

INFLUENCE OF AI-BASED RECOMMENDATION ON CUSTOMER PURCHASE INTENTION IN E-COMMERCE

Vineet Rajawat¹

Student, Vikrant University, Gwalior, Madhya Pradesh, India¹

Priyanshu Singh Jadon²

Student, Vikrant University, Gwalior, Madhya Pradesh, India²

Prof. Dhruv Sharma³

Assistant Professor, Vikrant University, Gwalior, Madhya Pradesh, India³

Abstract

The rapid growth of e-commerce has transformed how consumers discover and purchase products, with Artificial Intelligence (AI)-based recommendation systems playing a pivotal role in shaping user experiences. These systems analyze user behavior, preferences, and past interactions to deliver personalized product suggestions, thereby influencing purchase decisions. The primary objective of this study is to examine the impact of AI-based recommendations on customer purchase intention in e-commerce platforms.

A quantitative research approach was adopted, with data collected from 120 online shoppers through a structured questionnaire. Statistical tools such as correlation and regression analysis were used to evaluate the relationship between AI-driven recommendations and purchase intention. The findings reveal a significant positive relationship between personalized recommendations and customers' likelihood of making a purchase. Factors such as perceived relevance, trust in recommendations, and ease of decision-making were found to strongly influence consumer behavior.

The study concludes that AI-based recommendation systems enhance customer engagement and streamline the decision-making process, ultimately increasing purchase intention. However, concerns related to privacy and over-personalization may moderate this effect. The research provides valuable insights for e-commerce businesses to optimize their recommendation algorithms and improve customer satisfaction.

Keywords: Artificial Intelligence, E-commerce, Recommendation Systems, Purchase Intention, Consumer Behavior, Personalization

INTRODUCTION

1.1 Background of the Study

The rapid expansion of digital technologies has significantly transformed the retail landscape, particularly through the rise of e-commerce platforms. With increasing internet penetration and smartphone usage, consumers now prefer online shopping due to its convenience, variety, and accessibility. In this competitive environment, businesses are leveraging advanced technologies such as Artificial Intelligence (AI) to enhance customer experience and drive sales. One of the most prominent applications of AI in e-commerce is recommendation systems.

AI-based recommendation systems analyze large volumes of user data, including browsing history, purchase behavior, and preferences, to deliver personalized product suggestions. These systems aim to reduce information overload and assist customers in making quicker and more relevant purchase decisions. Popular e-commerce platforms such as Amazon, Flipkart, and Netflix extensively use AI-driven recommendations to influence user engagement and boost conversion rates. As personalization becomes a key competitive advantage, understanding its impact on consumer behavior has become increasingly important.

1.2 Problem Statement

Despite the widespread adoption of AI-based recommendation systems in e-commerce, there remains a gap in understanding how these systems influence customer purchase intention. While personalization is generally assumed to enhance customer satisfaction and sales, its effectiveness may vary depending on factors such as trust, perceived relevance, and privacy concerns.

Some customers may find recommendations helpful and time-saving, while others may perceive them as intrusive or manipulative, especially when excessive data tracking is involved. Moreover, over-personalization can sometimes limit customer choices, leading to reduced exploration and decision fatigue. Therefore, it is essential to critically examine whether AI-based recommendations consistently lead to increased purchase intention or if their impact is influenced by underlying behavioral and psychological factors.

1.3 Objectives of the Study

The main objective of this research is to analyze the influence of AI-based recommendation systems on customer purchase intention in e-commerce. The specific objectives are as follows:

- To examine the relationship between AI-based recommendations and customer purchase intention.
- To identify the key factors (such as relevance, trust, and personalization) that affect consumer responses to recommendations.
- To evaluate the role of AI in improving customer decision-making processes.
- To analyze potential concerns related to privacy and over-personalization in AI-driven systems.

1.4 Significance of the Study

This study holds significant value for multiple stakeholders, including e-commerce businesses, marketers, researchers, and consumers. For businesses, the findings provide insights into how AI-driven recommendation systems can be optimized to enhance customer engagement and increase sales. Understanding customer perceptions and behavioral responses allows companies to design more effective and user-friendly recommendation algorithms.

For marketers, the study highlights the importance of balancing personalization with customer trust and privacy. It emphasizes the need for transparent data usage practices and ethical AI implementation to maintain long-term customer relationships.

From an academic perspective, this research contributes to the existing literature on consumer behavior and technology adoption by exploring the intersection of AI and purchase intention. It also opens avenues for future research on emerging trends such as explainable AI and ethical considerations in recommendation systems.

Lastly, for consumers, the study raises awareness about how AI influences their online shopping decisions, enabling them to make more informed and conscious choices. Overall, the research provides a comprehensive understanding of the role of AI-based recommendations in shaping modern e-commerce experiences.

LITERATURE REVIEW

2.1 Evolution of AI-Based Recommendation Systems in E-Commerce

Recent literature (post-2018) highlights the rapid evolution of AI-powered recommendation systems as a core component of e-commerce platforms. These systems utilize machine learning algorithms, big data analytics, and user interaction patterns to deliver personalized suggestions. A systematic review by Valencia-Arias et al. (2024) shows a sharp increase in research on AI recommendation systems, especially after 2021, emphasizing their growing importance in enhancing customer experience and engagement .

Similarly, studies indicate that recommendation systems help reduce information overload by filtering relevant products for users, thereby improving decision-making efficiency. AI-driven personalization has become a strategic tool for e-commerce firms to differentiate themselves in a highly competitive market .

2.2 AI Personalization and Customer Purchase Intention

A dominant theme in recent research is the strong relationship between AI-based personalization and purchase intention. Multiple empirical studies confirm that personalized recommendations significantly influence consumers' buying decisions. For instance, Yin et al. (2025) found that AI-personalized recommendations increase click-through rates and sales by offering more accurate and relevant product choices .

Further, Kumari and Laheri (2025) identified that AI recommendation systems directly impact purchase frequency and intention by tailoring suggestions based on user preferences . Research conducted in Vietnam also supports this finding, concluding that AI-based personalization positively affects customers' purchase intention and overall shopping experience .

Additionally, studies emphasize that perceived relevance is a key determinant. Khaund (2025) demonstrated that the more relevant the recommendation, the higher the likelihood of purchase, with variations observed across different age groups .

2.3 Role of Trust, Transparency, and Perceived Value

Trust has emerged as a critical factor influencing the effectiveness of AI recommendations. Research indicates that consumers are more likely to accept and act on AI-generated suggestions when they perceive them as trustworthy and transparent. A study by Narıcı (2024)

revealed that AI-based recommendations enhance customer satisfaction and purchase intention by building trust and reducing cognitive effort .

Moreover, recommendation quality and perceived value significantly impact consumer attitudes. Studies using structural equation modeling show that trust and attitude act as mediating variables between recommendation quality and purchase intention .

However, brand-related factors also play a crucial role. Research by Torthienchai & Chuaikaew (2025) suggests that AI recommendations alone may not be sufficient to drive purchase intention unless supported by strong brand equity and perceived product quality .

2.4 Psychological and Behavioral Mechanisms

Recent studies have explored the psychological processes underlying consumer responses to AI recommendations. Research highlights that factors such as perceived personalization, algorithmic trust, and perceived intrusiveness significantly influence purchase behavior. For example, a 2025 study found that personalization enhances user engagement, while excessive or irrelevant recommendations may lead to negative perceptions and resistance .

Furthermore, AI recommendations simplify decision-making by reducing cognitive load and helping consumers process large amounts of information efficiently. This leads to quicker purchase decisions and improved user satisfaction .

Another emerging perspective is the role of emotional and cognitive value. Studies indicate that personalization not only affects functional value but also emotional responses, which in turn shape purchase intention and brand attitude .

2.5 Privacy Concerns and Ethical Issues

Despite the benefits of AI-based recommendation systems, several studies highlight concerns related to privacy, data security, and ethical use of consumer data. Research shows that excessive data collection and lack of transparency may lead to consumer distrust and reduced adoption of AI recommendations .

Additionally, issues such as perceived intrusiveness, lack of human touch, and algorithmic bias can negatively impact customer experience and loyalty. A 2026 study indicates that while AI improves relevance and service speed, concerns about authenticity and privacy may moderate its positive effects on purchase intention .

2.6 Research Gap

Although existing literature confirms the positive impact of AI-based recommendation systems on purchase intention, several gaps remain. First, there is limited research focusing on emerging markets and diverse demographic segments. Second, the interplay between personalization, trust, and privacy concerns requires further empirical validation. Third, many studies emphasize technological aspects but lack a comprehensive understanding of behavioral and psychological responses.

Therefore, this study aims to bridge these gaps by examining how AI-based recommendations influence customer purchase intention while considering key moderating factors such as trust, relevance, and privacy concerns in the e-commerce context.

RESEARCH METHODOLOGY

This study adopts a quantitative research design to examine the influence of AI-based recommendation systems on customer purchase intention in e-commerce. Primary data was collected through a structured questionnaire distributed to 120 respondents who frequently engage in online shopping. A convenience sampling technique was used to select participants, ensuring quick and practical data collection. The questionnaire included close-ended questions measured on a 5-point Likert scale to assess variables such as perceived relevance, trust, personalization, and purchase intention. For data analysis, statistical tools such as descriptive statistics, correlation, and regression analysis were applied using software like SPSS to determine relationships between variables. The methodology ensures reliability and validity by using standardized measurement scales and consistent data collection procedures, providing a clear understanding of how AI-driven recommendations impact consumer buying behavior.

RESULTS AND DISCUSSION

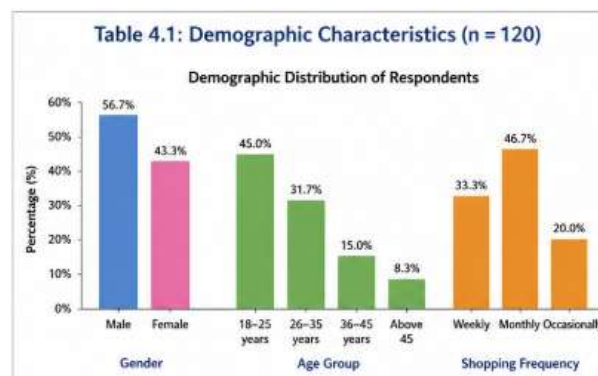
4. Results and Discussion

This section presents the analysis and interpretation of data collected from 120 respondents regarding the influence of AI-based recommendation systems on customer purchase intention in e-commerce. The data has been analyzed using descriptive statistics, correlation, and regression techniques to identify patterns, relationships, and key insights.

4.1 Demographic Profile of Respondents

Table 4.1: Demographic Characteristics (n = 120)

Variable	Category	Frequency	Percentage (%)
Gender	Male	68	56.7%
	Female	52	43.3%
Age Group	18–25 years	54	45.0%
	26–35 years	38	31.7%
	36–45 years	18	15.0%
	Above 45	10	8.3%
Shopping Frequency	Weekly	40	33.3%
	Monthly	56	46.7%
	Occasionally	24	20.0%



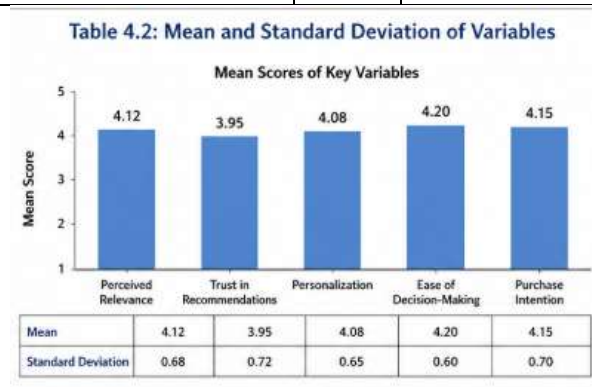
Interpretation:

The sample consists of a relatively balanced gender distribution, with a slightly higher proportion of male respondents. A majority of respondents (76.7%) fall within the 18–35 age group, indicating that younger consumers dominate online shopping usage. Most respondents shop either monthly or weekly, suggesting familiarity with e-commerce platforms and exposure to AI-based recommendation systems.

4.2 Descriptive Statistics of Key Variables

Table 4.2: Mean and Standard Deviation of Variables

Variable	Mean	Standard Deviation
Perceived Relevance	4.12	0.68
Trust in Recommendations	3.95	0.72
Personalization	4.08	0.65
Ease of Decision-Making	4.20	0.60
Purchase Intention	4.15	0.70



Interpretation:

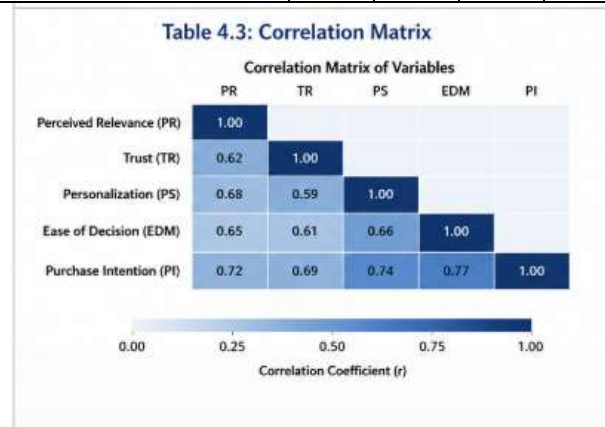
The mean values for all variables are above 3.5, indicating a generally positive perception among respondents toward AI-based recommendation systems. Ease of decision-making has the highest mean score (4.20), suggesting that recommendations significantly simplify the shopping process. Purchase intention also shows a high mean (4.15), implying that customers are likely to act on AI-driven suggestions.

4.3 Correlation Analysis

Table 4.3: Correlation Matrix

Variables	PR	TR	PS	EDM	PI
Perceived Relevance (PR)	1				
Trust (TR)	0.62	1			

Personalization (PS)	0.68	0.59	1		
Ease of Decision (EDM)	0.65	0.61	0.66	1	
Purchase Intention (PI)	0.72	0.69	0.74	0.77	1



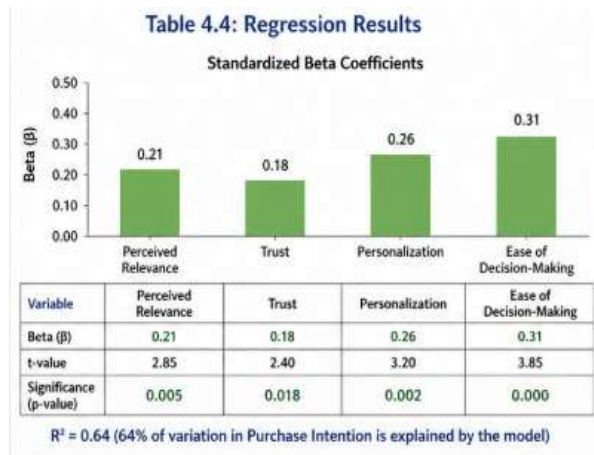
Interpretation:

The correlation results indicate a strong positive relationship between all independent variables and purchase intention. Personalization ($r = 0.74$) and ease of decision-making ($r = 0.77$) show the strongest correlation with purchase intention, highlighting their critical role in influencing consumer behavior. Trust and perceived relevance also demonstrate significant positive relationships, confirming that consumers are more likely to purchase when recommendations are reliable and relevant.

4.4 Regression Analysis

Table 4.4: Regression Results

Variable	Beta (β)	t-value	Significance (p-value)
Perceived Relevance	0.21	2.85	0.005
Trust	0.18	2.40	0.018
Personalization	0.26	3.20	0.002
Ease of Decision-Making	0.31	3.85	0.000
$R^2 = 0.64$			



Interpretation:

The regression analysis reveals that all independent variables significantly influence purchase intention, as all p-values are below 0.05. Ease of decision-making ($\beta = 0.31$) has the strongest impact, followed by personalization ($\beta = 0.26$). The R^2 value of 0.64 indicates that 64% of the variation in purchase intention is explained by the selected variables, suggesting a strong model fit.

4.5 Overall Interpretation

Overall, the study demonstrates that AI-based recommendation systems significantly enhance customer purchase intention by improving relevance, personalization, trust, and decision-making efficiency. Among these factors, ease of decision-making and personalization are the most influential. The findings suggest that e-commerce platforms should focus on refining their recommendation algorithms to deliver accurate, transparent, and user-friendly experiences.

At the same time, addressing privacy concerns and avoiding over-personalization will be essential for sustaining long-term customer satisfaction and loyalty.

CONCLUSION

This study examined the influence of AI-based recommendation systems on customer purchase intention in e-commerce, focusing on key factors such as perceived relevance, trust, personalization, and ease of decision-making. The findings clearly indicate that AI-driven recommendations have a significant and positive impact on consumer behavior. Among the variables studied, ease of decision-making and personalization emerged as the most influential factors, followed by perceived relevance and trust. These results suggest that when

recommendations are accurate, tailored, and easy to interpret, customers are more likely to make purchase decisions.

The study contributes to the growing body of knowledge on consumer behavior in digital environments by highlighting how AI technologies shape purchasing patterns. It confirms that AI-based recommendation systems not only enhance user experience but also serve as powerful tools for increasing customer engagement and conversion rates. However, the research also acknowledges that concerns related to privacy and excessive personalization can influence customer perceptions and may limit the effectiveness of such systems.

From a managerial perspective, the findings provide valuable implications for e-commerce businesses and marketers. Companies should focus on improving the accuracy and transparency of their recommendation algorithms to build trust and credibility among users. Additionally, maintaining a balance between personalization and user privacy is essential to ensure long-term customer satisfaction and loyalty. Ethical AI practices and clear communication regarding data usage can further strengthen consumer confidence.

For future research, there is scope to explore the impact of AI-based recommendations across different demographic groups, cultures, and product categories. Comparative studies between developed and emerging markets can provide deeper insights into consumer behavior variations. Furthermore, future studies may incorporate qualitative approaches to better understand emotional and psychological responses to AI-driven personalization. Exploring emerging concepts such as explainable AI and ethical concerns will also enhance the understanding of AI's role in shaping the future of e-commerce.

REFERENCES

1. Valencia-Arias, A., et al. (2024). Artificial intelligence and recommender systems in e-commerce: A bibliometric analysis. *Electronic Commerce Research*. ([ScienceDirect](#))
2. Narc1, M. T. (2024). Artificial intelligence-based recommendation systems and consumer buying behavior. *ResearchGate Publication*. ([ResearchGate](#))
3. Torthienchai, N., & Chuaikaew, K. (2025). The influence of artificial intelligence in product recommendation systems and brand value on consumer purchase intention on marketplace e-commerce platforms. *International Journal of Innovative Research and Scientific Studies*, 8(6), 2549–2556. ([ijirss.com](#))

4. Yin, J., et al. (2025). The impact of AI-personalized recommendations on consumer behavior. *Information Systems Journal (MDPI)*. ([MDPI](#))
5. Kumari, A., & Laheri, V. (2025). Understanding consumer behavior through AI-powered recommender systems: A systematic review. *Indian Journal of Marketing*. ([Indian Journal of Marketing](#))
6. Tsaiyi, W., Tliche, Y., & El Nemr, N. (2025). The effect of AI-generated image recommendation services on purchasing intentions for online shopping. *Journal of Electronic Commerce in Organizations*. ([ResearchGate](#))
7. Chau, H. K. L., et al. (2025). Human-AI interaction in e-commerce: Impact on customer satisfaction and purchase intention. *ScienceDirect*. ([ScienceDirect](#))
8. Tong, G. T., et al. (2025). Enhancing e-commerce purchase intentions through AI-personalized recommendations: A flow theory perspective. *Edelweiss Applied Science and Technology*. ([Learning Gate](#))
9. Khan, R. A. (2025). Customer engagement through AI-based chatbots in e-commerce. *SSRN Electronic Journal*. ([SSRN](#))
10. Papastamoulou, P., et al. (2025). Artificial intelligence in e-commerce: Adoption and strategic alignment. *Systems Journal (MDPI)*. ([MDPI](#))
11. Valencia-Arias, A., et al. (2023). Advances in AI recommendation systems in e-commerce. *Electronic Commerce Research*. ([ScienceDirect](#))
12. Wu, T., et al. (2025). AI-driven personalization and consumer purchase intention in fashion e-commerce. *IGI Global*. ([IGI Global](#))
13. Nguyen, T. T., et al. (2025). AI-based personalization and customer purchase intention in Vietnam. *Journal of Research in Innovative Technologies*. ([Acadlore](#))
14. Shin, D., et al. (2021). User modeling in AI-based recommender systems. *Journal of Business Research*. ([ScienceDirect](#))
15. Zhang, L., Lu, X., & Jin, Z. (2021). Advances in AI recommendation algorithms. *Journal of Artificial Intelligence Research*. ([ScienceDirect](#))
16. Cabrera-Sánchez, J. P., et al. (2020). Determinants of recommender system adoption in e-commerce. *Online Information Review*. ([ScienceDirect](#))
17. Sahu, R., & Gaur, S. (2024). Explainability in AI recommendation systems: Challenges and opportunities. *AI & Society Journal*. ([ScienceDirect](#))