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# Automotive business marketing with the use of artificial intelligence technologies for service personalization

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**Abstract.** In today's fast-paced world, where innovation and technology drive development, the automotive industry faces new challenges associated with high competition and ever-increasing customer expectations. The **purpose of the article** is to analyze strategic approaches to the use of artificial intelligence (AI) in automotive marketing to personalize services and increase the competitiveness of enterprises. **Methods.** The study is based on theoretical generalization and systematic analysis of the concepts of personalization, marketing flexibility and AI. The theoretical generalization method was used to systematize and structure existing knowledge and scientific publications related to the impact of AI on marketing. It allowed us to outline the current state of the problem and identify the main trends. The analysis method was employed to identify the key advantages and challenges associated with implementing AI. Based on the empirical method, an analysis of practical cases from global and Ukrainian companies was conducted, illustrating the application of AI technologies. The synthesis method was used to formulate conclusions and predict the future development of the industry. **Results.** It was

determined that, under market conditions, AI becomes not just an auxiliary tool but a fundamental driver of the transition to personalized marketing. The use of AI enables companies not only to respond quickly to changes but also to predict them, creating personalized offers that meet the unique needs of each client. However, for the widespread implementation of AI, it is necessary to address significant challenges associated with data storage and use, as well as confidentiality, and the need for substantial financial investments. The analysis reveals that AI is a key driver of the transition to personalized marketing, enabling companies to accurately predict customer needs and create tailored offers. The experience of leading global manufacturers confirms it: BMW utilizes AI for autonomous driving, Toyota for optimizing lead generation, and Tesla integrates it into its ecosystem to increase efficiency. These examples demonstrate that AI is becoming an integral part of a successful strategy in the automotive industry, despite the numerous challenges it presents. **Conclusions.** It has been established that the combination of AI and marketing flexibility is a prerequisite for sustainable growth in the modern automotive industry. The analysis demonstrates how AI enables businesses to establish strong, trusting relationships with customers and achieve long-term market success. Areas of further research include the development of methodologies for analyzing the cost-effectiveness of AI implementation and studying its impact on customer loyalty.

**Keywords:** digital transformation, customer loyalty, marketing effectiveness, marketing strategy, automotive industry, competitiveness, customer experience, innovation.

АКТУАЛЬНІ ПИТАННЯ ЕКОНОМІЧНИХ НАУК

# Маркетинг автобізнесу з використанням технологій ШІ для персоналізації послуг

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**Анотація.** У сучасному швидкоплинному світі, де інновації та технології є рушійною силою розвитку, автомобільна індустрія стикається з новими викликами, пов'язаними з високою конкуренцією та постійно зростаючими очікуваннями клієнтів. **Метою** статті є аналіз стратегічних підходів до використання штучного інтелекту (ШІ) в маркетингу автомобільної галузі для персоналізації послуг та підвищення конкурентоспроможності підприємств. **Методи**. Дослідження ґрунтується на теоретичному узагальненні та системному аналізі понять персоналізації, маркетингової гнучкості та ШІ. Метод теоретичного узагальнення використано для систематизації та структурування існуючих знань і наукових публікацій, що стосуються впливу ШІ на маркетинг. Це дозволило окреслити поточний стан проблеми та виявити основні тенденції. Для виокремлення ключових переваг та викликів впровадження ШІ застосовано метод аналізу. На основі емпіричного методу проведено аналіз практичних кейсів світових та українських компаній, які ілюструють застосування ШІ-технологій. Методу синтезу було застосовано для формулювання висновки та прогнозування майбутнього розвитку галузі. **Результати.** Визначено, що в умовах ринкової конкуренції ШІ стає не просто допоміжним інструментом, а фундаментальним драйвером переходу до персоналізованого маркетингу. Застосування ШІ дозволяє компаніям не лише оперативно реагувати на зміни, але й прогнозувати їх, створюючи унікальні пропозиції, що відповідають потребам

кожного клієнта. Однак, для широкого впровадження ШІ необхідно враховувати значні виклики, пов'язані з проблемами збереження та використання даних, конфіденційністю та необхідністю залучення значних фінансових інвестицій. Проведений аналіз показує, що ШІ є фундаментальним драйвером переходу до персоналізованого маркетингу, дозволяючи компаніям прогнозувати потреби клієнтів і створювати унікальні пропозиції. Це підтверджується досвідом провідних світових виробників: BMW використовує ШІ для автономного керування, Toyota — для оптимізації генерації лідів, а Tesla інтегрує його у свою екосистему для підвищення ефективності. Ці приклади ілюструють, що ШІ стає невід'ємною частиною успішної стратегії в бізнесі, попри всі виклики. **Висновки.** Встановлено, що поєднання ШІ та маркетингової гнучкості є обов'язковою умовою сталого розвитку в сучасному автобізнесі. Проведений аналіз показує, як ШІ допомагає бізнесу формувати міцні, довірчі відносини з клієнтами та забезпечувати довготривалий успіх на ринку. Напрямки подальших досліджень включають розробку методологій для аналізу економічної ефективності впровадження ШІ та дослідження його впливу на клієнтську лояльність.

**Ключові слова**: цифрова трансформація, споживча лояльність, ефективність маркетингу, маркетингова стратегія, автомобільна галузь, конкурентоспроможність, клієнтський досвід, інновації.

**Problem statement.** The global automotive market is undergoing a significant transformation driven by technological advancements, shifting consumer expectations, and intensifying competition. From a traditional model with an emphasis on physical products, the industry is shifting to a customer-centric approach, where the key factor for success is the customer experience. In the era of digitalization and access to vast amounts of data, traditional marketing tools are becoming less effective. Consumers no longer respond to mass, impersonal

advertising messages. They expect brands to understand their needs, preferences and interaction mechanisms. The relevance of the study lies in the development and application of new approaches that not only attract but also retain customers.

Artificial intelligence (AI) is the technology that can change this situation. Its capabilities allow you to analyze Big Data, predict customer behavior and create unique, personalized offers. Thanks to AI, companies can not only sell cars or services, but also form a trusting emotional connection, which is the basis for long-term cooperation and loyalty. However, implementing AI in automotive marketing requires solving several problems, particularly related to the ethical aspects of using personal data, integrating new technologies into existing business processes, and making significant investments, all while requiring highly qualified personnel.

**Analysis of recent research and publications.** In modern scientific discourse, AI and personalization are considered key factors in transforming marketing, particularly in the complex automotive industry. Research in this area focuses on examining how new technologies alter traditional approaches to customer interaction and business process management.

Ukrainian and foreign scholars, in particular O. V. Popko and V. V. Filatov [1], emphasize that personalization has evolved beyond simple address by name, becoming a process of building deep and long-term relationships with clients, which is a critically crucial competitive advantage. K. Kasianenko [2] emphasizes that in the context of personalization, media image acquires special importance, which affects the perception of the brand and the formation of trust in the digital economy. In this context, N. I. Bolkvadze, O. S., Bratko, O. F. Mygal [3] consider the implementation of AI as a tool for modernization and increasing the competitiveness of enterprises, which enables the creation of more effective marketing campaigns. K. Shalender and N. Singh [4] emphasize the importance of the flexibility of marketing systems in the automotive industry, which allows you to respond to dynamic market changes quickly.

M. Hoffmann and F. Neukart [5] emphasize that AI tools are crucial for automating processes at all stages of the automotive product life cycle. T. R. Ismatullaev [6] further suggests that successful marketing depends on a deep understanding of customers. H. Pysanko's [7] study on the use of agile methodologies demonstrates how small companies can increase efficiency by adapting the practices of large technology giants. N. L. Rane et al. [8] demonstrate that AI significantly enhances customer satisfaction and loyalty, while C. R. Vaz et al. [9] note that the introduction of innovations in the sustainability sector occurs gradually due to high associated risks. S. Băbeanu's study [10] confirms that AI is an integral part of the industry transformation, allowing the transition from a product focus to a customer orientation. Additional possibilities for using AI, particularly in predictive maintenance, are analyzed by S. Yildirim et al. [11]. At the same time, Y. Rybalchenko [12] notes that the lack of unified strategies is a serious obstacle to the effective implementation of AI in business processes, which is also relevant for complex AI systems. S. T. K. Jan, V. Ishakian, and V. Muthusamy [13] point out a significant challenge: the problem of trust in AI models due to their lack of transparency. H. M. Heyn, K. M. Habibullah, E. Knauss, J. Horkoff, M. Borg, A. Knauss and P. J. Li [14] emphasize that the main obstacles to the implementation of AI in the business sphere are problems with the use, storage and confidentiality of data, technological requirements for infrastructure, lack of qualified personnel and financial and legal aspects.

**Highlighting previously unresolved parts of the general problem.** Existing research on marketing personalization using AI in the automotive industry does not focus on several key aspects that are formed in the context of rapid digital transformation: the impact of AI on customer trust and loyalty is insufficiently studied. Despite the generally recognized effectiveness of personalized content, it is still unclear how automated algorithms and chatbots can create a «human» emotional connection and long-term trust, which is critically important when buying and servicing a car.

There is no unified methodology for assessing the economic efficiency of AI implementation. Existing approaches focus on increasing sales but do not sufficiently consider aspects such as optimizing marketing costs, mitigating reputational risks, and enhancing customer value in the long term.

**Formulation of the article's objectives (task statement).** The purpose of the article is to substantiate the importance of using AI in automotive marketing to personalize services and increase the competitiveness of enterprises.

To achieve this goal, the following tasks were defined:

1. To systematize the theoretical foundations of the concepts of «personalization in marketing», «flexibility of marketing systems» and «AI», as well as to explore their relationship in the context of the automotive business.
2. To identify the key advantages of using AI for personalization in the automotive business, in particular to increase loyalty, optimize marketing costs and improve customer experience.
3. To identify the main challenges and risks associated with the implementation of AI technologies in automotive marketing, in particular, data problems, financial and legal aspects.
4. To analyze practical cases of using AI in automotive marketing using the example of leading global companies.

**Presentation of the main material of the study.** In modern market conditions and information overload, the decisive factor for success is a brand's ability to interact with clients on an individual level. This paradigm shift is based on the concept of personalization, which in modern business is taking on new forms thanks to the use of AI.

AI enables not only the collection and analysis of large amounts of data about customers, but also the application of this knowledge to create personalized offers that cater to the needs and behavior of each consumer. In the context of the auto business, where the customer journey is complex and multi-stage, personalization,

driven by AI, becomes a key tool for increasing loyalty, optimizing sales, and creating a unique customer experience.

Moving from general conceptual principles to a more detailed consideration, it is necessary to determine the essence of personalization in marketing.

Personalized marketing is a modern approach that focuses on the individual needs of the client. Its key goal is not just to sell a product, but to create a deep and lasting connection between the brand and the consumer through the customization of communications and offers. This concept views personalization as a process of building long-term relationships based on the recognition of each customer's individuality [1]. Thus, personalization is a critically crucial competitive advantage that enables companies to differentiate themselves in the market and effectively enhance customer loyalty.

In the context of personalization, media image acquires particular importance, which is a key factor in shaping brand perception in the digital economy. It affects the psychological processes of forming trust and emotional connection with the consumer through the quality of visual content, personal representation and consistency of the brand story. Even small businesses can effectively utilize this tool, attracting and retaining a loyal audience, which is especially important in the automotive industry [2].

However, to achieve maximum efficiency and scale of personalization, brands are gradually moving from manual methods of image formation to the use of automated and high-tech solutions. It is in this context that AI becomes key.

According to research on the implementation of AI in business activities, modern AI tools are widely utilized in various areas. They enable you to analyze vast amounts of data, which forms the basis for personalization. The implementation of AI is viewed as a tool for modernization and enhancing the competitiveness of enterprises, enabling companies to create more targeted and effective marketing campaigns based on a deep understanding of their customers [3].

Given the need for a deep understanding of the customer for effective marketing, it becomes clear that success in the automotive business depends on companies' ability to adapt to market changes quickly. It is especially true for the automotive industry, which is one of the most complex and competitive industries.

A key feature of the automotive market is its dynamism and high competition. It requires companies not only to create a quality product, but also to have flexible marketing systems that allow brands to respond quickly to changes in consumer behavior, technological innovations and economic fluctuations. This approach assumes the presence of adaptive strategies that encompass both pricing, logistics, and sales channels. In this industry, where customer decisions are influenced by numerous factors (including price, technical characteristics, and emotional brand perception), flexible marketing is a necessary condition for success [4, p. 260].

It is worth noting that AI tools enable us to ensure this flexibility in the automotive industry, thanks to the automation of learning and optimization of processes at all stages of creating automotive products, from development and production to marketing, sales, and after-sales service [5].

One of the primary challenges in marketing for the automotive industry is the intense level of competition, which necessitates that companies continually monitor the market and their competitors. Before entering the market with its products, each automotive company must thoroughly analyze the industry's state to identify its strengths and weaknesses. Such analysis helps to obtain comprehensive information about customers' needs and desires, which, in turn, makes marketing strategies more effective [6, p. 2]. In general, successful marketing in the automotive business depends on a deep understanding of customers and the ability to adapt to dynamic market conditions quickly.

Therefore, the symbiosis of AI and marketing flexibility becomes not just an advantage but a prerequisite for survival and prosperity in the modern automotive business. The use of AI enables companies not only to respond quickly to changes but also to anticipate them, creating offers that exceed consumer expectations. This

ability to adapt, driven by technology, enables brands to transform the challenges associated with high competition and the complexity of customer requests into opportunities to build strong, trusting relationships and ensure long-term market success.

This integration of technology into marketing processes finds parallels in the field of management, where companies, especially small ones, can adapt the practices of large technology giants to improve the efficiency of their teams. For example, the implementation of agile methodologies, such as Scrum, Kanban, and DevOps, which are successfully used in leading global corporations, enables small companies to overcome the limitations associated with a lack of resources and opaque processes [7]. It contributes not only to increased productivity but also ensures high quality of work and employee motivation, which are key to competitiveness in the modern market. The application of AI in automotive marketing enables the enhancement of customer satisfaction and loyalty. AI is actively used to analyze customer data, enabling brands to predict customer behavior and provide personalized offers. It includes automated recommendation systems for selecting cars, spare parts or services that match individual preferences. In addition, chatbots and virtual assistants controlled by AI provide customers with real-time support, enhancing the overall interaction experience with the brand. AI tools also help automate routine tasks in customer relationship management (CRM) systems, optimizing audience acquisition and retention strategies [8, p. 261].

It is also worth noting that the automotive industry has its own specific requirements, necessitating companies to continually adapt to shifting market conditions and evolving environmental standards. For example, the introduction of innovations in the sustainable development sector is gradual, primarily, rather than revolutionary, due to the high risks and costs characteristic of this industry [9].

Therefore, to maintain competitiveness, brands must constantly improve their business processes. In this context, AI plays a critically important role in helping

collect and process data to inform decisions regarding logistics and, of course, marketing.

It is also worth noting that in the modern era, digital channels are used to introduce an individualized approach to customers, offering specific promotions tailored to their needs. It includes email campaigns, relevant social media ads, and mobile app notifications based on customer behavior. The goal is to create the most personalized experience for each consumer.

Therefore, using AI for personalization in the automotive industry provides many significant benefits that not only improve customer interactions but also contribute to the overall growth of business efficiency:

1. Increasing customer loyalty and trust. AI enables you to predict customer needs and provide personalized offers, which strengthens their sense of care from the brand and fosters long-term trust.

2. Increasing sales conversion. Analyzing customer data with AI helps to form targeted offers, which significantly increases the likelihood of purchase, turning general messages into specific, relevant offers.

3. Optimization of marketing costs. AI provides precise targeting, directing advertising efforts to the most interested audience, which minimizes costs and maximizes return on investment.

4. Creating a unique customer experience. AI creates a continuous and positive interaction experience. Chatbots, recommendation systems, and predictive analytics help at every stage, from initial contact to after-sales service.

Focusing on the benefits of using AI for personalization in the automotive business, it is worth noting that the modern automotive industry is in a transformational phase. It requires a transition from simple adaptation to a fundamental change, focusing not only on production but also on the customer experience. Successful companies use AI as a key tool for innovation and efficiency.

The use of AI is an integral part of this transformation, as it affects several key aspects [10], namely:

- Customer-centricity: AI enables companies to shift from a product-centric focus to creating deeply personalized customer experiences and innovative service models.

- Innovation: The exponential growth of AI is forcing companies to accelerate the implementation of technologies to remain competitive in the market, particularly in the field of autonomous driving.

- Efficiency: AI can optimize business processes, freeing up financial resources for investments in digital innovations and providing a more flexible company structure.

It is worth noting that the scope of AI in the automotive industry extends beyond traditional marketing, also encompassing the enhancement of after-sales service. The use of AI systems for predictive maintenance enables the analysis of data on a car's condition, operation, and repair history to predict future malfunctions accurately. It allows customers to be notified in advance of the need for service, which increases their satisfaction, reduces the risk of unexpected breakdowns and optimizes the work of service centers.

In addition, AI significantly enhances market analysis, enabling the detection and assessment of consumer trends, moods, and needs in real-time. The analysis of large amounts of unstructured data, such as reviews on social networks, comments on forums, and news, enables companies to obtain in-depth insights and quickly adapt their marketing strategies to dynamic market conditions [11].

Along with the undeniable advantages, the implementation of AI in the automotive industry is accompanied by significant challenges and drawbacks that require a careful strategic approach.

One of the key shortcomings is the lack of unified strategies and a clear understanding of the specifics of cooperation. It complicates the strategic implementation of new technologies. As noted in a study on influencer marketing for small businesses, the lack of such strategies is a serious obstacle to practical

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implementation, which is also relevant for complex AI systems in large companies [12].

A significant challenge that often hinders the widespread adoption of AI is the issue of trust. Many innovations in the field of AI have not been adopted by enterprises due to a lack of trust in the models, which is a critical aspect, especially in business processes such as automotive marketing [13]. It emphasizes the need not only to develop practical algorithms, but also to ensure their transparency and explainability.

The implementation of AI in the automotive industry faces some challenges, including:

1. Data issues: The automotive industry generates vast amounts of data, which are often unstructured and diverse. Collecting, consolidating, and cleaning them is a complex and resource-intensive task.

2. Privacy and security: Since AI systems process large amounts of sensitive information, there is a high risk of cyber threats, which requires the implementation of robust data protection mechanisms.

3. Infrastructure requirements: Effective operation of AI requires significant investments in high-performance computing systems, scalable data storage, and a robust network infrastructure.

4. Skill shortage: Successful integration of AI requires specialists with a high level of knowledge, which creates a shortage in the labor market and requires collaboration between data scientists, engineers, and industry experts.

5. Financial and legal aspects: the implementation of AI in the automotive business requires millions of investments in research and development, data collection and processing, equipment, programming, testing and further support. These significant costs are accompanied by high risks, including the lack of precise legal regulation and increased digital competition [14].

Thus, the implementation of AI in the automotive industry is one of the most critical trends in the industry. The analysis of this process reveals its differentiated

nature, encompassing both advantages and disadvantages. Based on the research conducted and to provide a balanced view of the outlined issues, the following is a comparative analysis of the key prospects and associated risks of implementing AI in the field of automotive marketing (table 1).

**Table 1**

The impact of AI on the automotive industry: prospects and threats

| Prospects | Risks and challenges |
|---|---|
| **Customer focus/ Lack of transparency and trust** | |
| AI provides personalization, predicting needs to form unique offers and increase loyalty | The complexity of AI models can undermine customer trust |
| **Innovation and adaptation/ Data problems** | |
| AI enables you to automate processes and respond quickly to market changes | Data comes from different sources in different formats, which makes it challenging to combine, use and implement innovations |
| **Cost-effectiveness/ Financial and legal aspects** | |
| AI optimizes marketing costs and increases sales conversion | The implementation of AI requires significant investments and faces uncertain legal regulation |
| **Improving after-sales service/ Difficulty of integration** | |
| AI is utilized for predictive maintenance, thereby enhancing customer satisfaction | Integrating AI systems with different data sources is technically challenging |
| **Improved market analysis/ Privacy risks** | |
| AI analyzes large data sets to identify market trends in real time | Collection and analysis of customer data create privacy and security challenges |

Source: systematized by the author based on analysis [10-14]

In practice, the outlined theoretical aspects are confirmed in the activities of leading automakers, which are already actively integrating AI into their business processes. Let's consider specific examples of AI use in global automotive brands, as well as cases of Ukrainian companies that also utilize these technologies.

For example, BMW is actively utilizing AI to enhance all aspects of its operations. AI systems are utilized to develop autonomous driving and predictive maintenance, significantly enhancing the safety and reliability of cars. In production, AI robots optimize processes to ensure the highest quality, and in the field of customer interaction, AI chatbots and personalization make the service more efficient and convenient [15].

Toyota uses AI to optimize the process of generating potential customers (leads) for test drive bookings. Using Kameleoon's AI Predictive Targeting technology, they analyze visitor behavior on the site to identify those most likely to convert [16].

Tesla uses AI as the main principle of operation throughout its ecosystem. AI is the heart of a fully autonomous driving system that learns from billions of kilometers of data collected from the entire fleet. In addition, AI is used in battery management, ensuring monitoring of their condition and optimizing charging, as well as in production processes, where it improves automation and quality control. Thanks to AI, Tesla cars can proactively analyze road conditions, thereby increasing safety and providing drivers with more accurate navigation data [17, p. 14-15].

In the context of technological development in Ukraine, it is worth noting that domestic companies are also actively implementing AI solutions, tailoring them to the local market's specific needs.

AI is also actively utilized in Ukraine's logistics sector. Thus, Nova Poshta actively utilizes AI tools to optimize its operations, particularly to analyze large volumes of data on pre-orders and predict the load on branches and sorting centers, enabling effective resource allocation and the avoidance of delays. In addition, AI is used to automate the sorting and routing processes of shipments, significantly increasing the speed and accuracy of delivery, as well as to analyze customer feedback to continuously improve the service [18, pp. 61-64]. The outlined solutions and mechanisms help Nova Poshta not only improve operational efficiency but also maintain a high level of customer satisfaction.

In addition to the above, it is worth emphasizing that AI is also used in the infrastructure sector. The latest technologies analyze data from cameras, GPS trackers, and road sensors to predict traffic jams in real time and optimize traffic flow. For example, bright traffic lights controlled by AI can dynamically adjust their cycles based on traffic intensity, reducing vehicle downtime and fuel consumption.

For example, the Ukrainian taxi service Uklon utilizes AI to optimize routes and distribute orders among drivers, significantly increasing the efficiency and speed of service. Additionally, several IT companies in Ukraine specialize in developing AI solutions for various industries, including the automotive sector. Their developments focus on creating systems for forecasting demand, analyzing customer behavior, and automating business processes, which helps domestic enterprises remain competitive and respond to global trends.

**Conclusions.** The study examines strategic approaches to leveraging AI to enhance the scalability and competitiveness of enterprises in the automotive industry. The results confirm that AI is not just an auxiliary tool, but a fundamental driver of the transition from traditional to personalized marketing, which is critically important for the automotive industry. Unlike legacy methods, AI enables you to analyze consumer behavioral data, optimize services, and create personalized offers that meet the needs of each client, which is especially valuable for businesses with high-value products.

The study found that the implementation of AI helps improve the efficiency of internal processes and strengthen brand trust, which is key to long-term customer relationships. At the same time, for the widespread implementation of AI in the automotive industry, it is necessary to take into account not only technical capabilities but also challenges related to ethical standards and trust.

Further research should focus on developing methodologies for quantifying the economic efficiency of integrating AI technologies into the marketing strategies of various segments of the automotive industry.

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