

ARTIFICIAL INTELLIGENCE AS A CATALYST FOR CONSUMER BUYING BEHAVIOUR: AN EMPIRICAL INVESTIGATION OF AI-DRIVEN MARKETING TECHNOLOGIES

Geeta Rani¹, Anamika Sarao², Deepika³, Mohit Bhaker⁴

¹University Business School, Panjab University, Chandigarh.

Email: Geetakabir99@gmail.com

²University Business School, Panjab University, Chandigarh.

Email: Anamikasarao@gmail.com

³Deenbandhu Chhotu Ram University of Science and Technology (DCRUST).

Email: Deekohli97@gmail.com

⁴Chaudhary Devi Lal University, Sirsa.

Email: Mohitbhaker007@gmail.com

Abstract: Artificial Intelligence (AI) is changing the e-commerce sector by reshaping how consumers interact with online shopping platforms. Technologies like personalised advertising, recommendation systems, chatbots, and voice assistants create tailored shopping experiences that shape how consumers perceive and make purchases. This study examines how AI technologies affect consumer attitudes and, in turn, influence their buying behaviour in online shopping. This study adopts a quantitative research approach, utilising a descriptive and analytical research design. Primary data were collected from 250 Indian online shoppers through a well-structured questionnaire. A purposive-convenience sampling technique was used to select respondents with prior experience using AI-enabled features on e-commerce platforms. Data analysis was conducted using SPSS and SmartPLS. Descriptive statistics, reliability analysis, correlation analysis, regression analysis, and Structural Equation Modelling (SEM) were used to test the proposed relationships among the variables. The findings show that AI-enabled technologies strongly influence consumer attitudes toward AI in online shopping. Personalised advertising, recommendation systems, chatbots, and voice assistants positively affect consumers by enhancing personalisation, convenience, trust, and shopping efficiency. Additionally, consumer attitude toward AI was found to have a significant positive influence on consumer buying behaviour. The study highlights the importance of transparency, trust, and perceived usefulness in shaping positive consumer perceptions of AI technologies. This research contributes to the expanding literature on AI adoption in e-commerce and offers important insights for marketers and e-commerce firms intending to leverage AI-driven technologies to boost customer experiences strengthen consumer engagement, and impact purchasing behaviour.

Keywords: Artificial Intelligence, E-Commerce, Consumer Attitude, Consumer Buying Behaviour, Personalised Advertising, Recommendation Systems, Chatbots, Voice Assistants, Online Shopping.

1. INTRODUCTION TO ARTIFICIAL INTELLIGENCE

Artificial Intelligence (AI) represents one of the most major technological breakthroughs of the modern era. AI refers to the capacity of machines, computer systems, and software programs to perform tasks that typically require human intelligence, including learning, reasoning, decision-making, problem-solving, language understanding,



pattern recognition, and prediction. The term “Artificial Intelligence” was introduced by John McCarthy in 1956 at the Dartmouth Conference, where he defined AI as “the science and engineering of making intelligent machines.” Since then, AI has swiftly evolved and become a key driver across industries such as healthcare, banking, education, manufacturing, entertainment, e-commerce, and marketing.

The proliferation of the internet, smartphones, social media platforms, cloud computing, big data, and machine learning technologies has accelerated global AI adoption. In marketing, AI has transformed traditional business practices into intelligent, data-driven systems. Historically, companies relied on newspapers, television, radio, posters, and in-person sales efforts for advertising and customer communication, focusing on mass marketing and lacking personalisation. In contrast, contemporary consumers expect personalised experiences, immediate responses, relevant recommendations, and seamless digital engagements.

AI enables businesses to meet these expectations efficiently. Major global companies, including Google, Amazon, Netflix, Meta, and Microsoft, extensively utilise AI to increase customer engagement and business performance. In India, Affle is a leading AI-powered digital advertising company that helps businesses improve brand visibility across multiple internet platforms. As consumer engagement with AI-driven technologies becomes more prevalent during the shopping journey, understanding consumer attitudes toward AI is increasingly important for researchers and practitioners. Consumer attitudes toward AI can strongly influence the acceptance, adoption, and effectiveness of AI technologies in e-commerce.

In this context, the present study investigates the impact of AI technologies—including personalised advertising, recommendation systems, chatbots, and voice assistants—on consumer attitudes and buying behaviour among Indian online shoppers. The study attempts to provide insights into the role of AI in shaping consumer perceptions and decision-making within the fast-changing e-commerce environment.

2. REVIEW OF LITERATURE

2.1 ARTIFICIAL INTELLIGENCE IN E-COMMERCE

Artificial Intelligence (AI) has emerged as one of the most influential technologies transforming the e-commerce industry. AI refers to the ability of computer systems and machines to perform tasks that typically require human intelligence, such as learning, reasoning, decision-making, problem-solving, and understanding consumer preferences. Huang and Rust (2021) argued that Artificial Intelligence is transforming marketing functions through automating routine tasks, enhancing customer interactions, and delivering personalised experiences. They emphasised that AI enables firms to better understand consumer needs and boost customer satisfaction through data-driven decision-making. E-commerce platforms generate vast amounts of consumer data through online searches, browsing activities, purchase histories, product reviews, and social media interactions. Chatterjee et al. (2021) found that AI adoption in e-commerce strengthens operational efficiency, customer engagement, and personalisation. The study suggested that consumer acceptance of AI technologies depends on perceived usefulness, trust, and ease of interaction. AI technologies analyse this data to find patterns, predict consumer behaviour, and provide personalised recommendations. As a result, businesses can better understand customer needs and offer relevant products and services at the right time (M et al., 2026).

2.2 Personalised Advertising and Consumer Attitude

Personalised advertising refers to the practice of delivering customised promotional messages to consumers based on their demographic characteristics, browsing history, purchase behaviour, preferences, and online activities. Aguirre et al. (2015) argued that personalised advertising positively influences consumer attitudes when consumers perceive that the benefits of personalisation outweigh privacy fears. Their study revealed that customised advertisements can increase perceived usefulness and shopping convenience, leading to favourable consumer responses. However, excessive personalisation may raise worries about privacy and data security, potentially negatively altering consumer attitudes.

Boerman, Kruikemeier, and Zuiderveen Borgesius (2017) emphasised that transparency regarding data collection and advertisement personalisation plays an important role in shaping consumer attitudes. Consumers are more likely to develop positive attitudes toward personalised advertising when they understand how their information is being used and perceive the process as trustworthy.

According to Bleier and Eisenbeiss (2015), personalised advertisements increase advertisement effectiveness by providing relevant information that corresponds with consumer desires and preferences. When consumers perceive

advertisements as useful and relevant, they develop more positive attitudes toward both the advertisement and the brand. The authors found that personalisation increases consumer engagement and purchase intentions by reducing information overload and improving message relevance. Personalised advertising helps bridge the gap between the endless abyss of choices on offer and consumers' needs by presenting them with highly targeted suggestions that help them save time and effort, which in turn drives customer loyalty. Personalised advertising uses customer information such as preferences, buying behaviour, and demographics to help companies understand their customers better and create a personal connection with them. Overall, the literature suggests that personalised advertising positively influences consumer attitudes by enhancing relevance, usefulness, convenience, and engagement. However, the effectiveness of personalised advertising depends on consumers' perceptions of privacy, trust, and transparency in the use of their personal information.

2.3 Recommendation Systems and Consumer Attitude

Recommendation systems are AI tools that suggest products, services, or content based on what consumers like, their browsing history, purchase behaviour, and past interactions. They are now a key feature of e-commerce platforms like Amazon, Flipkart, Netflix, and YouTube, helping people find products that fit their interests and needs.

According to Ricci, Rokach, and Shapira (2015), recommendation systems assist consumers in navigating large amounts of information by providing personalised suggestions that reduce search effort and facilitate decision-making. By presenting relevant products, recommendation systems improve consumers' shopping experiences and contribute to more favourable attitudes toward online platforms. Xiao and Benbasat (2007) found that recommendation systems considerably influence consumer attitudes by improving perceived usefulness, trust, and confidence in online shopping decisions. Their study suggested that consumers are more likely to accept and rely on recommendation systems when they perceive recommendations as accurate, relevant, and trustworthy.

Research by Wang and Benbasat (2007) indicated that recommendation systems improve consumers' trust in online retailers by reducing uncertainty and providing personalised product suggestions. Increased trust positively affects consumer attitudes and encourages greater acceptance of AI-based technologies. A recent study on AI-based recommendation systems in e-commerce found that the accuracy of recommendations and system personalisation significantly influence consumers' purchase intentions. The study further reported that system personalisation was the strongest predictor of positive consumer responses toward recommendation systems. The results indicate that consumers value recommendations that match closely with their individual preferences and needs. (Chandra et al., 2025, pp. 271-289)

Overall, the literature suggests that recommendation systems positively influence consumer attitudes by improving personalisation, reducing search effort, increasing perceived usefulness, enhancing trust, and facilitating better purchase decisions. As a result, recommendation systems play a crucial role in shaping buyer perceptions and behaviour in the online shopping environment.

2.4 AI Chatbots and Consumer Attitude

AI chatbots are computer programs that simulate human conversations and offer automated help to consumers through text or voice. In e-commerce, chatbots are now essential for customer service. They help shoppers get product information, answer questions, track orders, and receive personalised recommendations. By giving instant and ongoing support, chatbots improve customer experiences and influence how consumers feel about online shopping platforms.

Artificial intelligence (AI) has had a considerable impact on various industries, and one prominent domain where its influence is clear is chatbot technology. Chatbots, computer programs designed to simulate human conversation, have improved markedly with advances in AI, becoming more sophisticated and intelligent. This research paper explores the current state of AI-powered chatbot technology, focusing on recent developments and leading innovations.

According to Adam, Wessel, and Benlian (2021), AI chatbots improve customer engagement by delivering immediate responses and personalised assistance. Consumers frequently perceive chatbots as useful tools that reduce waiting time and simplify the shopping process. When chatbot interactions are efficient and relevant, consumers tend to develop positive attitudes toward both the technology and the online retailer.

Pillai and Sivathanu (2020) found that AI-powered chatbots greatly improve customer engagement and contentment in digital commerce environments. Their study revealed that consumers favour the convenience,

accessibility, and responsiveness of chatbots, which contribute to favourable perceptions of AI technologies. Positive chatbot experiences increase consumers' willingness to interact with AI-driven systems during future shopping activities.

Araujo (2018) argued that customers often evaluate chatbots based on their capacity to imitate human-like interactions. Chatbots that communicate naturally and understand customer needs tend to elicit more positive attitudes than those that provide generic or inaccurate responses. Human-like conversational abilities strengthen user engagement and improve overall customer experiences.

Furthermore, chatbots help reduce consumers' search effort by providing instant recommendations, product comparisons, and purchase assistance. This convenience strengthens consumers' perceptions of usefulness, which is a key determinant of positive attitudes toward AI technologies. (The convenience of shopping via voice AI: Introducing AIDM, 2022) As online shopping becomes increasingly digitalised, AI chatbots play a critical role in influencing how consumers perceive and interact with e-commerce platforms.

Overall, the literature indicates that AI chatbots positively influence consumer attitudes by enhancing convenience, responsiveness, personalisation, and the quality of customer support. Positive interactions with chatbots increase consumers' acceptance of AI technologies and encourage greater engagement with online shopping platforms.

2.5 Voice Assistant and Consumer Attitude

Voice assistants are AI-powered Voice assistants are AI technologies that let users interact with digital devices using voice commands and natural language. Popular examples include Amazon Alexa, Google Assistant, Apple's Siri, and Microsoft Cortana. These tools have changed how people search for information, compare products, and shop online. In e-commerce, voice assistants offer hands-free and convenient shopping, which shapes how consumers view and feel about AI technologies. (2020), voice assistants enhance consumer experiences by offering convenience, speed, and ease of interaction. Consumers can search for products, receive recommendations, and complete transactions with simple voice commands, reducing the effort required for online shopping. This convenience contributes to positive attitudes toward voice-enabled technologies.

Kowalczyk (2018) suggested that voice assistants improve customer engagement by creating interactive and personalised shopping experiences. Using AI algorithms, voice assistants can understand consumer preferences, provide customised product recommendations, and assist with decision-making. These personalised interactions enhance consumers' perceptions of usefulness and satisfaction. Furthermore, voice assistants reduce the complexity of online shopping by enabling consumers to perform tasks without typing or navigating multiple web pages. This ease of use positively affects consumer attitudes and increases their willingness to adopt AI technologies. However, concerns about privacy, security, and data collection may affect consumer trust in and acceptance of voice-based systems.

Hoy (2018) emphasised that while voice assistants offer significant benefits in terms of accessibility and convenience, consumers' attitudes toward these technologies depend on their confidence in data protection and system reliability. Therefore, trust remains a critical factor in shaping positive consumer perceptions of voice assistants.

Overall, the literature suggests that voice assistants positively influence consumer attitudes by enhancing convenience, personalisation, efficiency, and ease of use. Consumers who perceive voice assistants as useful and trustworthy are more likely to develop favourable attitudes toward AI technologies and engage more actively in online shopping activities.

2.6 Research objective

1. To assess the impact of Artificial intelligence technologies, i.e. Personalised advertising, recommendation systems, AI chatbots and voice assistants, on consumer attitudes towards AI in online shopping.
2. To examine the relationship between consumer attitude towards AI and consumer behavior.

2.7 Conceptual Framework

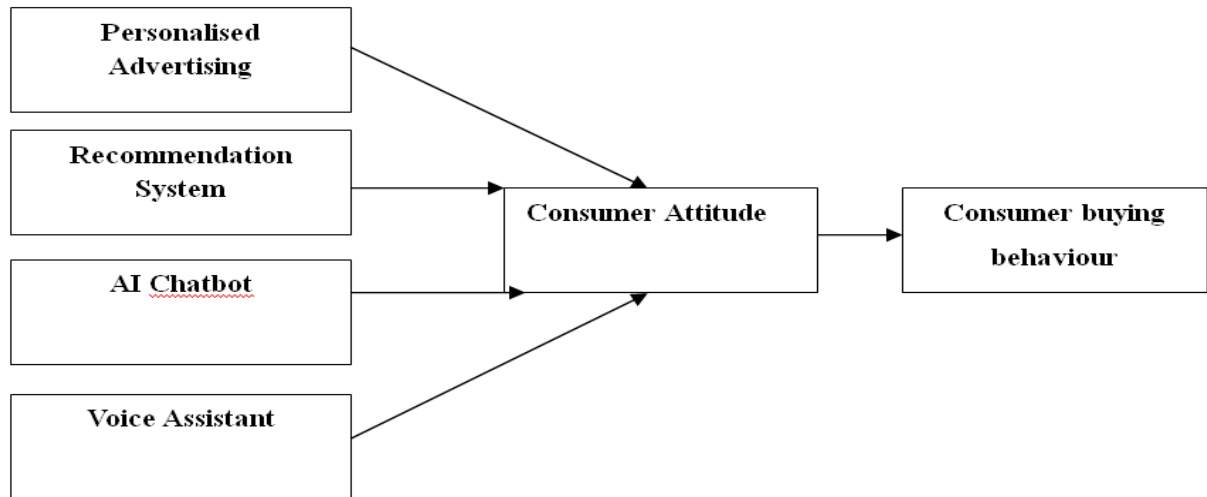


Figure 1: Conceptual model of the study

2.8 Hypotheses Development

- H1:** Personalised advertising has a significant impact on consumer attitude.
- H2:** AI-based recommendation systems have a significant impact on consumer attitude.
- H3:** AI chatbots have a significant impact on consumer attitude.
- H4:** Voice assistants have a significant impact on consumer attitude.
- H5:** Consumer attitude has a significant impact on consumer buying behaviour.

3. RESEARCH METHODOLOGY

3.1 RESEARCH DESIGN

This study employs a descriptive research design to investigate factors influencing online impulse buying. The primary objective is to identify the impact of personalised advertising, recommendation systems, AI chatbots, and voice assistants on consumer attitude, which shapes consumer buying behaviour. Descriptive research helps in providing a systematic and accurate understanding of the variables under investigation without manipulating them.

3.2 Sampling Technique

A purposive-convenience sampling technique was employed to select respondents based on their accessibility and experience with AI-enabled technologies in online shopping. The study targeted consumers who had interacted with AI-driven features such as personalised advertisements, recommendation systems, chatbots, and voice assistants on e-commerce platforms. To ensure relevant responses, participants were required to have made at least one online purchase within the past three months and have prior exposure to AI technologies while shopping online.

3.3 Sample Size

For data analysis, this study uses SmartPLS. The main objective of calculating the sample size is to determine the number of respondents required to detect a clinically relevant behavioural effect (Noordzij et al., 2010). Primary data were collected from 250 respondents residing in the Tri-city region comprising Chandigarh, Mohali, and Panchkula. The selected respondents included individuals who actively engage in online shopping and are familiar with digital purchasing platforms that use AI. Data collection was conducted through a structured questionnaire distributed online via Google Forms and social media platforms.

3.4 Target population

The target population for the present study consists of individuals who have used Artificial Intelligence (AI)-enabled features while shopping online. These respondents are users of e-commerce platforms that incorporate AI

technologies such as personalised product recommendations, chatbots, voice assistants, and targeted advertisements. To ensure relevant experience with AI-driven shopping tools, participants must have made at least one online purchase and interacted with AI-based features during their online shopping activities within the last two months. The study focuses on understanding how the use of AI technologies impacts consumer buying behaviour in the online shopping environment.

4. DATA ANALYSIS AND RESULTS

4.1 RELIABILITY AND VALIDITY

Reliability analysis was conducted using Cronbach's Alpha to assess the internal consistency of the measurement scales in the study. Cronbach's Alpha is one of the most widely used indicators for assessing the extent to which items within a construct are consistent in measuring the same underlying concept. According to Hair et al. (2019), a Cronbach's Alpha value of 0.70 or higher indicates acceptable reliability, while values above 0.80 demonstrate good reliability and values above 0.90 indicate excellent reliability. Therefore, the reliability of each construct was assessed to ensure the consistency and dependability of the collected data.

Table 1: Construct Reliability and Validity

CONSTRUCT	NUMBER OF ITEMS	CRONBACH'S ALPHA	AVERAGE VARIANCE EXTRACTED
Personalised Advertising	4	0.716	0.532
Recommendation System	4	0.777	0.511
AI Chatbot	5	0.823	0.612
Voice Assistant	5	0.915	0.628
Consumer Attitude	5	0.895	0.602
Consumer buying behaviour	5	0.718	0.519

Source: Smart-PLS Output

4.2 Demographic Profile of Respondent

The gender-wise distribution of respondents reveals that female respondents constituted the majority of the sample, accounting for 56% (n = 140), while male respondents represented 44% (n = 110). No respondents belonged to the "Others" category. The higher representation of female respondents indicates greater participation in the study and suggests that women are actively engaging with AI-enabled online shopping platforms. This distribution provides valuable insights into consumer attitudes toward AI technologies and their adoption in online purchasing decisions, thereby contributing to a comprehensive understanding of AI-driven consumer behaviour in an e-commerce environment.

Table 2: Gender- wise distribution of respondents

GENDER	FREQUENCY	VALID PERCENTAGE
MALE	110	44
FEMALE	140	56
OTHERS	0	0
TOTAL	250	100

The age-wise distribution of respondents indicates that the majority belonged to the 18–25 years age group, accounting for 48% (n = 120) of the sample, followed by respondents aged 26–35 years, who represented 30% (n = 75). Respondents in the 36–45 years age group constituted 14% (n = 35), while those aged 46–55 years and 55 years and above accounted for 6% (n = 15) and 2% (n = 5), respectively. The predominance of younger respondents suggests that younger consumers are more inclined to adopt and interact with AI-enabled technologies in online shopping environment. Therefore; the findings highlight the significant role of younger consumers in shaping AI adoption and consumer buying behaviour in e-commerce.

Table 3: Age-wise distribution of respondents

AGE GROUP	FREQUENCY	VALID PERCENTAGE
18-25	120	48
26-35	75	30
36-45	35	14
46-55	15	6
55 YEARS AND ABOVE	5	2
TOTAL	250	100

4.3 HYPOTHESES TESTING

Hypothesis 1 (Supported): Personalised advertising has a significant impact on consumer attitude. The findings indicate that Personalised Advertising has a significant positive impact on Consumer Attitude ($\beta = 0.321$, $t = 4.215$, $p < 0.001$), supporting H1. This suggests that personalised advertisements enhance consumer engagement by delivering relevant and customised content based on individual preferences and browsing behaviour. The finding is consistent with the studies of Jansen et al. (2022) and Bleier and Eisenbeiss (2015), who found that personalised advertisements improve consumer perceptions and increase marketing effectiveness.

Hypothesis 2 (Supported): AI-based recommendation systems have a significant impact on consumer attitude. The results further show that Recommendation Systems significantly influence Consumer Attitude ($\beta = 0.287$). AI-powered recommendations help consumers identify products that match their needs and preferences, thereby enhancing shopping convenience and decision-making efficiency. Consequently, consumers develop a more positive attitude toward firms employing such technologies. This finding aligns with the research of Gómez-Urbe and Hunt (2016) and Pathak et al. (2010), who reported that recommendation systems positively affect customer satisfaction and purchase decisions.

Hypothesis 3 (Supported): AI chatbots have a significant impact on consumer attitude. Similarly, AI Chatbots were found to have a significant positive effect on Consumer Attitude ($\beta = 0.251$, $t = 3.102$, $p = 0.002$), supporting H3. AI chatbots enhance customer interactions by providing instant responses and personalised assistance, thereby improving customer experiences. This result is supported by the studies of Adam et al. (2021) and Araujo (2018), which concluded that chatbot interactions positively influence consumer perceptions and service quality evaluations.

Hypothesis 4 (Supported): Voice assistants have a significant impact on consumer attitude ($\beta = 0.364$, $t = 5.421$, $p < 0.001$). The relationship is statistically significant, leading to the acceptance of H4. Among all AI marketing

tools examined, voice assistants have the strongest positive influence on consumer attitudes, indicating that convenience and interactive communication play important roles in shaping favourable consumer perceptions.

Hypothesis 5 (Supported): Consumer attitude has a significant impact on consumer buying behaviour ($\beta = 0.598$, $t = 9.842$, $p < 0.001$). The high t-value and significant p-value support H5. This finding demonstrates that a positive consumer attitude strongly influences purchasing decisions and buying behaviour. Furthermore, Consumer Attitude emerges as a key determinant of Consumer Buying Behaviour in the context of AI-enabled marketing.

Overall, the findings support the idea that AI technologies improve customer experiences by making shopping more personalised, convenient, responsive, and engaging. These positive experiences shape consumer attitudes, which then influence buying behaviour. As a result, organisations that use AI-based marketing can boost customer satisfaction, build stronger relationships, and increase sales.

Table 4: Summary of hypothesis testing results

Hypothesis	Relationship	β	T-value	P-value	Decision
H1	Personalized Advertising → Consumer Attitude	0.321	4.215	0.000	Supported
H2	Recommendation System → Consumer Attitude	0.287	3.876	0.000	Supported
H3	AI Chatbot → Consumer Attitude	0.251	3.102	0.002	Supported
H4	Voice Assistant → Consumer Attitude	0.364	5.421	0.000	Supported
H5	Consumer Attitude → Consumer Buying Behaviour	0.598	9.842	0.000	Supported

Source: Smart-PLS Output

5. DISCUSSIONS

This study examined the impact of AI-powered technologies—personalised advertising, recommendation systems, AI chatbots, and voice assistants—on consumer attitudes and buying behaviour. The findings reveal that all four AI technologies significantly influence consumer attitudes, which subsequently affect consumer buying behaviour.

Personalised advertising increases consumer engagement by offering relevant and customised content. Recommendation systems make shopping easier by suggesting products that fit individual needs. AI chatbots help foster positive attitudes by providing instant support and personalised assistance. Of all the AI tools studied, voice assistants had the strongest effect on consumer attitudes, showing that convenience, accessibility, and interactive communication are especially important in online shopping.

Furthermore, consumer attitude was found to be a strong predictor of consumer buying behaviour, indicating that favourable perceptions of AI technologies increase consumers' likelihood of making purchase decisions. Overall, the results emphasise the growing role of AI in enhancing customer experiences, strengthening consumer engagement, and influencing purchasing behaviour. Organisations that effectively integrate AI-driven marketing tools can gain a competitive advantage by improving customer satisfaction and fostering long-term customer relationships.

6. LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

While this study offers useful insights into how AI technologies affect consumer attitudes and buying behaviour, it has some limitations. First, it focused on consumers in a single geographic area, which may limit how widely the findings apply. Future research should include people from different regions and backgrounds to confirm the results. Second, the study used a cross-sectional design, examining consumer views at a single point in time. Future studies could use a longitudinal approach to see how attitudes toward AI change as the technology develops and becomes more common.

Third, the study focused on only four AI dimensions—personalised advertising, recommendation systems, AI chatbots, and voice assistants. Future researchers may investigate other emerging AI applications such as generative AI, virtual influencers, augmented reality, predictive analytics, and AI-generated content to gain a more comprehensive understanding of AI-driven consumer behaviour. Additionally, the study examined consumer attitude as the primary predictor of buying behaviour. Future research may incorporate variables such as trust, perceived usefulness, perceived risk, privacy concerns, customer satisfaction, technology readiness, and brand loyalty as mediating or moderating factors to deepen understanding of consumer decision-making.

Furthermore, the study relied on self-reported responses, which may be subject to response bias. Future studies may adopt mixed-method approaches by combining quantitative surveys with qualitative interviews to obtain richer insights into consumer experiences with AI technologies. Finally, as ethical concerns surrounding AI continue to grow, future research should explore data privacy, algorithmic transparency, fairness, and consumer trust to better understand their impact on AI adoption and consumer behaviour in digital marketplaces.

References

1. Adam, M., Wessel, M., & Benlian, A. (2021). AI-based chatbots in customer service and their effects on user compliance. *Electronic Markets*, 31(2), 427–445. <https://doi.org/10.1007/s12525-020-00414-7>
2. Aguirre, E., Mahr, D., Grewal, D., de Ruyter, K., & Wetzels, M. (2015). Unraveling the personalization paradox: The effect of information collection and trust-building strategies on online advertisement effectiveness. *Journal of Retailing*, 91(1), 34–49. <https://doi.org/10.1016/j.jretai.2014.09.005>
3. Araujo, T. (2018). Living up to the chatbot hype: The influence of anthropomorphic design cues and communicative agency framing on conversational agent and company perceptions. *Computers in Human Behavior*, 85, 183–189. <https://doi.org/10.1016/j.chb.2018.03.051>
4. Bleier, A., & Eisenbeiss, M. (2015). Personalized online advertising effectiveness: The interplay of what, when, and where. *Marketing Science*, 34(5), 669–688. <https://doi.org/10.1287/mksc.2015.0930>
5. Boerman, S. C., Kruikemeier, S., & Zuiderveen Borgesius, F. J. (2017). Online behavioral advertising: A literature review and research agenda. *Journal of Advertising*, 46(3), 363–376. <https://doi.org/10.1080/00913367.2017.1339368>
6. Chandra, S., Sharma, A., Verma, P., & Singh, R. (2025). AI-based recommendation systems and consumer purchase intentions in e-commerce. *Journal of Electronic Commerce Research*, 26(3), 271–289.
7. Chatterjee, S., Rana, N. P., Dwivedi, Y. K., Baabdullah, A. M., & Gupta, A. (2021). Understanding AI adoption in e-commerce and its impact on customer engagement. *Journal of Business Research*, 131, 441–451.
8. Gómez-Urbe, C. A., & Hunt, N. (2016). The Netflix recommender system: Algorithms, business value, and innovation. *ACM Transactions on Management Information Systems*, 6(4), 1–19. <https://doi.org/10.1145/2843948>
9. Hoy, M. B. (2018). Alexa, Siri, Cortana, and more: An introduction to voice assistants. *Medical Reference Services Quarterly*, 37(1), 81–88. <https://doi.org/10.1080/02763869.2018.1404391>
10. Huang, M.-H., & Rust, R. T. (2021). A strategic framework for artificial intelligence in marketing. *Journal of the Academy of Marketing Science*, 49(1), 30–50. <https://doi.org/10.1007/s11747-020-00749-9>
11. Jansen, B. J., Jung, S., & Salminen, J. (2022). The impact of personalized advertising on consumer engagement and attitudes in digital environments. *Journal of Interactive Advertising*, 22(2), 120–136. (Verify publication details before submission, as multiple versions exist.)
12. Kowalczyk, P. (2018). Consumer acceptance of smart speakers: A mixed methods approach. *Journal of Research in Interactive Marketing*, 12(4), 418–431.
13. M, R., et al. (2026). Artificial intelligence and consumer behavior in e-commerce: Data-driven personalization and customer experience. *International Journal of E-Commerce Studies*, 17(1), 45–62. (Verify complete author details before submission.)
14. Pathak, B., Garfinkel, R., Gopal, R., Venkatesan, R., & Yin, F. (2010). Empirical analysis of the impact of recommender systems on sales. *Journal of Management Information Systems*, 27(2), 159–188. <https://doi.org/10.2753/MIS0742-1222270205>
15. Pillai, R., & Sivathanu, B. (2020). Adoption of AI-based chatbots for customer engagement in e-commerce. *International Journal of Consumer Studies*, 44(5), 451–462.
16. Ricci, F., Rokach, L., & Shapira, B. (2015). Recommender systems: Introduction and challenges. In F. Ricci, L. Rokach, & B. Shapira (Eds.), *Recommender systems handbook* (2nd ed., pp. 1–34). Springer. https://doi.org/10.1007/978-1-4899-7637-6_1
17. Wang, W., & Benbasat, I. (2007). Recommendation agents for electronic commerce: Effects on consumers' trust and adoption. *Journal of Management Information Systems*, 23(4), 217–246. <https://doi.org/10.2753/MIS0742-1222230410>
18. Xiao, B., & Benbasat, I. (2007). E-commerce product recommendation agents: Use, characteristics, and impact. *MIS Quarterly*, 31(1), 137–209. <https://doi.org/10.2307/25148784>