

The Impact of Artificial Intelligence on Consumer Behavior in e-Commerce

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Abstract

Artificial Intelligence (AI) significantly influences consumer behavior in e-Commerce by enabling personalized experiences. Through data analysis and machine learning, AI systems provide tailored product recommendations, dynamic pricing, and real-time customer support via chatbots. These enhancements improve user satisfaction, increase engagement, and drive purchase decisions, reshaping how consumers interact with online platforms. In this context, this article aims to examine the impact of AI implementation in e-Commerce on consumer behavior, with a particular focus on how it influences customer satisfaction and decision-making process. A quantitative approach is adopted in this study through the use of a structured consumer survey. The results of the research conducted among 355 online consumers in Romania indicated that the integration of AI-based tools (such as chatbots, personalized marketing, and product recommendations) within e-Commerce platforms has a positive impact on the online shopping experience and influences the purchase decision-making process, with younger consumers, in particular, considering these tools essential to their digital buying behavior. Therefore, this research offers insights into the evolving relationship between technological advancements and consumer behavior in the online marketplace.

Keywords

Artificial Intelligence (AI), e-Commerce, consumer behavior, chatbots, personalized marketing, AI-based product recommendations.

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Introduction

Artificial Intelligence (AI) has become an extremely common concept nowadays and it implies the ability of a machine to learn from experience, adapt to new information inputs and perform tasks like humans (Duan, Edwards and Dwivedi, 2019; Țală et al., 2024). AI implications has covered many economic fields, including e-Commerce. Implementing AI has increased the performance of businesses because of the resource-saving and the automation of the whole process. These kinds of technological upgrades are not only meant to automate processes, but also to enhance digital experiences by enabling personalization for the customer - a step that helps satisfy consumer needs (Pillarisetty and Mishra, 2022). Thus, the exploration of AI and its profound impact on consumer behaviour within the realm of e-Commerce has garnered considerable attention in recent years. This reflects the rapid and significant advancement of technology and its seamless integration into consumer interactions and experiences. The perspective of e-Commerce is continuously evolving and developing based on advancement in technology just to match the consumers' expectations. e-Commerce applications have become essential tools in everyday life, offering user-friendly interfaces and personalized experiences, allowing AI to analyze data and provide the best tailored recommendations (He, Du and Pu, 2025).

The impact of AI in e-Commerce can be observed through chatbots that assist customers in real time by simulating human interaction, personalized marketing offers, product recommendations based on social media marketing, and notifications based on last-minute personalized deals. These kinds of actions can help

predicting the consumers preferences. Research shows that there is a continuous increase in the use of chat interfaces (Adam, Wessel and Benlian, 2021; Shawar and Atwell, 2007). Also, AI tools help build relationships between the platform and consumers, significantly influencing decision-making by providing personalized, real-time recommendations and enhancing the overall shopping experience (Hariguna and Ruangkanjanases, 2024). Once the chatbot collects user data, consumers can be continuously notified about personalized deals - an important step in transforming occasional buyers into loyal customers.

This article aims to investigate the impact of AI on consumer behaviour in e-Commerce, using a quantitative survey to identify the AI applications that influence consumers' decision-making process and the online shopping process. The paper is divided into five main sections. After this introductory section, the literature review follows, focusing on AI applications in e-commerce and their impact on the online experience and the purchasing decision-making process. The next section presents the research methodology, followed by the analysis and interpretation of the main findings of the study. Finally, the key conclusions are presented.

1. Review of scientific literature

The landscape of digital shopping has transformed dramatically, creating new opportunities and challenges for both businesses and customers. Lopes, Silva and Massano-Cardoso (2024) highlighted the necessity for consumers to feel comfortable with AI technologies, emphasizing that understanding consumer attitudes is crucial for fostering responsible growth in AI applications. As Zhang and Xiong (2024) explain, AI-driven processes - such as personalized recommendations and sales forecasting - have transformative effects that significantly improve the buying and selling experience for both consumers and retailers. Braga (2020) further delves into the consumer decision-making process, illustrating how AI facilitates quicker access to information and aids companies in anticipating consumer needs. The findings of this research suggest that while AI adoption is still in its infancy, its potential to influence consumer behaviour is profound.

The role of chatbots in enhancing customer satisfaction is explored by Klein (2021), who illustrates how conversational agents can refine offers and streamline the purchasing process. This study points the growing relevance of chatbot technology in e-Commerce and indicates that consumer perceptions of value and trust are important in mediating the relationship between AI services and purchasing intentions. Sharma M. et al. (2024) contribute to this perspective by examining the attributes of digital assistants. Their findings emphasize the importance of enhancing digital assistant attributes to foster engagement and improve customer experiences.

Also, Ameen et al. (2021) and Chen and Prentice (2024) discuss the broader implications of AI in consumer interactions, noting the increasing reliance on digital technologies and the potential for AI to reshape customer experiences. Authors highlight the need for businesses to adapt to these changes, emphasizing that effective AI implementation can lead to improved customer satisfaction.

The systematic review by Peruchini, da Silva and Teixeira (2024) further explores AI's capabilities in understanding customer preferences and enabling rapid customization of offerings, reinforcing the potential benefits of AI in enhancing consumer experiences. Finally, Adulyasak et al. (2024) contextualize these developments within the post-COVID landscape, illustrating how AI has become an integral part of retail operations and decision-making processes, despite existing limitations.

Together, these studies provide a comprehensive overview of the multifaceted impact of AI on consumer behaviour in e-Commerce, revealing both opportunities and challenges that online businesses must navigate in this evolving landscape.

2. Research methodology

As indicated throughout this article, aspects related to the use of AI in e-Commerce have been addressed in the literature. However, we have not identified other comprehensive studies targeting online consumers from Romania. To address these gaps, this article aims to present the results of a research conducted among Romanian online consumers.

The primary objectives of our research were as follows:

- identify the key applications of AI in e-Commerce that influence online consumer behavior, as perceived by respondents;

- assess the extent of the influence and the positive impact of AI applications on the behavior of Romanian online consumers;
- evaluate the extent to which online consumers consider AI-based product recommendations in their decision-making process.

This research was based on a standard methodology that is applied in questionnaire-based surveys. The method chosen for data collection was the self-administered questionnaire, which was developed on the Google Forms platform and was distributed as a link by e-mail.

The sample used in the survey was 355 respondents. Given the limited sample size, this online questionnaire-based survey is exploratory research. Data collection was carried out between March and April 2025.

It is important to note that the findings presented in this paper are part of a broader research examining the impact of AI on the behavior of Romanian consumers.

3. Results and discussions

The integration of AI in e-Commerce has introduced transformative changes in how businesses interact with customers and deliver value. While previous studies have extensively explored AI's capabilities, this research aims to delve into its tangible impact on customer behavior, particularly focusing on satisfaction and decision-making processes. By examining the role of chatbots and personalized marketing strategies, this study provides insights into how AI tools influence consumer perceptions and interactions in the digital marketplace. This survey aimed to capture consumer perceptions, experiences, and concerns regarding AI-driven tools such as chatbots or personalized recommendations. The survey delved into various aspects of AI's influence. Additionally, it assessed which AI tools had the most significant impact on consumer experiences.

The socio-demographic distribution of respondents ensured a diverse representation in terms of age, gender, and educational background, enabling a comprehensive analysis of consumer behavior (Table no. 1).

Table no. 1. The socio-demographic profile of the respondents

Variable		Percentage
Gender	Female	61.9%
	Male	37.4%
	Prefer not to stay	0.6%
Age	18 – 25	65.8%
	26 – 35	21.9%
	36 – 45	7.1%
	46 – 55	2.6%
	55+	2.6%
Education	High School	39.4%
	Bachelor's degree	41.3%
	Master's degree	16.1%
	Doctorate or higher	3.2%

Source: Authors' own research

The survey findings reveal that AI tools significantly influence consumer behavior in e-Commerce, with younger consumers (18–25 years, 65.8%) being the most engaged. Women (61.9% of respondents) are also prominent users, reflecting their active role in online shopping. Most of the people (41.3%) who have completed this survey have graduated with a bachelor's degree.

As shown the Figure no. 1, the most influential tool is special offers or discounts, which covers 37.4% of users. Following that, virtual chatbots for assistance influence 21.9% of users. Personalized marketing offers affect 18.7%, while product recommendations based on social media marketing impact 16.8%. Lastly, getting notified based on last-minute deals has the least impact, affecting only 5.2% of users. This data highlights that personalized and promotional AI tools significantly shape user behavior in e-Commerce.

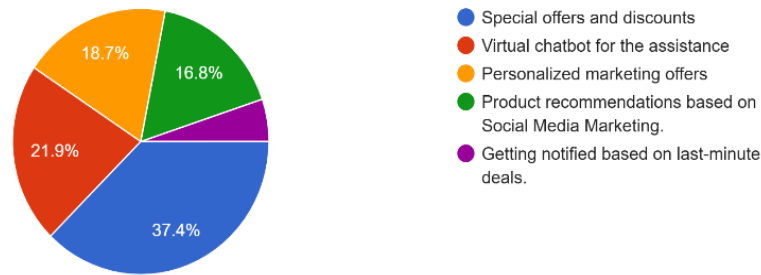


Figure no. 1. The primary AI applications influencing online consumer behavior
Source: Authors' own research

Figure no. 2 shows that 40.6% of respondents receive AI-based product recommendations but find them uninteresting, while 27.1% find them very useful. A smaller portion, 17.4%, do not receive recommendations but wish they did, and 14.8% neither receive nor desire them. Overall, opinions on AI recommendations are mixed, with nearly equal shares valuing, dismissing, or desiring them.

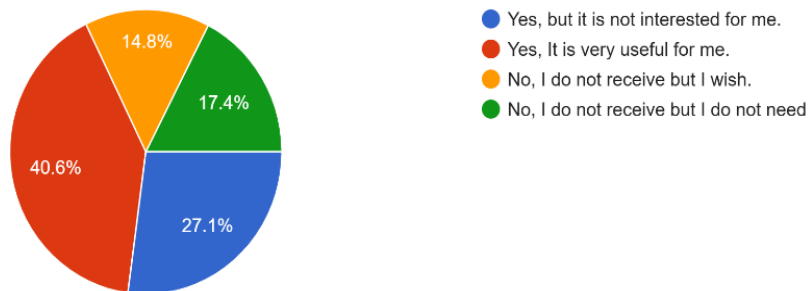


Figure no. 2. Receiving AI-based product recommendations
Source: Authors' own research

Figure no. 3 shows how 355 respondents rated the impact of AI on their purchasing decisions, from 1 (Very poor) to 5 (Excellent). The majority (49.7%) rated it as "Fair," while 21.3% found it "Good." Only 2.6% considered the impact "Excellent," and a small percentage (10.3%) rated it as "Very poor." Overall, AI has a moderate influence, with most finding it adequate but not exceptional.

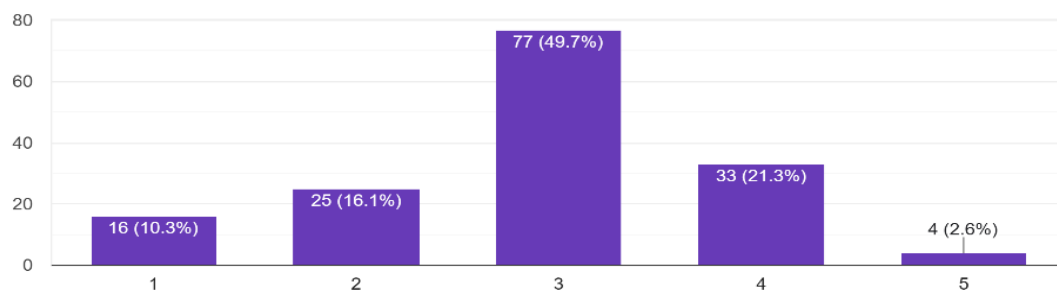


Figure no. 3. The degree to which AI tools influences online buying decisions
Source: Authors' own research

Figure no. 4 illustrates the results regarding whether AI has positively impacted their use of e-Commerce platforms as consumers. Based on responses, the data shows that 71.6% of respondents believe AI has had a positive impact, while 28.4% do not perceive any positive influence. The chart highlights a clear majority favoring the positive effects of AI in enhancing their e-Commerce experiences, indicating that AI tools are generally well-received by most consumers.

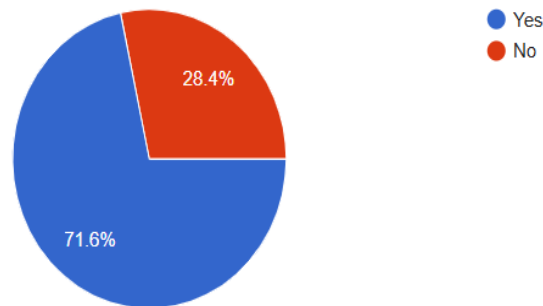


Figure no. 4. Assessing whether AI tools have a positive impact on customers of e-Commerce platforms

Source: Authors' own research

The survey conducted on the impact of AI tools in e-Commerce platforms aligns with findings from existing academic research, while also offering unique insights. For instance, the prominence of special offers and discounts as the most impactful AI tool is consistent with Saurabh and Raghav's (2024) study, which highlights that personalized discounts significantly drive consumer engagement. Similarly, the positive perception of virtual chatbots for assistance mirrors Akdemir and Bulut's (2024) conclusion that chatbots enhance customer experience by providing real-time support. However, the survey uniquely identifies last-minute deal notifications as having minimal influence, a factor less emphasized in prior studies.

Regarding AI recommendations, the survey's finding that most of respondents find them "very useful" aligns with Yin, Qiu and Wang's (2025) observation that such recommendations are valued by online users. Yet, the notable 27.1% who desire but do not currently receive recommendations underscores an unmet demand. The survey's moderate rating of AI's impact on purchasing decisions (49.7% rate it as "Fair") resonates with Sharma S. et al. (2024) assertion that AI's influence is often subtle rather than transformative.

Finally, the overall positive perception of AI's impact is corroborated by Sulastris's (2023) study, which reports a similar perspective of consumers satisfied with AI in e-Commerce. However, the 28.4% who perceive no positive impact suggests areas for improvement. Additionally, the survey reveals that AI's ability to personalize marketing offers is a key driver of user satisfaction, a finding supported by recent industry trends. Furthermore, the data emphasizes that users value relevance and timeliness in AI-driven interactions, highlighting the need for more context-aware systems. It also shows that younger respondents are more likely to engage with AI tools, reflecting broader differences in technology adoption. Lastly, the results suggest that transparency in AI decision-making could enhance trust and adoption rates, a critical consideration for future implementations.

Conclusions

This study highlights the profound impact of AI on consumer behavior within the e-Commerce landscape. The integration of AI-driven tools, such as chatbots, personalized marketing, and special offers, has significantly enhanced the shopping experience by providing convenience, efficiency, and tailored interactions. Survey results demonstrate that most consumers embrace these tools as integral to their online shopping experiences. This indicates strong adaptability and engagement with AI technologies.

The findings reveal that special offers and discounts, as well as virtual chatbots, are the most influential AI features, reflecting consumer preferences for personalization and real-time assistance. However, tools like last-minute notifications require further refinement to meet consumer expectations and effectively drive engagement. The survey also underscores the importance of trust in AI systems, with 71.6% of respondents

reporting a positive experience, while 28.4% express concerns. These insights align with existing literature (Gonçalves et al., 2023) that emphasizes the need for ethical implementation and transparent practices to ensure consumer confidence and loyalty.

Obviously, our research has certain limitations, such as the predominance of respondents aged 18 to 25 and the small sample size. Additionally, many other aspects of AI usage in e-commerce can be explored from the perspective of customer experience.

Beyond enhancing convenience and satisfaction, AI poses challenges, particularly in addressing ethical concerns such as data security and potential manipulation through over-personalization. Businesses must strike a balance between innovation and responsibility, ensuring that AI-driven strategies are inclusive, fair, and secure. As AI continues to evolve, its role in shaping e-Commerce will depend on how effectively these challenges are managed.

In conclusion, AI has revolutionized e-Commerce by reshaping consumer interactions and creating new opportunities for businesses. Its ability to analyze data, predict preferences, and personalize offerings makes it a cornerstone of modern online shopping. However, the long-term success of AI in e-Commerce will require businesses to prioritize ethical considerations, continuously innovate their approaches, and address consumer concerns about trust and transparency. By doing so, they can harness AI's potential to build stronger, more sustainable relationships with their customers and further drive the growth of the digital marketplace.

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