



The Use of Artificial Intelligence in Marketing Strategies: Automation, Personalization and Forecasting

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Abstract. The integration of Artificial Intelligence (AI) in marketing strategies is pivotal in the era of digital transformation, especially in automation, personalization, and forecasting. This research investigates the evolutionary role of AI in transitioning from traditional marketing frameworks to data-driven methodologies, thereby enhancing marketing efficiency and customer engagement. The increasing reliance on AI for strategic decision-making in marketing underscores the significance of this study. Employing a systematic literature review and thematic analysis, this research synthesizes data from an array of studies to thoroughly understand the impact of AI on marketing. The findings reveal that AI significantly streamlines marketing operations, fosters highly personalized marketing strategies, and enhances the accuracy of forecasting market trends and consumer behavior. However, this study also sheds light on the ethical and privacy concerns associated with the use of AI in marketing. Results point towards a significant transformation in marketing practices propelled by AI, marked by improvements in operational efficiency and customer interaction. Nevertheless, the study advocates the importance of addressing ethical considerations and privacy issues, emphasizing responsible AI deployment. The study offers a comprehensive perspective on the integration of AI in marketing and suggests insights into prospective trends. It recommends a balanced approach to leveraging AI's capabilities while upholding ethical standards. The research's practical implications aim to guide marketers and researchers towards responsible and effective AI adoption in marketing strategies, paving the way for a future where technology enhances marketing endeavours without compromising ethical integrity.

Keywords: AI-driven market personalization, Customer engagement techniques, Data ethics, Machine learning applications, Predictive analytics, Privacy management.

1 | INTRODUCTION

The integration of Artificial Intelligence (AI) in marketing signifies a transformative shift in business-customer interactions and market understanding. Traditionally, marketing strategies leaned heavily on human intuition and conventional statistical methods. The emergence of AI has revolutionized this scenario, enabling more sophisticated planning, execution, and evaluation of marketing efforts through machine learning algorithms, predictive analytics, and data-driven insights. Applications range from automating repetitive tasks and developing complex forecasting models to crafting personalized customer experiences. Recent studies have begun to shed light on the multifaceted role of AI in marketing. For instance, [Wamba-Taguimdje, Fosso Wamba, Kala Kamdjoug, and Tchatchouang Wanko \(2020\)](#) explored the efficiency of AI in automating customer service processes, revealing significant improvements in customer satisfaction and operational cost reductions. [Bag et al. \(2022\)](#) examined the impact of AI on consumer personalization, finding that AI-driven campaigns significantly enhance customer engagement and loyalty. However, these studies often focus on isolated aspects of AI in marketing, leaving a holistic understanding of its impact across automation, personalization, and forecasting relatively unexplored. Furthermore, [Keding \(2021\)](#) highlighted the predictive power of AI in market trend analysis, yet called for more research into its long-term strategic implications. Similarly, [Du and Xie \(2021\)](#) raised concerns about ethical considerations and consumer privacy in AI applications, suggesting a gap in comprehensive guidelines for responsible AI use in marketing.

The primary aim of this review is to bridge these gaps by offering an extensive analysis of AI's influence on marketing strategies, focusing particularly on automation, personalization, and forecasting. This study endeavors to provide a thorough understanding of AI's capabilities and limitations in these areas, examining how AI optimizes marketing operations, enables personalized marketing initiatives based on detailed consumer data, and enhances strategic decision-making through accurate predictions of consumer behavior and market trends. This evaluation is critical in light of the rapid evolution of the digital business landscape, where AI is a critical element of marketing technology's advancement. This paper seeks to deliver a pertinent analysis for academics, business leaders, and marketers, aiming to navigate the increasingly data-driven and competitive market landscape. By elucidating current trends, ethical dilemmas, and future directions, this review contributes to a deeper comprehension of the intersection between marketing and AI—a junction poised to redefine consumer engagement and commerce's future. Conclusively, the purpose of this study is to synthesize existing research, identify unaddressed issues within the domain of AI in marketing, and outline future research directions, thereby enriching the understanding and application of AI in evolving marketing paradigms.

2 | LITERATURE REVIEW

This section offers insight into the large corpus of research on artificial intelligence (AI) applications in marketing. This analysis starts by charting the historical development of AI in the marketing space, highlighting the shift from traditional techniques to sophisticated, data-driven strategies.

We then examine the current status of AI applications in marketing, focusing on automation, customization, and forecasting. The study thoroughly examines recent research and foundational studies that demonstrate the power of AI-driven customization to boost consumer engagement and loyalty as well as the deep potential of AI in predictive analytics and market forecasting. Furthermore, this section also addresses the burgeoning ethical and privacy issues arising from the use of AI in marketing, underscoring the critical discussions and debates in this context.

2.1 | Historical Development of AI in Marketing: A Detailed Exploration

Prior to the development of AI, human intuition and fundamental analytical techniques dominated the marketing industry (Venkatesan & Lecinski, 2021). Limited client data, frequently acquired through surveys and observational studies, served as the main basis for decision-making. Nations like the United States and portions of Europe employed traditional marketing techniques, placing a strong emphasis on broadcast media for mass marketing (Nielsen & Fletcher, 2020). A turning point in the history of marketing was the digital revolution, particularly the development of the internet and digital gadgets (Imamov & Semenikhina, 2021). During this time, the amount of client data has increased exponentially. Firms were suddenly privy to comprehensive consumer contacts, preferences, and behaviours. This surge was particularly notable in technologically advanced regions like Silicon Valley in the USA, where companies began to leverage digital footprints to better understand customer trends.

The introduction of AI technology marked the beginning of a real revolution in marketing. AI has unmatched power for analysing data and identifying patterns. The late 20th and early 21st centuries saw the rise in sophistication and accessibility for these technologies. With the advent of automated systems and chatbots, customer service was one of the first industries to use AI in marketing (Holzinger, Keiblinger, Holub, Zatloukal, & Müller, 2023). For instance, as early as the 2000s, Japanese businesses like SoftBank started experimenting with AI-powered customer support robots. The early uses of artificial intelligence were only the beginning. Marketing campaigns quickly began to incorporate AI in increasingly intricate ways. During this time, machine learning algorithms that could analyse massive datasets and find patterns and insights were introduced. For example, the US-based corporation Netflix transformed content suggestion through the use of machine learning algorithms, greatly improving user experience by personalizing (Habil, El-Deeb, & El-Bassiouny, 2023). Academic contributions have greatly influenced the understanding and application of artificial intelligence (AI) in marketing. Varian (2014) shed light on the potential use of big data for more precise marketing plans and economic modelling.

Similarly, big data may revolutionize marketing and business, and businesses could use data to gain a competitive edge (McAfee, Brynjolfsson, Davenport, Patil, & Barton, 2012). Moreover, digital data analysis technologies are essential for customising marketing tactics for e-commerce (Mykhalchenko & Tytarenko, 2023). Based on expert perspectives and comparative studies, it concluded that Google Analytics is the preferred option for smaller businesses, while the Glass Box is best for large firms. It stresses the need for choosing the right instrument and issues a warning about possible monetary losses brought on by misalignment. Sayed (2023) emphasises how important cutting-edge management tools are for surviving in the cutthroat corporate environment of today. It highlights the critical role that digitization plays and looks at how contemporary businesses may use business intelligence technologies to boost resource efficiency and spur innovation. It highlights how digital tactics may be revolutionary in promoting corporate growth and preserving competitive advantage in ever-changing markets. Global adoption of AI technologies in marketing occurred as they developed. Nations like South Korea, renowned for its technical prowess, have adopted AI to enhance a range of marketing functions, from marketing analysis to consumer engagement. AI has also been gradually adopted in underdeveloped countries, particularly in fields like digital advertising and e-commerce. The story of AI's historical evolution in marketing is one of constant innovation and tactical adjustment. AI has significantly changed marketing techniques all throughout the world, from the early days of simple data analysis to the present day of deep learning and predictive analytics (Hutsaliuk, Koval, Tsimoshynska, Koval, & Skyba, 2020). This evolution has been supported and driven by both technological advancements and insightful academic research, leading to a marketing ecosystem that is increasingly data-driven, personalized, and efficient.

2.2 | Current State of AI in Marketing: A Focus on Automation and Personalization

AI-driven automation in modern marketing marks a dramatic improvement in efficacy and efficiency (Alloui & Mourdi, 2023). Operations have been simplified, and human error has decreased because of the automation of key marketing activities, such as customer relationship management (CRM) and content delivery (Buttle & Maklan, 2019). AI systems, for example, can now monitor and improve social media posts, email marketing campaigns, and even digital advertising placements in real time (Nair & Gupta, 2021). This development has proven especially helpful in industries like e-commerce and online services, where it is essential to react quickly to customer behaviour. Dudnik et al. (2020) aim to advance Smart Home systems by enhancing and developing new techniques and technologies. Their research introduces an innovative home network monitoring system that is organized into subsystems for the control of electrical and electromechanical devices. They also propose a groundbreaking method for measuring the distance between wireless sensors, aimed at identifying emergency situations. Furthermore, they present an algorithm that enables the operation of sensor devices in areas where direct line of sight is not possible. These contributions are pivotal for improving operational efficiency and emergency response capabilities in residential settings, significantly pushing forward the field of Smart Home technology.

Perhaps the area of customization is where AI has the greatest influence on marketing today. Currently available AI systems are capable of analysing enormous volumes of consumer data, including social media interactions, past purchases, and browsing and purchasing patterns (De Bruyn, Viswanathan, Beh, Brock, & Von Wangenheim, 2020). This study enables the sending of highly tailored marketing messages and product suggestions. Online retail is a classic example of this since AI-driven suggestions have greatly improved sales and customer engagement. AI has transformed marketing targeting beyond customization. Businesses may more successfully identify and connect with particular audience segments by employing complex algorithms. Programmatic advertising's use of AI is evidence of this capacity. Artificial intelligence (AI) algorithms are used to buy ad space automatically, targeting consumers based on behaviour and preferences in addition to standard demographics (Chen, Xie, Dong, & Wang, 2019).

2.3 | AI in Forecasting: Navigating Market Trends and Predictive Analytics

AI's incorporation into market forecasting has transformed predictive analytics, making it a vital component of contemporary marketing tactics. Artificial intelligence (AI) algorithms provide previously unheard-of accuracy in forecasting future consumer preferences and market behaviours by utilizing historical data and current industry patterns (Campbell, Sands, Ferraro, Tsao, & Mavrommatis, 2020). This AI feature enables proactive strategy modifications and well-informed decision-making by allowing marketers to not only react to but also predict changes in the market.

The prediction of consumer behaviour is one of the most important areas in which artificial intelligence is used in forecasting. Artificial intelligence (AI) systems are capable of analyzing data from a variety of sources, such as social media, website interactions, and purchase histories, in order to spot patterns and trends that aren't always obvious (Shah & Shah, 2023). One innovative study uses panel data from 212 enterprises across many nations and industries to evaluate the effect of e-business on the growth of entrepreneurship across different sectors during the COVID-19 pandemic (Verbivska et al., 2022). Their results show that e-business platforms were essential to keeping businesses operating throughout the pandemic; 58 percent of respondents reported higher online revenue, particularly in the commerce, IT (InformationTechnology), and pharmaceutical industries. Improved consumer communication networks showed a favourable correlation with the effectiveness of e-business. Additionally, as demonstrated by return on equity and return on assets measures, equity financing and efficient liquidity management emerged as critical components supporting economic growth.

There is a critical role for digital marketing tactics, especially when applied within social media platforms to advertise products and services (Yevseytseva, Lyulchak, Semenda, Yarvis, & Ponomarenko, 2022). It highlights the significance of external variables in influencing marketing strategies and emphasises the critical role that digital marketing plays in building consumer loyalty and trust. Academic research envisions digital marketing as a method that leverages digital platforms to address consumer demands. It emphasizes the importance of conducting preliminary marketing audits with digital technologies and provides steps for creating a digital marketing plan. The research emphasises how important it is for firms to give priority to consumer preferences in the age of ubiquitous internet commerce in order to build a devoted clientele in the face of intense competition online. There is current transition of economic growth towards a new phase characterized by digital transformation (Petrova, Niyazbekova, Kuznetsova, Sarbassova, & Baymukhametova, 2022). The findings of their study emphasise the strategic significance of digital transformation for industry and government, and they also provide a conceptually clear distinction between automation, digitalization, and digital transformation. A key component of market forecasting is machine learning, a type of artificial intelligence. These algorithms can process large volumes of data, enabling them to learn and enhance their predictions over time. It is possible to train machine learning models to predict future changes in customer behaviour, market needs, and even possible interruptions to the supply chain (Akbari & Do, 2021).

It is clear that a variety of businesses are using AI for market forecasting. Retail behemoths like Amazon and Walmart use AI to predict customer demand, thereby enhancing their supply chains and inventory management (Weber & Schütte, 2019). AI is used in the financial industry to forecast market trends and direct investment plans. Additionally, AI's predictive analytics are vital in predicting future trends and customer preferences in industries like entertainment and fashion. PMSs have changed in the face of rapid digitization, mostly because of the COVID-19 pandemic. Digital technology adoption makes it easier to streamline personnel management procedures, which increases employee mobility and flexibility in decision-making (Gurzhii, Gurman, Leskova, Tyagunova, & Lubetska, 2022).

Digital platforms make project monitoring, training programmes, and management meetings easier to access and more comfortable. Principles such as flexible employee development, alignment with business objectives, stakeholder integration, increased motivation, and considering staff as an investment in their own growth serve as a roadmap for the digitization of human management (Bresciani, Ferraris, Romano, & Santoro, 2021). Additionally, Kovalchuk, Kobets, and Zaburmekha (2019) report a study that aims to create a mathematical and economic model for the mutual alignment of people management and marketing strategies. This study presents a thorough method for developing marketing plans that are in line with people management concepts, using the mechanical engineering industry in Ukraine as an example. The model's effectiveness is demonstrated by practical validation, which produces observable financial gains and streamlines monitoring procedures by optimising information flows inside businesses.

The use of AI in marketing efforts by printing firms is a striking illustration of how this technology may be customised for certain sectors. Printing businesses are now using AI to obtain a competitive edge and satisfy the changing needs of their clientele. Historically, they relied on a blend of B2B and B2C marketing techniques (Foltean & Van Bruggen, 2022). Customer segmentation and customization are major areas where artificial intelligence is transforming marketing for printing firms. These businesses may now analyse client data more efficiently by seeing trends in order preferences and printing requirements, thanks to AI-driven analytics (Marr, 2019). They are able to more precisely customise their product offers and marketing messaging as a result. An AI system may, for example, recognise a segment of the consumer base that regularly purchases large-format prints and target them with tailored marketing campaigns that highlight new materials and printing technologies that align with their interests or provide exclusive discounts.

AI is also essential for maximising operational effectiveness in marketing campaigns. This may entail employing AI algorithms to determine the optimal times to post and the most engaging material for printing firms, as well as automating email campaigns and social media marketing (Kapoor & Kapoor, 2021). In addition to streamlining marketing procedures, this automation frees up resources that might be better used in other company departments. Furthermore, AI-powered predictive analytics offers a wide range of uses for predicting printing industry trends. Using market data, AI may assist printing enterprises in anticipating changes in printing patterns, such as the growing popularity of specific printing processes or the growing need for sustainable materials. Empowered by this data, businesses may make necessary modifications to their inventory, create new products, and coordinate their marketing plans to take advantage of developing market prospects. Nevertheless, there are certain difficulties in integrating AI into printing firms' marketing campaigns. Data quality is critical, as skewed or erroneous data may result in unsuccessful marketing campaigns (Kumar, 2023). These businesses also have to deal with the moral ramifications of collecting consumer data, guaranteeing privacy and openness in its usage.

2.4 | Ethical Considerations and Accuracy Challenges

Even if AI is revolutionising market forecasting, there are still certain difficulties. Concerns about the ethical ramifications of exploiting customer data are among the main ones. Ensuring data privacy and ethical usage is critical. Furthermore, unanticipated market factors or biases in the training data may have an impact on how accurate AI forecasts are (Chopra & Sharma, 2021). These challenges necessitate the cautious and appropriate application of AI to market forecasting. Moreover, trust plays a crucial role in e-commerce transactions (Akimov, Karpa, Parkhomenko-Kutsevil, Kupriichuk, & Omarov, 2021). They recognise that trust is inherently linked to risk and that it must be adjusted continuously based on validation from experience. Additionally, there exists an intricate relationship between the function of trust in the digital economy (Shah, Serna, & Delgado, 2023).

While using AI in marketing has many advantages, like increased productivity and customised client experiences, it also raises serious ethical and privacy issues. The use of personal data in AI processes is the main problem. Sensitive customer data must be gathered, examined, and stored, as AI systems need enormous volumes of data to operate efficiently. Important concerns concerning data protection and customer privacy are brought up

by this approach. The extent to which personal data is exploited and shared in AI-driven marketing techniques is one of the main worries. As AI's capacity for processing data grows, there is a chance that invasive data practises could arise, raising the possibility of illegal surveillance and data breaches. This risk is exacerbated by the fact that consumers are often unaware of how their data is being used. The lack of transparency in AI algorithms further complicates the issue, leaving consumers in the dark about the extent of data collection and analysis.

An important ethical concern with AI systems is their openness. Artificial intelligence (AI) is widely used in marketing to provide tailored content and advertisements, which has raised worries about the manipulation of customer behaviour based on insights given by algorithms. In her research, Zuboff (2023) examines the ramifications of this emerging data economy. She contends that large digital companies' monetization of personal data has given rise to a surveillance-based kind of capitalism, frequently at the price of human privacy. An additional topic of discussion in the field of ethical AI is the accountability of algorithmic decision-making. AI algorithms used in marketing may have a big influence on the decisions and perceptions of consumers. In addressing this matter, Diakopoulos (2016) emphasises how important it is for algorithms to be responsible and transparent. This means ensuring that AI systems in marketing are not only effective but also fair and unbiased.

Finding a balance between protecting consumer rights and utilising technical innovation is key to navigating the ethical and privacy issues in AI-driven marketing. This entails putting in place strong data security protocols, guaranteeing AI algorithm openness, and upholding moral principles when using data. In this context, regulatory frameworks that establish standards for data privacy and consumer rights — such as the General Data Protection Regulation (GDPR) of the European Union — play a critical role. Sanetra-Pólgrabi (2022) examines the philosophical underpinnings of management strategies in Poland's public administration sector. It is a blend of classical and innovative methodological approaches, it advocates for a balance between traditional norms and innovative paradigms. The research highlights priority vectors of development, emphasizing democracy, rule of law, pragmatism, and innovation. By aligning with European standards while preserving national authenticity, it posits a holistic paradigm for societal development rooted in humanistic values. As AI continues to redefine the marketing landscape, addressing its ethical and privacy implications is imperative. Ensuring responsible AI practices that respect consumer privacy and promote transparency is not just a regulatory requirement but also a moral obligation for companies. As we move forward, the challenge lies in harnessing the power of AI in marketing while maintaining an unwavering commitment to ethical standards and consumer rights.

3 | METHODOLOGY

To conduct a comprehensive and systematic review of the literature, a structured search of multiple academic databases was undertaken. The databases included Google Scholar, PubMed, Institute of Electrical and Electronics Engineers (IEEE) Xplore, and Journal Storage (JSTOR). We selected these platforms for their extensive repository of academic papers, articles, and journals, which span a wide range of disciplines such as marketing, computer science, and data ethics. The literature search was guided by a combination of *keywords and phrases* to ensure comprehensive coverage of the topic. These included “Artificial Intelligence in Marketing,” “AI and Consumer Behavior,” “Marketing Automation,” “Personalization in Marketing,” “Predictive Analytics in Marketing,” “AI-driven Forecasting,” “Ethical Concerns in AI Marketing,” and “Data Privacy in Digital Marketing.” We used Boolean operators (AND, OR) to refine the search results.

3.1 | Selection Criteria

We developed a comprehensive set of criteria for the literature evaluation to ensure academic rigor and relevance. The primary focus of the inclusion criteria was on studies that were presented at academic conferences or peer-reviewed publications, as these venues go through a rigorous evaluation process and are representative of high-caliber research. Acknowledging the fast progression of AI technologies, the evaluation concentrated on publications released in the past five years to guarantee that the data and conclusions are up to date and accurately represent the most recent developments in the area. To keep a tight emphasis on the most relevant and significant applications of AI in marketing, special consideration was given to papers that focused on the use of AI in marketing, especially those that examined its role in automation, customization, and forecasting. Furthermore, we included studies addressing ethical and privacy concerns related to AI in marketing to provide a comprehensive view of the field, encompassing both its technological ethical dimensions.

However, in order to preserve the study's academic credibility, the exclusion criteria were designed to weed out grey literature and papers that had not undergone peer review. This exclusion is essential to guaranteeing the validity and credibility of the included research from a scientific standpoint. Furthermore, the evaluation purposefully excluded articles that focused on AI applications beyond the marketing field. This selection ensured that all included research directly contributed to a detailed knowledge of AI's function in marketing, maintaining the review's specificity. The careful selection of sources ensures that the evaluation focuses on the latest advancements and ethical concerns related to AI-enhanced marketing methods, while also maintaining academic rigor and relevance.

3.2 | Data Extraction and Synthesis

We performed data extraction once we identified relevant articles based on the criteria. This involved a detailed review of each selected study, focusing on key findings, and drawing conclusions. From each study, we extracted the following data: Study objectives and background, AI technologies and techniques examined, and key findings related to AI in marketing automation, personalization, and forecasting. The synthesis of extracted data was performed through a thematic analysis approach. This involved categorizing the data into themes such as “AI-driven Personalization Techniques,” “Impact of AI on Marketing Forecasting,” and “Ethical and Privacy Challenges in AI-Driven Marketing.” We then analyze each theme to uncover overreaching patterns, trends, and insights relevant to the research question. The process also involved cross-referencing findings to identify areas of consensus and divergence among different studies. This systematic methodology ensured a comprehensive and unbiased review of the current literature on AI's role in marketing, providing a solid foundation for the analysis presented in the review article.

4 | RESULTS

We group significant findings from the systematic literature study and data extraction method into three main themes: forecasting, customization tactics, and AI in marketing automation. A thorough grasp of the influence of AI on various marketing-related factors has been made possible by the merging of data from several studies. Research constantly demonstrates how artificial intelligence has greatly simplified marketing processes. AI has improved productivity in a number of sectors, including targeted advertising, consumer segmentation, and automated content curation. AI-

driven technologies have cut down on the amount of time needed for campaign analysis. AI-Driven chatbots have revolutionized the way marketing uses customer support (Campbell et al., 2020). AI has changed the way that consumer data is utilised for forecasting and customization, in addition to automating and optimising a number of marketing operations (Chintalapati & Pandey, 2022). Although there are many advantages in terms of productivity, customer involvement, and forecast precision, the research also raises concerns about potential moral problems, especially with regard to consumer privacy. While artificial intelligence (AI) serves as a powerful tool for marketers, its applications necessitates adherence to ethical principles and responsible usage.

Table 1 demonstrates significant improvements in operational efficiency post-AI implementation in marketing processes. The reduction in campaign analysis time indicates a significant increase in the efficiency of processing and interpreting marketing data (Goic, Rojas, & Saavedra, 2021).

Table 1: Impact of AI on marketing operational efficiency.

Metric	Pre-AI implementation	Post-AI implementation	% Improvement
Campaign analysis time	10 hours	7 hours	30%
Customer response time	12 hours	1 hour	91.67%
ROI on marketing campaign	15%	20%	33.33%

Source: Author's own development deduced from literature.

AI's ability to rapidly analyze large datasets means marketing teams can make faster, data-driven decisions, allowing for more agile responses to market trends. The dramatic decrease in customer response time highlights AI's role in enhancing customer service (Díaz Herrera, 2021). This improvement is likely due to the deployment of AI-driven chatbots and automated response systems, which enable real-time interaction with customers and resolve queries more quickly. The increase in ROI suggests that AI implementation makes marketing campaigns more effective and profitable (Abrokwah-Larbi & Awuku-Larbi, 2023; Salkovska, Batraga, Kaibe, & Kellerte, 2023). This improvement can be attributed to AI's precision in targeting, optimizing ad spending, and personalizing content, leading to higher conversion rates and customer engagement.

Building upon the significant advancements facilitated by AI in marketing, real-world examples further illustrate the tangible impact of these technologies. For example, Starbucks' use of AI to personalize customer experiences through their mobile app showcases how data-driven insights can enhance customer engagement and loyalty. By analyzing customer preferences and purchase histories, Starbucks offers personalized recommendations and discounts, leading to increased customer satisfaction and sales. This strategy has not only improved the efficiency of their marketing efforts but also significantly boosted their ROI (Return on Investment) by driving up repeat purchases and customer loyalty. Similarly, the deployment of AI-driven chatbots by companies like Sephora demonstrates an improvement in customer service efficiency. Sephora's chatbot assists customers in choosing products, providing personalized beauty advice, and answering queries instantly, thereby streamlining the shopping experience and reducing the need for human intervention. This not only improves response times but also ensures customers receive tailored assistance, enhancing their overall satisfaction and engagement with the brand. In the context of marketing campaign optimization, Netflix's use of AI to personalize content recommendations is a prime example of improving operational efficiency and ROI. By analyzing viewing patterns and preferences, Netflix delivers highly targeted content recommendations, keeping users engaged and reducing churn rates. This personalized approach has been pivotal in Netflix's ability to maintain a strong subscriber base and achieve a high ROI on its content investment. These successes exemplify the transformative potential of AI in redefining marketing practices for the digital era.

Table 2 indicates that after AI integration, consumer engagement rates across a range of customization tactics significantly rise. The rise in engagement rates in email marketing efforts demonstrates the efficacy of AI in creating tailored content (Kshetri, Dwivedi, Davenport, & Panteli, 2023).

Table 2: AI in personalization – customer engagement metrics.

Personalization strategy	Pre-AI engagement rate	Post-AI engagement rate	% Increase
Email marketing	10%	15%	50%
Targeted advertising	5%	12%	140%
Product recommendation	8%	18%	125%

Source: Author's own development deduced from literature.

AI systems are able to examine the unique tastes and behaviours of each consumer, allowing marketers to craft messages that are more likely to be understood by the intended audience. The increase in targeted advertising engagement rates is indicative of AI's proficiency in accurate audience segmentation and ad customization (Gao, Wang, Xie, Hu, & Hu, 2023). This suggests that advertisements driven by AI are more pertinent to the audience, resulting in increased interaction and click-through rates. The increase in product recommendation engagement rates highlights how accurate artificial intelligence is at comprehending and forecasting consumer preferences (Ziakos & Vlachopoulou, 2023). E-commerce platforms employ AI-driven recommendation algorithms that greatly improve user experience by making product recommendations that precisely match the preferences of specific customers.

The effectiveness of AI in tailoring content to an individual's unique preferences is further exemplified by leading industry practices. For instance, Amazon's implementation of AI for product recommendations showcases an exemplary model of leveraging technology to boost consumer engagement. By analyzing vast amounts of data on customer behavior, purchase history, and search queries, Amazon's algorithms are able to predict customer preferences with remarkable accuracy, thereby presenting highly relevant product suggestions. This not only enhances the shopping experience for consumers but also significantly increases the likelihood of purchases, as evidenced by Amazon's consistent growth in sales and customer loyalty. Similarly, Spotify's use of AI to personalize music playlists demonstrates the profound impact of tailored content on engagement rates. By understanding each user's listening habits and preferences, Spotify creates "Discover Weekly" playlists, which introduce users to new music tailored to their tastes every week. This personalized approach has been instrumental in increasing user engagement and subscription rates, showcasing the power of AI in creating deeply personalized experiences that resonate with consumers. Furthermore, Nike's adoption of AI for personalized marketing campaigns illustrates the effectiveness of AI in targeted advertising. Nike specifically designs customized marketing messages and product recommendations for individual consumers by utilizing AI to analyze consumer data. This strategy not only improves engagement rates but also strengthens the brand's relationship with its customers, leading to higher customer retention and increased sales. By enabling a deeper understanding of consumer preferences and behaviors, AI facilitates the creation of highly personalized and relevant marketing efforts that significantly enhance consumer engagement.

Table 3 shows how using AI techniques can improve market forecasting accuracy over more conventional methods. The increase in market trend forecast accuracy demonstrates AI's greater capacity to analyse market data and spot new trends (Tang et al., 2022).

Table 3: Accuracy of AI in market forecasting.

Forecasting aspect	Traditional methods accuracy	AI methods accuracy	% Improvement
Market trend prediction	70%	85%	21.43%
Consumer demand	60%	90%	50%
Sales forecasting	65%	88%	35.38%

Source: Author's own development deduced from literature.

This precision is essential for firms to foresee market changes and adjust their strategy accordingly. The increase in consumer demand forecasting accuracy is a glaring example of AI's potent predictive analytics. This suggests that companies can more accurately predict changes in demand, maximising their efforts in marketing and inventory control (Prasad & Ghosal, 2022). AI's ability to predict sales outcomes is demonstrated by the rise in forecasting accuracy for sales. Businesses are able to set realistic sales objectives, allocate resources more effectively, and plan with greater accuracy because of this precision (Sohrabortpour, Oghazi, Toorajipour, & Nazarpour, 2021). When taken as a whole, these tables illustrate how AI is revolutionising several areas of marketing. Artificial intelligence (AI) shows notable advances over conventional techniques in a number of areas, including operational efficiency, personalised client interaction, and accurate market predictions.

The use of AI in customer relationship management has revolutionised the way that companies communicate with their clientele. AI-powered chatbots and virtual assistants, which offer immediate customer care and assistance, are becoming widespread on several websites (Libai et al., 2020). These AI systems may learn from encounters, making them more adept to responding to intricate client inquiries and providing relevant information. AI's ability to handle a high volume of requests without human involvement improves customer experience while also enabling organizations to run more effectively. Polishchuk, Dovgan, Gromova, Dovgan, and Hnydyuk (2022) examine how businesses incorporate marketing tools into management procedures to manage innovation and investment activities. It draws attention to how crucial marketing concepts are to the transformation of conventional management practices. The suggested framework distinguishes two types of marketing tools: those that support management and those that facilitate execution. They evaluate these tools' effects on investment and innovation projects using the "desirability function" technique, putting particular emphasis on long-term strategic focus, innovation dissemination, and consumer comprehension as top concerns. This all-encompassing method seeks to improve overall performance and optimize company strategy in dynamic market situations. The present status of AI in marketing is characterised by a strong emphasis on customization and a shift towards more complex automation. These innovations have expanded the realm of marketing possibilities and enabled companies to engage with clients more effectively and meaningfully. We expect the scope and impact of AI in marketing to expand further as technology continues to evolve thereby continuously reshaping the landscape of digital marketing strategies.

Although there are obvious advantages to AI in marketing, the data also points to possible privacy and ethical issues. The management of customer data and the openness of AI algorithms are the main areas of concern. The need to make sure that consumer privacy is protected and that AI algorithms are applied in an ethical and transparent way is growing as AI systems become increasingly integrated into marketing strategies. The main theme that emerged from the data analysis is the need to strike a balance between ethical use and the potential of artificial intelligence in marketing. Maintaining moral principles, safeguarding customer privacy, and ensuring transparency in AI-powered decision-making are crucial. In order to overcome these obstacles and responsibly realise AI's full potential, marketers and developers must work closely together as the technology develops.

5 | DISCUSSION

The findings of this study on the integration of Artificial Intelligence (AI) in marketing strategies offer a nuanced view that complements and, in some instances, diverges from existing research. For instance, the observed improvements in operational efficiency and customer response times through AI align with Haleem, Javaid, Qadri, Singh, and Suman (2022) who underscored AI's capacity to enhance marketing agility. This study extends their findings by demonstrating not just agility but also the dynamic market presence that AI-enabled companies can achieve, suggesting a deeper integration of AI in responding to real-time market and consumer data. Contrastingly, while Rathore (2020) emphasized the heightened customer engagement resulting from AI-driven personalization, these findings further pinpoint the significance of AI in elevating customer lifetime value and brand loyalty. This study offers a granular analysis of how personalized marketing efforts, driven by AI, do not merely engage but actively contribute to a sustainable business model by enhancing customer retention and satisfaction.

This research further validates the precision in marketing forecasting as discussed by Chintalapati and Pandey (2022). However, this study brings additional insights into how such precision offers a competitive edge, particularly through strategic decisions in inventory management and marketing campaign execution. This nuanced understanding highlights the strategic dimension of AI's predictive analytics beyond its operational benefits. This research also engages with the ethical considerations highlighted by Shah and Shah (2023), particularly around data privacy and algorithmic bias. While agreeing on the importance of these concerns, this study diverges in its exploration of the practical challenges and solutions to implementing AI ethically in marketing strategies. It sheds light on the complexities of navigating data protection laws and the proactive steps needed to mitigate biases inherent in AI technologies.

The comparison with Akyüz and Mavnacıoğlu (2021) reveals a shared acknowledgment of the efficiency and effectiveness of AI-driven versus traditional marketing methods. Yet, this study uniquely addresses the evolving nature of AI, emphasizing the need for continuous adaptation and learning in marketing strategies to remain relevant and ethical. In addressing the limitations and challenges associated with AI in marketing, identified by Dwivedi et al. (2021) these findings underscore the need for a balanced approach. This includes developing robust data governance structures and adhering to ethical standards, which are critical for sustaining customer trust and leveraging AI's full potential responsibly.

6 | CONCLUSIONS

A thorough analysis of the use of artificial intelligence (AI) in marketing tactics has shown several important findings and consequences. The use of AI in marketing has completely changed operational effectiveness, especially when it comes to job automation, campaign data analysis, and improving customer relations. Engagement has risen as a result of its capacity to tailor marketing strategies based on consumer data analysis, signalling the beginning of a new era in customer-centric marketing. Furthermore, AI makes a significant contribution to predictive analytics in marketing as it gives companies precise predictions about customer behaviour and market trends, enabling them to make more strategic and informed decisions.

However, this advancement comes with its own set of challenges, primarily ethical and privacy concerns. The use of AI in processing and analyzing personal data raises significant issues related to consumer privacy and data protection, highlighting the need for transparency and responsible use of AI in marketing practices. As we delve into the future, several trends are likely to shape the trajectory of AI in marketing. Notable among these is the advancement in Natural Language Processing (NLP), which will further the effectiveness of AI in consumer interactions. The integration of AI with technologies like Augmented Reality (AR) and Virtual Reality (VR) is anticipated to create more immersive and interactive marketing experiences. Moreover, there will be a growing emphasis on developing ethical AI systems that respect consumer privacy and avoid inherent biases.

In light of these insights and trends, certain recommendations emerge for both marketers and researchers. We advised marketers to cautiously integrate AI into their strategies, mindful of its capabilities and limitations. While openness and ethical issues should be given top priority, a special emphasis should be placed on using AI to personalise content and improve user experiences. It's also critical to keep up with the most recent advancements in AI and to maintain flexibility when changing tactics. The focus of researchers needs to be on resolving the privacy and ethical issues raised by AI in marketing. It is crucial to create frameworks and rules for the appropriate usage of AI. Furthermore, investigating the wider, interdisciplinary effects of AI in marketing might offer a more thorough comprehension of its function. It's also critical that AI technology and its marketing applications remain at the forefront of innovation, especially in fields like natural language processing, predictive analytics, and consumer behaviour modelling.

Unquestionably, artificial intelligence (AI) is changing the marketing landscape by providing unparalleled prospects for efficiency, personalization, and forecast accuracy. However, this change is not without its hurdles, particularly with regard to ethical and privacy concerns. Researchers and marketers alike must appropriately address these concerns as AI technology advances. It's critical to make sure that the advantages of AI in marketing are realised while lowering risks and preserving customer confidence. AI in marketing has a bright future, but it also requires a well-rounded strategy that balances responsible and ethical business practises with cutting-edge technology.

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REFERENCES

- Abrokwah-Larbi, K., & Awuku-Larbi, Y. (2023). The impact of artificial intelligence in marketing on the performance of business organizations: Evidence from SMEs in an emerging economy. *Journal of Entrepreneurship in Emerging Economies*. <https://doi.org/10.1108/jeee-07-2022-0207>
- Akbari, M., & Do, T. N. A. (2021). A systematic review of machine learning in logistics and supply chain management: Current trends and future directions. *Benchmarking: An International Journal*, 28(10), 2977-3005. <https://doi.org/10.1108/bij-10-2020-0514>
- Akimov, O., Karpa, M., Parkhomenko-Kutsevil, O., Kupriichuk, V., & Omarov, A. (2021). Entrepreneurship education of the formation of the e-commerce managers professional qualities. *International Journal of Entrepreneurship*, 25(7), 1-8.
- Akyüz, A., & Mavnacıoğlu, K. (2021). Marketing and financial services in the age of artificial intelligence. *Financial Strategies in Competitive Markets: Multidimensional Approaches to Financial Policies for Local Companies*, 327-340. https://doi.org/10.1007/978-3-030-68612-3_23
- Allioui, H., & Mourdi, Y. (2023). Unleashing the potential of AI: Investigating cutting-edge technologies that are transforming businesses. *International Journal of Computer Engineering and Data Science*, 3(2), 1-12.
- Bag, S., Srivastava, G., Bashir, M. M. A., Kumari, S., Giannakis, M., & Chowdhury, A. H. (2022). Journey of customers in this digital era: Understanding the role of artificial intelligence technologies in user engagement and conversion. *Benchmarking: An International Journal*, 29(7), 2074-2098. <https://doi.org/10.1108/bij-07-2021-0415>
- Bresciani, S., Ferraris, A., Romano, M., & Santoro, G. (2021). Human resource management and digitalisation. In *Digital transformation management for agile organizations: A compass to sail the digital world* (pp. 117-138). Bingley: Emerald Publishing Limited.
- Buttle, F., & Maklan, S. (2019). *Customer relationship management: Concepts and technologies*. London: Routledge. <https://doi.org/10.4324/9781351016551>
- Campbell, C., Sands, S., Ferraro, C., Tsao, H.-Y. J., & Mavrommatis, A. (2020). From data to action: How marketers can leverage AI. *Business Horizons*, 63(2), 227-243. <https://doi.org/10.1016/j.bushor.2019.12.002>
- Chen, G., Xie, P., Dong, J., & Wang, T. (2019). Understanding programmatic creative: The role of AI. *Journal of Advertising*, 48(4), 347-355. <https://doi.org/10.1080/00913367.2019.1654421>
- Chintalapati, S., & Pandey, S. K. (2022). Artificial intelligence in marketing: A systematic literature review. *International Journal of Market Research*, 64(1), 38-68. <https://doi.org/10.1177/14707853211018428>
- Chopra, R., & Sharma, G. D. (2021). Application of artificial intelligence in stock market forecasting: A critique, review, and research agenda. *Journal of Risk and Financial Management*, 14(11), 1-34. <https://doi.org/10.3390/jrfm14110526>
- De Bruyn, A., Viswanathan, V., Beh, Y. S., Brock, J. K.-U., & Von Wangenheim, F. (2020). Artificial intelligence and marketing: Pitfalls and opportunities. *Journal of Interactive Marketing*, 51(1), 91-105. <https://doi.org/10.1016/j.intmar.2020.04.007>

- Diakopoulos, N. (2016). Accountability in algorithmic decision making. *Communications of the ACM*, 59(2), 56-62. <https://doi.org/10.1145/2844110>
- Díaz Herrera, J. C. (2021). *Conversational AI assistant using artificial neural networks: Implementation of a contextual chatbot framework in a point-of-sale system*. Doctoral Dissertation.
- Du, S., & Xie, C. (2021). Paradoxes of artificial intelligence in consumer markets: Ethical challenges and opportunities. *Journal of Business Research*, 129, 961-974. <https://doi.org/10.1016/j.jbusres.2020.08.024>
- Dudnik, A., Kuzmych, L., Trush, O., Domkiv, T., Leshchenko, O., & Vyshnivskiy, V. (2020). *Smart home technology network construction method and device interaction organization concept*. Paper presented at the 2020 IEEE 2nd International Conference on System Analysis & Intelligent Computing (SAIC), Kyiv, Ukraine, 2020.
- Dwivedi, Y. K., Hughes, L., Ismagilova, E., Aarts, G., Coombs, C., Crick, T., . . . Eirug, A. (2021). Artificial intelligence (AI): Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy. *International Journal of Information Management*, 57, 101994.
- Foltean, F. S., & Van Bruggen, G. H. (2022). Digital technologies, marketing agility, and marketing management support systems: How to remain competitive in changing markets. In *Organizational innovation in the digital age* (pp. 1-38). Cham: Springer International Publishing.
- Gao, B., Wang, Y., Xie, H., Hu, Y., & Hu, Y. (2023). Artificial intelligence in advertising: Advancements, challenges, and ethical considerations in targeting, personalization, content creation, and ad optimization. *SAGE Open*, 13(4), 21582440231210759. <https://doi.org/10.1177/21582440231210759>
- Goic, M., Rojas, A., & Saavedra, I. (2021). The effectiveness of triggered email marketing in addressing browse abandonments. *Journal of Interactive Marketing*, 55(1), 118-145. <https://doi.org/10.1016/j.intmar.2021.02.002>
- Gurzhi, N., Gurman, O., Leskova, S., Tyagunova, Z., & Lubetska, M. (2022). Analysis of the modern personnel management system under the influence of digitalization of business processes: Experience of international companies, Ukrainian realities. *Financial and Credit Activity Problems of Theory and Practice*, 1(42), 484-492.
- Habil, S., El-Deeb, S., & El-Bassiouny, N. (2023). AI-based recommendation systems: The ultimate solution for market prediction and targeting. In *Palgrave handbook of interactive marketing* (pp. 683-704). Cham: Springer International Publishing.
- Haleem, A., Javaid, M., Qadri, M. A., Singh, R. P., & Suman, R. (2022). Artificial intelligence (AI) applications for marketing: A literature-based study. *International Journal of Intelligent Networks*, 3, 119-132. <https://doi.org/10.1016/j.ijin.2022.08.005>
- Holzinger, A., Keiblinger, K., Holub, P., Zatloukal, K., & Müller, H. (2023). AI for life: Trends in artificial intelligence for biotechnology. *New Biotechnology*, 74, 16-24. <https://doi.org/10.1016/j.nbt.2023.02.001>
- Hutsaliuk, O., Koval, V., Tsimoshynska, O., Koval, M., & Skyba, H. (2020). Risk management of forming enterprises integration corporate strategy. *TEM Journal: Technology, Education, Management, Informatics*, 9(4), 1514-1523. <https://doi.org/10.18421/tem94-26>
- Imamov, M., & Semenikhina, N. (2021). The impact of the digital revolution on the global economy. *Linguistics and Culture Review*, 5(S4), 968-987. <https://doi.org/10.21744/lingcure.v5ns4.1775>
- Kapoor, R., & Kapoor, K. (2021). The transition from traditional to digital marketing: A study of the evolution of e-marketing in the Indian hotel industry. *Worldwide Hospitality and Tourism Themes*, 13(2), 199-213. <https://doi.org/10.1108/whatt-10-2020-0124>
- Keding, C. (2021). Understanding the interplay of artificial intelligence and strategic management: Four decades of research in review. *Management Review Quarterly*, 71(1), 91-134. <https://doi.org/10.1007/s11301-020-00181-x>
- Kovalchuk, S., Kobets, D., & Ziburmekha, Y. M. (2019). Modeling the choice of strategies of marketing management of enterprise personnel. *Natsional'nyi Hirnychiy Universytet. Naukovi Visnyk*(2), 163-173. <https://doi.org/10.29202/nvngu/2019-2/17>
- Kshetri, N., Dwivedi, Y. K., Davenport, T. H., & Panteli, N. (2023). Generative artificial intelligence in marketing: Applications, opportunities, challenges, and research agenda. *International Journal of Information Management*, 75, 102716. <https://doi.org/10.1016/j.ijinfomgt.2023.102716>
- Kumar, D. (2023). The use of artificial intelligence in data analysis and business intelligence. In *AI and emotional intelligence for modern business management* (pp. 311-320). IGI Global.
- Libai, B., Bart, Y., Gensler, S., Hofacker, C. F., Kaplan, A., Kösterheinrich, K., & Kroll, E. B. (2020). Brave new world? On AI and the management of customer relationships. *Journal of Interactive Marketing*, 51(1), 44-56. <https://doi.org/10.1016/j.intmar.2020.04.002>
- Marr, B. (2019). *Artificial intelligence in practice: How 50 successful companies used AI and machine learning to solve problems*. New York, NY: John Wiley & Sons.
- McAfee, A., Brynjolfsson, E., Davenport, T. H., Patil, D., & Barton, D. (2012). Big data: The management revolution. *Harvard Business Review*, 90(10), 60-68.
- Mykhalchenko, H., & Tytarenko, M. (2023). Data analytics and personalized marketing strategies in E-commerce platforms. *Futurity Economics & Law*, 3(3), 114-138. <https://doi.org/10.57125/fel.2023.09.25.07>
- Nair, K., & Gupta, R. (2021). Application of AI technology in modern digital marketing environment. *World Journal of Entrepreneurship, Management and Sustainable Development*, 17(3), 318-328. <https://doi.org/10.1108/wjemsd-08-2020-0099>
- Nielsen, R., & Fletcher, R. (2020). Democratic creative destruction? The effect of a changing media landscape on democracy. *Social Media and Democracy: The State of the Field, Prospects for Reform*, 139-162. <https://doi.org/10.1017/9781108890960.008>
- Petrova, L. A., Niyazbekova, S. U., Kuznetsova, T. E., Sarbassova, S. B., & Baymukhametova, K. I. (2022). Digital Transformation as a strategic direction business development in modern conditions. *Lecture Notes in Networks and Systems*, 245, 183-192.
- Polishchuk, I., Dovgan, Y., Gromova, O., Dovgan, L., & Hnydyuk, I. (2022). Instruments of marketing management of innovation and investment activity. *Financial and Credit Activity Problems of Theory and Practice*, 2(43), 228-237.
- Prasad, B., & Ghosal, I. (2022). Forecasting buying intention through artificial neural network: An algorithmic solution on direct-to-consumer brands. *FIIB Business Review*, 11(4), 405-421. <https://doi.org/10.1177/23197145211046126>
- Rathore, B. (2020). Personalization and profits: The impact of ai on targeted digital marketing. *International Journal of Transcontinental Discoveries*, 7(1), 1-14.
- Salkovska, J., Batraga, A., Kaibe, L., & Kellerte, K. (2023). *Use of artificial intelligence in the digital marketing strategy of Latvian companies*. Paper presented at the International Congress on Information and Communication Technology, Singapore: Springer Nature Singapore.
- Sanetra-Półgrabi, S. (2022). The philosophy of the newest development strategy in the public management in Poland: Analysis of concepts and results of implementation. *Futurity Philosophy*, 1(4), 4-15. <https://doi.org/10.57125/fp.2022.12.30.01>

- Sayed, R. (2023). Strategic integration of business analytics in innovation management: framework for sustainable growth. *Futurity of Social Sciences*, 1(1), 51-66. <https://doi.org/10.57125/fs.2023.03.20.04>
- Shah, S. S., Serna, R.-J., & Delgado, O. S. (2023). Modelling the influence of social learning on responsible consumption through directed graphs. *Electronic Research Archive*, 31(9), 5161-5206. <https://doi.org/10.3934/era.2023264>
- Shah, S. S., & Shah, T. (2023). Responsible consumption choices and individual values: An algebraic interactive approach. *Mind & Society*, 22(1), 1-32. <https://doi.org/10.1007/s11299-023-00294-2>
- Sohrabpour, V., Oghazi, P., Toorajipour, R., & Nazarpour, A. (2021). Export sales forecasting using artificial intelligence. *Technological Forecasting and Social Change*, 163, 120480. <https://doi.org/10.1016/j.techfore.2020.120480>
- Tang, L., Li, J., Du, H., Li, L., Wu, J., & Wang, S. (2022). Big data in forecasting research: A literature review. *Big Data Research*, 27, 100289. <https://doi.org/10.1016/j.bdr.2021.100289>
- Varian, H. R. (2014). Big data: New tricks for econometrics. *Journal of Economic Perspectives*, 28(2), 3-28. <https://doi.org/10.1257/jep.28.2.3>
- Venkatesan, R., & Lecinski, J. (2021). *The AI marketing canvas: A five-stage road map to implementing artificial intelligence in marketing*. Palo Alto: Stanford University Press.
- Verbivska, L., Al-Ababneh, H., Korbutiak, A., Bondar, O., Panchenko, A., & Ippolitova, I. (2022). The impact of e-business on entrepreneurship development in the context of COVID-19. *WSEAS Transactions on Business and Economics*, 19, 1824-1838. <https://doi.org/10.37394/23207.2022.19.164>
- Wamba-Taguimdje, S.-L., Fosso Wamba, S., Kala Kamdjoug, J. R., & Tchatchouang Wanko, C. E. (2020). Influence of artificial intelligence (AI) on firm performance: The business value of AI-based transformation projects. *Business Process Management Journal*, 26(7), 1893-1924. <https://doi.org/10.1108/bpmj-10-2019-0411>
- Weber, F. D., & Schütte, R. (2019). State-of-the-art and adoption of artificial intelligence in retailing. *Digital Policy, Regulation and Governance*, 21(3), 264-279. <https://doi.org/10.1108/dprg-09-2018-0050>
- Yevseytseva, O., Lyulchak, Z., Semenda, O., Yarvis, M., & Ponomarenko, I. (2022). Digital marketing as a modern tool for promoting goods and services in social networks. *Financial and Credit Activity Problems of Theory and Practice*, 1(42), 361-370.
- Ziakis, C., & Vlachopoulou, M. (2023). Artificial intelligence in digital marketing: Insights from a comprehensive review. *Information*, 14(12), 664. <https://doi.org/10.3390/info14120664>
- Zuboff, S. (2023). The age of surveillance capitalism. In *Social theory re-wired* (pp. 203-213). New York, NY: Routledge.