-conflict market and the specific challenges faced by enterprises after the war is not covered. In the scientific work of Vasylchak et al. (2022), the study focuses on state regulation of employment and innovative development of entrepreneurship but does not highlight the connection between these aspects and the marketing of bioeconomy enterprises. In the context of post-war recovery, it is important to consider how labor regulation

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and innovation development can influence the marketing strategies of bioeconomy enterprises, but this work does not address this issue.

The study by Brandão et al. (2021) focuses on circular bioeconomy strategies but does not provide specific recommendations on the marketing aspects of bioproduct commercialization, which is important for post-war recovery. The issues related to the adaptation of marketing strategies to new conditions, post-conflict stability, and economic reset are poorly studied.

The study by Ramcilovic-Suominen and Pülzl (2018) examines sustainable development within the bioeconomy at the level of EU policies but does not focus on marketing issues. In the context of post-war recovery, it is important to focus on how sustainable development can be linked to marketing strategies and business processes, but this topic is not explored in the work.

The scientific article by Zhyvko et al. (2022) examines digitalization in the context of management accounting and finance but does not explore how these factors can be used to shape marketing strategies in the bioeconomy. Bioeconomy enterprises need to integrate digital tools into marketing strategies, and this issue is not covered in the paper. The scientific findings of Ovcharenko et al. (2022) focus on modeling the functioning of ecoclusters in the context of globalization. Although this may be useful for analyzing the interactions between enterprises in the bioeconomy sector, the paper does not consider the specific marketing strategies needed to develop and promote bio innovative products after the war.

The authors of Fava et al. (2021), highlight the bioeconomy strategy of Italy, but do not consider marketing aspects and business strategies for enterprises engaged in bioinnovation. For post-war recovery, more attention needs to be paid to how marketing can help put these strategies into practice, including through market segmentation, promoting innovation, and integrating new business approaches. Budzianowski's (2017) study of high-value bio-based products focuses more on technological aspects and opportunities for sustainable bio-based products. The role of marketing in the development and promotion of such products, as well as specific marketing strategies needed for post-conflict recovery, are not addressed.

De Vriend and Stemerding's (2011) paper focuses on the general principles of the bioeconomy and its opportunities but does not provide specific recommendations on marketing tools or strategies needed for the development of bio-based businesses in the context of post-conflict recovery. There is a lack of integration of marketing aspects with bio-based policies and practices.

Kowalska-Styczeń et al.'s (2023) study on the green innovation economy is based on economic complexity but does not cover the marketing aspects needed for the implementation of innovative bio-based products in the post-conflict recovery. It is important to consider how economic complexity can affect marketing and consumer behavior, but this issue is not addressed in the paper.

Bell et al. (2018) focuses on the EU's global ambitions to create a leading bioeconomy, but they do not focus on real marketing strategies for businesses. The lack of specific approaches to how businesses can adapt marketing for innovative bio-based products after the war is a serious limitation.

In summary, the scientific findings of all authors have significant theoretical value for the study of the bioeconomy, sustainability, and innovation, but they have significant limitations for the topic of our article. Thus, insufficient attention is paid to marketing aspects. Most studies focus on general principles of bioeconomy development, sustainability strategies, or technological approaches, but they do not consider specific marketing strategies that are necessary for the recovery of businesses in the post-conflict period. The studies do not address the specific challenges that enterprises face after the war, such as market recovery, changing consumer needs, and adaptation to new conditions of economic stability. Post-war recovery requires flexible marketing strategies adapted to a rapidly changing environment. Most works focus on political, economic or environmental aspects of the bioeconomy, but do not provide specific practical advice on the implementation of marketing tools for the development of innovative bioproducts in specific recovery conditions. Therefore, these scientific works provide a useful theoretical basis for understanding the bioeconomy and innovation processes, but they do not provide a comprehensive approach to marketing management, which is key for the effective recovery of bioeconomy enterprises after the war. Therefore, it is necessary to complement these studies with specific recommendations and strategies focused on practical marketing approaches in post-war recovery conditions.

CONCLUSIONS

In the system of marketing management of the bioeconomic potential of enterprises and the quality of their innovative products, especially in the post-war recovery strategy, the key is the combination of innovation, sustainability, and market

orientation. Food industry enterprises must adapt to new challenges by investing in environmental technologies and developments that meet consumer needs for high-quality and safe products. Important aspects are the management of financial resources and stability in achieving performance indicators that can ensure competitiveness and sustainable development in the market. Effective marketing management in this area is focused on actively promoting the bioeconomic advantages of products and improving distribution channels, which allows enterprises to quickly respond to changes in the market situation. In the context of economic recovery, this contributes to consolidating environmental and social responsibility as key elements of their market strategy, creating new opportunities for attracting investment and improving product quality.

Prospects for research into marketing management of bioeconomic potential and quality of innovative products of food industry enterprises focus on developing strategies that allow to increase the effectiveness of promoting ecological products and optimize costs. It is important to study the mechanisms that contribute to the stability of financial indicators in conditions of market uncertainty and allow enterprises to adapt to changes in demand and consumer preferences. An in-depth study of right-sided asymmetry and significant variability in financial indicators can help to understand how to reduce risks and increase the resilience of enterprises to external factors. In the post-war recovery strategy, important areas of research are the adaptation of production to the requirements of the bioeconomy, the introduction of ecological technologies, and the development of distribution channels that would ensure efficiency and cost minimization. Further analysis of the dynamics of sales costs and material resources can provide an idea of the possibilities of optimizing these costs without reducing product quality.

ADDITIONAL INFORMATION

AUTHOR CONTRIBUTIONS

All authors have contributed equally.

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CONFLICT OF INTEREST

The Authors declare that there is no conflict of interest.

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МАРКЕТИНГОВИЙ МЕНЕДЖМЕНТ БІОЕКОНОМІЧНОГО ПОТЕНЦІАЛУ ПІДПРИЄМСТВ І ЯКОСТІ ЇХНЬОЇ ІННОВАЦІЙНОЇ ПРОДУКЦІЇ В СТРАТЕГІЇ ПОВОЄННОГО ВІДНОВЛЕННЯ

У статті описане дослідження значення маркетингового менеджменту для використання біоекономічного потенціалу підприємств та якості їхньої інноваційної продукції в контексті стратегій повоєнного відновлення. Підкреслена важливість адаптації маркетингових стратегій до викликів і можливостей, що виникають після конфлікту, коли бізнеси повинні орієнтуватися на зміни на ринку й трансформацію споживчих потреб. У дослідженні акцентована увага на тому, як інтеграція сталих практик та інновацій може підвищити конкурентоспроможність і стійкість біоекономічних підприємств. Також наголошено на необхідності комплексного підходу, що поєднує маркетингові стратегії з технологічними новаціями, щоб стимулювати зростання й підтримувати сталий розвиток біоекономіки в умовах швидких економічних змін. Запропоновано інструменти оцінки маркетингового менеджменту біоекономічного потенціалу підприємств і здійснено їх апробацію на прикладі підприємств харчової промисловості. Стаття спрямована на розширення розуміння того, як маркетинг може стати рушійною силою для успішного відновлення та довгострокової стійкості підприємств, що працюють у царині біоекономіки.

Ключові слова: маркетинговий менеджмент, реклама, стратегії, повоєнне відновлення, продуктовий портфель, якість продукції, інновації, фінансові результати, біоекономіка

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