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PROSPECTS OF ARTIFICIAL INTELLIGENCE APPLICATION IN MARKETING ACTIVITY

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Abstract. *The article is devoted to the analysis of possibilities of artificial intelligence (AI) application in the sphere of marketing. The main directions of AI use are considered, including personalization, automation, data analysis and optimization of advertising campaigns. The influence of these technologies on improving the effectiveness of marketing strategies, attracting customers and the formation of competitive advantages is substantiated. The paper identifies the main challenges and risks of AI integration into marketing, and offers recommendations for successful implementation.*

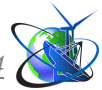
Keywords: *artificial intelligence, marketing, automation, personalization, data analysis, digital technologies, efficiency.*

Introduction.

Modern marketing is undergoing significant transformations under the influence of digital technologies, among which artificial intelligence occupies a key position. AI allows businesses to automate processes, personalize interaction with consumers and develop more accurate forecasts of market trends. In a global context where competition is constantly growing, the integration of AI into marketing strategies is becoming a prerequisite for success. The purpose of the work is to determine the possibilities of using AI in marketing, assess its impact on business performance and offer recommendations for implementation [1].

Artificial intelligence (AI) is becoming a key tool for transforming marketing activities, opening up new opportunities for business automation, personalization and analysis. The modern market, characterized by high competition and rapid changes, requires innovative approaches to attract customers and increase the efficiency of business processes. The integration of AI into marketing strategies allows companies to adapt to these conditions, creating competitive advantages and ensuring sustainable development. The article examines the key aspects of using AI in marketing, its impact on business efficiency, as well as the challenges that accompany the introduction of technologies, and possible ways to overcome them.

The topic of using artificial intelligence in marketing activities is reflected in many works of both Ukrainian and foreign scientists. A significant number of scientific developments were presented by Zayachkovskaya G.A., Resler M.V., Galyo Y.M., Proskurnina N.V., Steblyuk N.V., Kopeykina E.V., Hrugovich S.E., Borisova T.M., Kudryan I., Ivanova AND. V., Borovik T. M., Zalozna T. G., Rudenko A. Yu., Yanchuk T.V. and others.



The main text.

Artificial intelligence (AI) is a branch of computer science that deals with the creation of systems capable of performing tasks that usually require human intelligence. This includes processes such as learning, speech recognition, decision making and problem solving. AI technologies are based on the use of machine learning (ML) algorithms, neural networks, natural language processing (NLP) and computer vision [2].

The idea of creating machines capable of thinking like a person dates back to ancient times. Nevertheless, the modern concept of artificial intelligence (AI) was formed in the middle of the 20th century. The term "artificial intelligence" was first used by John McCarthy in 1956 during a conference at Dartmouth College. During this period, researchers focused on developing algorithms capable of performing mathematical calculations, logical problems and basic language processing. The first significant advances in AI occurred in the 1960s and 1970s, when programs were created that could play chess, prove mathematical theorems, and solve problems in geometry. In the 1980s, the development of neural networks and expert systems significantly expanded the capabilities of AI. By the end of the 20th century, computers began to analyze large amounts of data, which became the basis for modern machine learning [3].

The first use of AI in marketing can be traced back to the late 1990s. One early example was the introduction of algorithms to analyze consumer behavior in retail. In the 2000s, large technology companies such as Google and Amazon began to actively use AI algorithms to personalize search queries and product recommendations. For example, Amazon launched its recommendation system in 2003, based on the analysis of user purchase data.

In the 2010s, with the development of social networks and mobile platforms, AI began to be actively used for targeted advertising. Facebook launched its AI-based targeting algorithms in 2014, allowing companies to increase the effectiveness of advertising campaigns. Google in 2017 integrated artificial intelligence into Google Ads, automating rate optimization and campaign development.

In Ukraine, the introduction of AI into marketing began a little later due to limited access to technology and insufficient investment in digital solutions. The first attempts to use AI in marketing strategies occurred in the 2010s. For example, in 2014-2015, Ukrainian companies began to actively use AI algorithms to analyze client bases, create targeted offers and automate email mailings.

In 2017, a number of Ukrainian marketing agencies and IT companies, such as Promodo and Netpeak, began implementing AI to optimize advertising campaigns in Google Ads and Facebook Ads. In 2018, major retailers such as Rozetka integrated AI algorithms to personalize product recommendations on their platforms. In 2020, during the pandemic, the use of AI in Ukraine received a new impetus: companies began to actively use chatbots to automate customer service, as well as big data analysis algorithms to develop effective strategies.

AI is now an integral part of marketing strategies both in Ukraine and in the world. In a global context, big companies like Amazon, Netflix and Google are setting the tone for AI use. In Ukraine, technologies are integrated mainly in e-



commerce, media and retail, where automation and personalization allow to reduce costs and improve customer experience.

AI allows you to automate routine processes, analyze large amounts of data and make predictions, which makes it a valuable tool in various fields, in particular in marketing.

AI provides a wide range of opportunities to improve marketing strategies. One of the key areas of its use is the personalization of content and communication. With algorithms that analyze customer behavior, preferences, and purchase history, companies can create customized offerings that best meet consumer needs. This not only increases customer engagement, but also contributes to their brand loyalty. AI technologies help optimize routine tasks such as sending emails, segmenting the audience, or managing social networks. This significantly reduces time and resources, allowing marketing teams to focus on creative and strategic tasks.

However, the introduction of AI in marketing is accompanied by certain challenges. One of the main risks is ethical issues related to the use of personal data of clients. Misuse of data or breach of confidentiality may adversely affect the reputation of the company. In addition, the introduction of AI requires significant financial investment in the development and maintenance of technologies, which can become a barrier for small and medium-sized enterprises. Technical problems, such as algorithm errors or limited output, can also lead to erroneous solutions.

Table 1 shows the risks of using AI.

This table helps to systematize risks, their consequences and effective ways to minimize them, ensuring that companies can integrate AI into marketing without significant losses or threats.

To overcome these challenges and maximize the potential of AI, companies are encouraged to take a systematic approach to technology integration. It is important to start with an audit of AI readiness, including an analysis of available data, technical infrastructure and personnel qualifications. At the initial stage, it is worth implementing pilot projects to test technologies and evaluate their effectiveness. In addition, it is necessary to provide training for employees working with AI, and to implement ethical standards for working with data [4].

After that, you should define clear goals for the implementation of AI. Key uses include personalizing content, analyzing large amounts of data, automating routine tasks, and improving communication with customers through chatbots and virtual assistants. These areas should be aligned with the company's business goals, such as increasing sales or improving customer engagement.

The next step is to choose technologies and tools. For example, CRM systems such as Salesforce or HubSpot provide convenient management of customer data, and platforms like Google Analytics and Tableau allow you to analyze customer behavior and evaluate the effectiveness of campaigns. Marketing automation tools such as Mailchimp or ActiveCampaign help optimize mailing and audience segmentation.

It is recommended to start implementing AI from a pilot project, for example, personalizing electronic mailings or analyzing social networks. At this point, key performance indicators such as conversion and ROI should be monitored to assess the results. If the pilot project is successful, AI is integrated into all marketing processes.



Table 1 - Risks of using artificial intelligence (AI) in marketing [1-4]

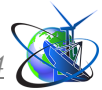
Risk category	Description	Example	Ways to minimize
Ethical risks	Bias of algorithms, excessive personalization, discrimination of certain groups of consumers.	Incorrect segmentation of the audience, excluding certain groups of customers.	Use of diverse and relevant data, regular audit of algorithms.
Data privacy breach	The use and storage of large amounts of personal data, the risk of leakage or abuse.	Unauthorized use of customer data in advertising campaigns.	Compliance with the law (GDPR), the introduction of secure data storage and processing systems.
Technical errors	Incorrect results due to limited or irrelevant data, algorithm failures.	AI generates incorrect content that affects brand reputation.	Regular testing and updating of algorithms, attracting qualified technicians.
Dependence on technology	Excessive automation reduces the role of creative thinking, dependence on external suppliers of AI solutions.	Stop marketing campaigns due to technical failures in AI systems.	Balance automation and human participation, choosing reliable technology providers.
Financial risks	High costs of implementing and maintaining AI solutions, the risk of overspending due to insufficient payback.	Non-return on investment in AI development due to incorrect definition of goals.	Clear definition of implementation goals, pilot projects for effectiveness testing.
Legal risks	Non-compliance with data protection legislation or automated decisions, lawsuits.	Use of personal data without the consent of customers, which is contrary to GDPR.	Compliance with the law, consultation with lawyers on the work of AI.
Reputational risks	Generating inappropriate content or incorrect strategies that harm customer confidence.	The advertising campaign created by AI caused a negative reaction from the audience.	Constant monitoring of AI results, attracting experts to check content before launching campaigns.

This can include creating personalized campaigns, dynamic pricing, automating customer request processing, and content management.

The key aspect is the training of the team. Marketers must master working with AI platforms to create effective campaigns, IT specialists must provide technical support and integration, and managers must adapt strategies to new opportunities. After AI integration, it is important to regularly evaluate results using indicators such as sales growth, cost reduction and increased customer engagement. If necessary, strategies should be optimized, adapting them to market changes. Successful cases can be scaled to other business processes.

The introduction of AI into the marketing strategy can provide an increase in conversion by 20-30%, reduce the cost of marketing campaigns by 15% and significantly increase customer satisfaction. Thanks to such results, the business receives a competitive advantage, increases efficiency and forms stable relationships with its audience.

Every year the introduction of AI is becoming more complex, allowing businesses to adapt to the challenges of the modern world. Personalization of content is one of the main directions of development, because AI algorithms are able to



analyze customer behavior and create individual proposals that best meet their needs. In the near future, personalization will become even more accurate by using real-time data on the emotional state of customers, which will increase their engagement and satisfaction [5].

Another promising direction is the automation of routine tasks. With generative models like DALL-E and ChatGPT, companies can automatically create texts, graphics, and other content for social media, advertising campaigns, or email newsletters. This reduces content production costs and allows marketing teams to focus on strategic planning. In parallel with this, voice assistants are actively developing, which are becoming an important channel of communication with consumers. Voice search through Siri, Alexa or Google Assistant requires adapting marketing strategies, which creates new opportunities for brands focused on innovation [5].

Big Data analysis is also undergoing significant improvements due to AI integration. Technologies allow us to identify hidden patterns, predict consumer behavior and adapt strategies to market changes in real time. For example, analytics platforms can help distribute advertising budgets more efficiently by targeting audience segments with the greatest potential. In the future, such approaches will become even more accurate, which will increase the effectiveness of marketing campaigns.

Augmented (AR) and virtual reality (VR) technologies open up new horizons for creating interactive experiences. Brands are already actively using these tools, creating virtual showrooms or interactive tours. In the future, this will further integrate consumers into the brand world, providing a unique experience. At the same time, chatbots equipped with AI are becoming more complex in interaction, allowing not only to respond to customer requests, but also to actively offer products or services, focusing on their needs.

Another important perspective is to create dynamic content that adapts in real time depending on user behavior. Banner ads or personalized emails will change to fit specific customer needs or moods. This will help increase communication efficiency and increase consumer satisfaction. In this context, the development of emotional marketing will become an important trend. AI technologies will allow you to analyze customer emotions, for example, through face or voice recognition, and create campaigns that will resonate with the target audience on an emotional level.

AI will also help optimize marketing campaign budgets, allowing funds to be automatically redistributed across channels based on their effectiveness. This will reduce costs and increase ROI. In addition, the development of "green marketing" will be an important aspect of the application of AI. Thanks to environmental impact analysis technologies, companies will be able to create strategies focused on sustainable development, which will increase their confidence among environmentally conscious consumers.

The forecast of the development of AI in marketing shows that by 2030, more than 80% of companies will actively use these technologies in their strategies. The effectiveness of advertising campaigns can increase by 25-30%, and the cost of creating content will decrease by 20-25%. Customer loyalty to brands that actively



implement AI will increase by 15-20%, which will provide long-term competitive advantages. Thus, the prospects for using AI in marketing cover a wide range of opportunities that will contribute to business development, increase efficiency and create a unique customer experience.

Conclusions.

Artificial intelligence has a significant impact on marketing, opening up new opportunities for improving the efficiency and competitiveness of business. Using AI allows you to personalize interaction with customers, automate processes and improve advertising campaigns. At the same time, it is important to take into account ethical, technical and financial risks, ensuring the competent integration of technologies. The successful implementation of AI in marketing strategies can be an important factor in the sustainable development of companies in today's dynamic world. Today, AI is a key factor in creating competitive advantages for enterprises.

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Анотація. Стаття присвячена аналізу можливостей застосування штучного інтелекту (ШІ) у сфері маркетингу. Розглядаються основні напрями використання ШІ, включаючи персоналізацію, автоматизацію, аналіз даних та оптимізацію рекламних кампаній. Обґрунтовано вплив цих технологій на підвищення ефективності маркетингових стратегій, залучення клієнтів та формування конкурентних переваг. У роботі визначено основні виклики та ризики інтеграції ШІ у маркетинг, а також запропоновано рекомендації для успішного впровадження.

Ключові слова: штучний інтелект, маркетинг, автоматизація, персоналізація, аналіз даних, цифрові технології, ефективність.

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