UDC 658.009.12:004.738.5:005.21
JEL Classification: L 21, M 15, O 33

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IMPLEMENTATION OF DIGITAL TECHNOLOGIES FOR MANAGING THE ENTERPRISE COMPETITIVENESS BASED ON BENCHMARKING RESEARCH

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In the context of digital transformation and intensifying market competition, enterprise competitiveness depends increasingly on the ability to adopt innovative technologies and integrate best practices at the basis of benchmarking. The article aims to explore the implementation of digital technologies in the process of managing enterprise competitiveness based on benchmarking research. The methodology involves a comparative benchmarking analysis of financial indicators of industrial enterprise LLC "Pyatykhatsky Plant of Metallurgical Mixtures," against key competitors. In addition, an expert survey was conducted to assess competitiveness parameters relevant to both internal and external stakeholders. The study reveals that despite relatively modest financial results, the enterprise demonstrates strong revenue efficiency per employee and high product quality. However, weaknesses were identified in marketing and client service capabilities. Benchmarking showed that leading competitors actively employ CRM systems and digital marketing tools. Based on these findings, a set of strategic recommendations was developed, including the introduction of basic CRM functionality, improved marketing communication, and enhanced service support. A reassessment based on expert evaluation showed a significant improvement in the company's competitiveness. The novelty of research lies in integrating benchmarking and stakeholder-based evaluation with competitiveness management system based at digital technology adaptation. Identifying opportunities for implementing artificial intelligence technologies in business activities and marketing is highly recommended. The study offers practical value for enterprises seeking to enhance their competitiveness through digital solutions.

Keywords: competitiveness, digital technologies, competitiveness management, benchmarking, lubricating and cooling liquids market, competitive advantage, competitiveness assessment, competitive strategy.

DOI: 10.32434/2415-3974-2025-21-1-225-232

Introduction and formulation of the problem

In today's business world, competitiveness is becoming a determining factor that businesses must focus on in order to thrive in an intensely competitive environment. In an era where consumers are faced with a variety of alternative products, understanding and managing competitiveness at the basis of modern technologies has become critical for businesses seeking to not only survive, but also thrive in their industries. The challenge for businesses is to stand out from the competition. This opportunity is provided by digital technologies for improving marketing and customer service. The enterprise's ability to manage the competitiveness at the basis of benchmarking by comparing the technologies, processes, policies and key performance indicators with competitors and market leaders, and implementing the best practices, is critical to improve and maintain strong position in the turbulent market.

Analysis and research of publications

Problems related to the definition of the theoretical and methodological foundations of

competitiveness, enterprise competitiveness management and the use of the benchmarking method as in assessing competitiveness are considered in the works of many scientists. A clear understanding of the essence of the process of managing the competitiveness of enterprises is provided by V. V. Khrapkina [1]. The peculiarities of managing the competitiveness of enterprises in the conditions of sustainable development were identified by A. M. Uzhva [2]. The main components of competitiveness management were studied by L. Berezina, O. Varaksina, and A. Oliynyk, as well as showed their interconnection and analyzed in detail the functions of enterprise competitiveness management [3]. In the research of L. Verbytska [4], it is comprehensively substantiated that the construction of the processes of managing the competitiveness of the enterprise on the basis of a systematic approach will contribute to the formation and development of sustainable competitive advantages of the enterprise. In turn, V. A. Pavlova and R. V. Gubarev proved that the process of managing the enterprise competitiveness should include a number of actions: monitoring the competitive environment and assessing the competitive situation in the industry and in the market; diagnostics of competitiveness the enterprise and its main competitors; competitive positioning of the enterprise; development and implementation of the competitive strategy of the enterprise [5]. Benchmarking as a tool for managing the competitiveness of an enterprise has been studied by G. O. Shklyaeva [6] and T. S. Morshchenok [7]. However, the problem of creating competitive advantages of the enterprise through the introduction of digital technologies based on benchmarking research remains insufficiently developed.

Purpose of the article

The purpose of the article is to reveal opportunities for implementing digital technologies in managing the enterprise competitiveness process based on benchmarking research.

Presentation of the main material

In order to assess the competitiveness of the enterprise in relation to its main competitors as a component of the competitiveness management process [5, p. 170], a benchmarking competitiveness assessment of industrial enterprise LLC "Pyatykhatsky Plant of Metallurgical Mixtures" that is a producer of auxiliary materials for steel-smelting and machine-building enterprises, was carried out.

The main type of manufactured products is lubricating and cooling liquid concentrates. The "Pyatykhatsky Plant of Metallurgical Mixtures" develops unique and high-quality products that stand out from others in the market and making the company competitive both in terms of quality and price. The enterprise focusing on the European quality system in the field of production and environmental protection [8].

Consumers are the companies operating within various sectors, from steel manufacturers to producers of machinery, pipes and other finished metal products, dispersed across different regions of Ukraine. Among the main customers of the enterprise are the largest manufacturer of steel products in Ukraine "Arcelor Mittal Kryvyi Rih", the manufacturer of seamless pipes and railway wheels "Interpipe", one of the leaders in aircraft engine building "Motor Sich", the manufacturer of large-sized forging and pressing equipment "NPO Dnepropress" and others [8].

The main competitors that represent the companies in the field of refractory concrete mixtures and lubricating and cooling liquids, are the following: Private Enterprise "Scientific and Production Firm SVK", (Dnipro), LLC "Invent Group" (Dnipro), LLC "Scientific and Production Association Nikos" (Samar, Dnipropetrovsk region), LLC "Barkor-Oil" (Fastiv, Kyiv Region).

The following indicators of financial performance for "Pyatykhatsky Plant of Metallurgical Mixtures" and competitors were analyzed for the year 2024: revenue; net profit; assets; liabilities; number of employees (Table 1).

Table 1

Summary of financial performance of the LLC "Pyatykhatsky plant of Metallurgical Mixtures" and its competitors, 2024

Enterprise	Revenue, Ths UAH	Net Profit, Ths UAH	Assets, Ths UAH	Liabilities, Ths UAH	Employees, people	Revenue per employee, Ths UAH
LLC "Pyatykhatsky plant of Metallurgical Mixtures"	27 336,2	1 121,1	6 912,0	2 200,3	7	3905,1
LLC "Invent Group"	982 008,0	46 536,0	387 914,0	94 611,0	196	5010,2
PE SPF "SVK"	345 227,0	32 965,0	135 048,0	20 418,0	139	2483,6
LLC "Barkor-Oil"	40 789,1	2 550,4	41 854,5	7 647,6	13	3137,6
LLC SPA "Nikos"	32 678,2	6 337,5	13 241,3	1 825,2	17	1922,2

Source: [9]

Comparative analysis shows that LLC «Invent Group» leads the industry by revenue of 982 008,0 Ths UAH and net profit 46 536,0 Ths UAH, as well as by volume of assets and liabilities. With 196 employees, this is a medium-sized enterprise.

PE SPF "SVK" is the second in terms of all provided indicators and also can be considered as a medium-sized enterprise with 139 employees.

LLC "Barkor-Oil" and LLC SPA "Nikos" are close in terms of revenue and actually share the third place in the rating. However, in terms of net profit and assets, "Nikos" significantly surpassed "Barkor-Oil". The both can be considered as small enterprises with 17 and 13 employees.

In turn LLC "Pyatykhatsky Plant of Metallurgical Mixtures" demonstrates the lowest volumes of financial performance with revenue of 27 336,2 Ths UAH, net profit 1 121,1 Ths UAH and assets 6 912,0. At the same time the number of employees is only 7 people which is significantly lower than that of all analyzed enterprises.

In order to compare the company with competitors, we calculated revenue per employee for all enterprises, the result is presented in Table 1. Market Leader LLC "Invent Group" is expected to be at the top of ranking in this indicator as well with 5010,2 Ths UAH. While LLC «Pyatykhatsky Plant of Metallurgical Mixtures» takes the second place, demonstrating a reliable result, which allows us to assume a sufficient degree of competitiveness compared to the analyzed enterprises. At the same time, it should be noted that the revenue of enterprise increased significantly in 2024 compared to 2022 (UAH 8,448.4 Ths UAH), but did not reach the level of 2021 (UAH 29,403.8 Ths UAH). At the same time, according to Opendatabot [9], all other surveyed enterprises exceeded the pre-war level in 2024.

We consider the company competitiveness as an ability to meet the needs of internal and external stakeholders – owners, employees and lubricating and cooling liquid concentrates consumers, compared to competitors. To determine the parameters that best reflect the stakeholders' satisfaction, as well the weight coefficients and parameters values, an expert survey was conducted.

A survey involved 7 experts, of which 3 were representatives of LLC "Pyatykhatsky Plant of Metallurgical Mixtures" and 4 were representatives of enterprises – consumers of lubricating and cooling liquid concentrates. Thus, both internal and external stakeholders were sufficiently represented. Evaluation was carried out on a 5-point scale, where 1 represented the lowest score and 5 the highest.

Based on the survey results, the following competitiveness parameters were identified: revenue per employee; staff turnover; price affordability; product novelties; resistance to rust and corrosion; absence of foam and contaminants; service support; marketing, as well as their weighting coefficients. According to experts, selected parameters influencing the internal and external stakeholders' decisions and behavior associated with competitiveness through their satisfaction in the best way. For example, staff turnover (excluding retirement) allows us to assess the loyalty of personnel to the company and indirectly assess working conditions and wage levels.

Table 2 compares the LLC "Pyatykhatsky Plant of Metallurgical Mixtures" and competitors.

Obtained benchmarking assessments results allow us to identify competitive advantages and lags (weaknesses) of LLC "Pyatykhatsky Plant of Metallurgical Mixtures" comparatively to competitors, and therefore assess the competitiveness through integral competitiveness indicator.

We calculated the integral competitiveness indicator for LLC "Pyatykhatsky Plant of Metallurgical Mixtures" and three most strong competitors selected by previous benchmarking of financial performance analysis (revenue per employee), included LLC "Invent Group", PE SPF "SVK" and LLC "Barkor-Oil" across various parameters, each weighted differently to reflect their importance according to the formula:

$$Iint=\sum(Xi \cdot ki), \quad (1)$$

where Iint is the enterprise integral competitiveness indicator; Xi is the expert assessment of the i-th parameter; i=1, 2, ...n, where n is the number of parameters; ki is the weighting coefficient for the i-th parameter.

The integral competitiveness indicator values are provided in Table 2.

Among the companies evaluated, market leader LLC "Invent Group" emerges as a frontrunner, boasting the highest integral competitiveness index of 3.98. In turn, LLC "Pyatykhatsky Plant of Metallurgical Mixtures" also demonstrates high competitiveness degree, with integral competitiveness index of 3.93. On the lower end of the spectrum are LLC "Barkor-Oil" and PE SPF "SVK" exhibiting integral competitiveness indices of 3.27 and 3.23 and comparatively weaker competitive position. These companies may need to address specific areas of weakness to enhance competitiveness and fortify its market positions.

Table 2

Key competitiveness parameters assessment (weighted scores) for LLC "Pyatykhatsky Plant of Metallurgical Mixtures" and competitors

Parameter	Weighting coefficient	LLC "Pyatykhatsky Plant of Metallurgical mixtures"		PE SPF "SVK"		LLC Invent Group		LLC "Barkor-Oil"	
		Absolute assessment	Weighted assessment	Absolute assessment	Weighted assessment	Absolute assessment	Weighted assessment	Absolute assessment	Weighted assessment
Revenue per employee	0.15	4	0.6	3	0.45	5	0.75	4	0.6
Staff turnover	0.15	4	0.6	3	0.45	5	0.75	3	0.45
Price affordability	0.1	5	0.5	4	0.4	3	0.3	3	0.3
Novelties	0.1	4	0.4	1	0.4	3	0.3	3	0.3
Rust and Corrosion	0.12	5	0.6	2	0.24	3	0.36	4	0.48
Absence of foam and contaminants	0.12	5	0.6	3	0.36	4	0.48	3	0.36
Service support	0.11	3	0.33	3	0.33	4	0.44	3	0.33
Marketing	0.15	2	0.3	4	0.6	4	0.6	3	0.45
Total	1	32	3.93	23	3.23	31	3.98	26	3.27
Integral competitiveness indicator	–	–	3.93	–	3.23	–	3.98	–	3.27

Source: authors' development based on the results of expert evaluations

The result of the comparative analysis showed that the stable financial situation LLC "Pyatykhatsky Plant of Metallurgical Mixtures", which is the second in revenue per person, provided the enterprise with rather high degree of competitiveness in the lubricating and cooling liquid market. The company has competitive advantage in Price affordability, as well in such regulatory (technological) parameters as Resistance to rust and corrosion and Absence of foam and contaminants.

To improve competitive position, LLC "Pyatykhatsky Plant of Metallurgical Mixtures" has to develop the available opportunities. The analysis underscores the importance of bolstering marketing and service support efforts. By augmenting these aspects of their operations, the company can boost its competitive advantage and strengthen competitive position in the industry.

The results of the analysis of market leader LLC "Invent Group", and also LLC "Barkor-Oil" activities showed that "Invent Group" installed CRM system for use in marketing and service support. Also, LLC "Invent Group" and LLC "Barkor-Oil" widely use LinkedIn tools, and implemented email marketing and conduct cold calls to attract clients.

Based on the benchmarking assessment revealed LLC "Pyatykhatsky Plant of Metallurgical Mixtures" weaknesses in marketing and service support from one hand, and strong financial statement from another hand, we consider it appropriate to implement a wide range of relevant measures based at the market leader's best practices in digital technologies. Although the focus is on digital tools in regular clients' support and product promotion as well as better targeting [10, p. 450].

It would be advisable to implement a CRM system, engage in email marketing, conduct cold calls and mailings to attract clients abroad, use LinkedIn search and create promotional offers.

Implementing a CRM system allows for efficient tracking of customer interactions, managing their requests, and ensuring high-quality service. By systematizing customer relations, the company can improve customer satisfaction and loyalty. Automation of processes and centralized storage of customer information will enable employees to respond more quickly and accurately to requests, as well as offer personalized solutions.

At the initial stage, instead of purchasing an expensive CRM software, we recommend LLC "Pyatykhatsky Plant of Metallurgical Mixtures" to use Google Sheets within Google Workspace to create a basic CRM. Google Sheets allows them to organize and track customer information, lead progress, and

other relevant data in a spreadsheet format, offering a cost-effective alternative to dedicated CRM software. This approach offers several advantages like:

– Cost Efficiency. Using Google Sheets is significantly more cost-effective compared to purchasing and maintaining proprietary CRM software. This allows the company to allocate funds to other critical areas such as marketing and product development;

– Flexibility and Customization. A CRM system in Google Sheets can be tailored specifically to the needs of the company. We can easily customize the system to include fields and sections relevant to our business processes without the constraints of off-the-shelf software;

– Accessibility. Google Sheets is cloud-based, ensuring that our CRM is accessible from anywhere at any time. This facilitates remote work and allows team members to access and update information in real time;

– Ease of Use. Most employees are familiar with Google Sheets, reducing the time and resources needed for training. The intuitive interface ensures a smooth transition and efficient use.

Integration with Other Google Services. Google Sheets integrates seamlessly with other Google services like Gmail, Google Calendar, and Google Drive. This integration enhances productivity by streamlining various business processes.

The Google Sheets basic CRM system will store detailed information on both new and existing clients. This includes: client contact information; interaction history (emails, phone calls, meetings); sales pipeline stages; follow-up schedules; marketing campaign tracking.

This approach will help to understand the real needs of the enterprise and after decide on the purchase of special CRM software.

Email marketing is an effective tool for maintaining communication with existing customers and attracting new ones. Through email newsletters, the company can inform customers about new products, promotions, and special offers, thereby increasing their engagement and interest in the products. Regular informational mailings will help strengthen relationships with customers and keep their attention. It is also important to note that email marketing allows for audience segmentation and targeted messaging, significantly increasing the effectiveness of marketing campaigns.

Using LinkedIn search is highly effective for LLC "Pyatykhatsky Plant of Metallurgical Mixtures" due to several key advantages. Firstly, it allows for targeted prospecting, enabling business development representatives to find potential clients based on specific criteria such as industry, location, and job title. This ensures that outreach efforts are focused on the most relevant prospects. LinkedIn facilitates enhanced networking by making it easier to connect with decision-makers and influencers in the metallurgical industry. This direct access to key individuals can significantly shorten the sales cycle. Additionally, LinkedIn serves as a valuable tool for market research, providing insights into industry trends and competitor activities, which can inform and refine marketing strategies. LinkedIn provides real-time interaction opportunities, allowing specialists to engage promptly with prospects and build relationships through direct messaging features like InMail. These capabilities make LinkedIn an indispensable tool in the company's marketing and sales strategy, helping to achieve business goals efficiently and effectively.

To consider and evaluate results of the proposed activities, the same experts were involved again. The following are the updated expert evaluations based on the proposed changes (Table 3).

The increase in service support rating to 4 is likely to lead to higher customer satisfaction, as clients receive more efficient and effective support. Improved service support can enhance customer loyalty, reducing churn rates and increasing repeat business. Striving for a top rating in service support, LLC "Pyatykhatsky Plant of Metallurgical Mixtures" will match or exceed the service level of its closest competitors, positioning itself as a leader in customer care within the industry.

The marketing rating for LLC "Pyatykhatsky Plant of Metallurgical Mixtures" was previously at 2, indicating significant weaknesses in promotion, brand visibility, and market outreach. Following the improvements, this rating will increase to 4. This requires the company to make significant efforts to improve its marketing policies, possibly through better use of digital marketing tools. A higher marketing rating indicates that LLC "Pyatykhatsky Plant of Metallurgical Mixtures" become more visible in the market, with stronger brand recognition and awareness. Improved marketing efforts can attract new customers and expand the company's market share, driving growth and revenue. With service support and marketing ratings of 4, the company is now ahead of competitors, eliminating previous disadvantages and positioning itself as a strong market player.

Table 3

Key competitiveness parameters assessment (weighted scores) for LLC "Pyatykhatsky Plant of Metallurgical Mixtures" and competitors after implementing the improvement measures

Parameter	Weighting coefficient	LLC "Pyatykhatsky Plant of Metallurgical mixtures"		PE SPF "SVK"		LLC Invent Group		LLC "Barkor-Oil"	
		Absolute assessment	Weighted assessment	Absolute assessment	Weighted assessment	Absolute assessment	Weighted assessment	Absolute assessment	Weighted assessment
Revenue per employee	0.15	4	0.6	3	0.45	5	0.75	4	0.6
Staff turnover	0.15	4	0.6	3	0.45	5	0.75	3	0.45
Price affordability	0.1	5	0.5	4	0.4	3	0.3	3	0.3
Novelties	0.1	4	0.4	1	0.4	3	0.3	3	0.3
Rust and Corrosion	0.12	5	0.6	2	0.24	3	0.36	4	0.48
Absence of foam and contaminants	0.12	5	0.6	3	0.36	4	0.48	3	0.36
Service support	0.11	4	0.44	3	0.33	4	0.44	3	0.33
Marketing	0.15	4	0.6	4	0.6	4	0.6	3	0.45
Total	1	35	4.34	25	3.23	29	3.98	25	3.27
Integral competitiveness indicator	–	–	4.34	–	3.23	–	3.98	–	3.27

Source: authors' development based on the results of expert evaluations

Conclusions

In order to improve the competitiveness management system of the enterprise LLC "Pyatykhatsky Plant of Metallurgical Mixtures" on the basis of the benchmarking method, the authors evaluated the parameters of competitiveness in comparison with competitors in the lubricating and cooling liquid market; identified competitive advantages and lags; calculated the integral index of competitiveness and concluded about the need to improve the marketing and service activities of the enterprise on the basis of digital technologies. In particular, based on the results of the study of market leader and competitors' best practices, it is recommended to implement a CRM system, LinkedIn tools, and also, implement email marketing and conduct cold calls to attract clients.

Taking into account the underrealized competitive advantages, which led to a lower revenue than competitors, in order to ensure effective competitiveness management, it is advisable for the enterprise to focus on the development and implementation of market growth strategy, which is aimed at enhancing competitiveness [11, p. 2038; 12, p. 146-147]. Such a competitive strategy should be based on the introduction of digital technologies, primarily in marketing and service activities. It is also important to consider introducing artificial intelligence technology into business activities and marketing, which requires more in-depth investigation. Such measures will contribute to an increase in sales volumes in the highly competitive, promising in view of Ukrainian industry post-war recovery ZOR market, as well as the expansion of the enterprise's activities in foreign markets.

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Received 05.03.2025.
Revised 15.03.2025.
Accepted 20.05.2025.
Published 25.06.2025.

ВПРОВАДЖЕННЯ ЦИФРОВИХ ТЕХНОЛОГІЙ В УПРАВЛІННЯ КОНКУРЕНТОСПРОМОЖНІСТЮ ПІДПРИЄМСТВА НА БАЗІ БЕНЧМАРКІНГОВОГО ДОСЛІДЖЕННЯ

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В умовах цифрової трансформації та загострення конкуренції на ринку конкурентоспроможність підприємства дедалі більше залежить від здатності впроваджувати інноваційні технології та інтегрувати найкращі практики на основі бенчмаркингу. У статті досліджується впровадження цифрових технологій у процес управління конкурентоспроможністю підприємства на базі бенчмаркингового дослідження. Методологія передбачає порівняльний бенчмаркинговий аналіз фінансових показників промислового підприємства ТОВ «П'ятихатський завод металургійних сумішів» щодо основних конкурентів. Крім того, було виконано експертне оцінювання параметрів конкурентоспроможності, релевантних як для внутрішніх, так і зовнішніх стейкхолдерів. Дослідження показало, що, незважаючи на помірні фінансові результати, підприємство демонструє високий дохід на одного працівника та якість продукції. Водночас виявлено слабкі місця у сфері маркетингу та обслуговування клієнтів. Бенчмаркинг виявив, що провідні конкуренти активно використовують CRM-системи та цифрові маркетингові інструменти. На основі цих висновків розроблено комплекс стратегічних рекомендацій, зокрема впровадження базового функціоналу CRM, покращення маркетингової комунікації та посилення сервісної підтримки. Повторна експертна оцінка засвідчила суттєве покращення конкурентоспроможності підприємства. Наукова новизна дослідження полягає в інтеграції бенчмаркингу та оцінки з урахуванням думок стейкхолдерів із системою управління конкурентоспроможністю на основі адаптації цифрових технологій. Рекомендується також вивчення можливостей впровадження технологій штучного інтелекту в бізнес-процеси та маркетинг. Дослідження має практичне значення для підприємств, які прагнуть підвищити свою конкурентоспроможність завдяки цифровим рішенням.

Ключові слова: конкурентоспроможність, цифрові технології, управління конкурентоспроможністю, бенчмаркинг, ринок змащувально-охолоджувальних рідин, конкурентна перевага, оцінка конкурентоспроможності, конкурентна стратегія.

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In the context of digital transformation and intensifying market competition, enterprise competitiveness depends increasingly on the ability to adopt innovative technologies and integrate best practices at the basis of benchmarking. The article aims to explore the implementation of digital technologies in the process of managing enterprise competitiveness based on benchmarking research. The methodology involves a comparative benchmarking analysis of financial indicators of industrial enterprise LLC "Pyatykhatsky Plant of Metallurgical Mixtures," against key competitors. In addition, an expert survey was conducted to assess competitiveness parameters relevant to both internal and external stakeholders. The study reveals that despite relatively modest financial results, the enterprise demonstrates strong revenue efficiency per employee and high product quality. However, weaknesses were identified in marketing and client service capabilities. Benchmarking showed that leading competitors actively employ CRM systems and digital marketing tools. Based on these findings, a set of strategic recommendations was developed, including the introduction of basic CRM functionality, improved marketing communication, and enhanced service support. A reassessment based on expert evaluation showed a significant improvement in the company's competitiveness. The novelty of research lies in integrating benchmarking and stakeholder-based evaluation with competitiveness management system based at digital technology adaptation. Identifying opportunities for implementing artificial intelligence technologies in business activities and marketing is highly recommended. The study offers practical value for enterprises seeking to enhance their competitiveness through digital solutions.

Keywords: competitiveness, digital technologies, competitiveness management, benchmarking, lubricating and cooling liquids market, competitive advantage, competitiveness assessment, competitive strategy.

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