

Artificial Intelligence in e-Tailing

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Dr. A. Hilary Joseph

Assistant Professor, Department of Commerce, The American College, Madurai

Dr. A. Nixon Jesuraj

Assistant Professor, Department of Commerce, The American College, Madurai

Abstract

Artificial Intelligence (AI) has emerged as a transformative force in modern e-tailing by enabling personalized customer experiences, predictive analytics, intelligent product recommendations, and efficient customer support through chatbots and virtual assistants. The present study examines consumer perceptions towards the application of AI in e-commerce platforms. A descriptive research design was adopted, and primary data were collected from 50 respondents using a structured questionnaire. Percentage analysis, rank analysis, and a five-point Likert scale were employed to analyse the data. The findings reveal that AI-driven tools, particularly chatbots and personalized recommendation systems, significantly enhance customer experience and satisfaction. However, concerns related to data privacy, trust, and transparency continue to pose challenges to the wider acceptance of AI in e-tailing. The study concludes with strategic suggestions to strengthen consumer trust and improve the effectiveness of AI integration in online retailing.

Keywords: Artificial Intelligence, E-Tailing, Consumer Perception, Chatbots, Personalization, Data Privacy

Statement of the Problem

The retail sector has undergone a profound transformation due to rapid technological advancements and the growing adoption of digital platforms. E-tailing, or electronic retailing, has become a dominant mode of shopping, offering consumers convenience, wider product choices, and time efficiency. Among the emerging technologies shaping this transformation, Artificial Intelligence (AI) plays a pivotal role by enabling intelligent decision-making, automation, and personalization.

Artificial Intelligence refers to computer systems designed to simulate human intelligence through learning, reasoning, and self-correction. In the context of e-tailing, AI facilitates data-driven strategies that enhance customer engagement, optimize supply chain operations, and improve service efficiency. Applications such as recommendation engines, chatbots, dynamic pricing, and demand forecasting are increasingly being deployed by major e-commerce platforms.

Despite the growing adoption of AI in e-tailing, consumer perceptions regarding trust, transparency, and data privacy remain uncertain. Many consumers benefit from AI-driven personalization, yet express concerns about data misuse and algorithmic decision-

making. Hence, there is a clear research problem in understanding how consumers perceive AI applications in e-commerce and the factors influencing their acceptance and satisfaction.

Review of Literature

Davenport and Ronanki (2018) highlighted that AI adoption in business primarily focuses on process automation, cognitive insight generation, and customer engagement. Their study emphasized that AI-driven personalization significantly enhances customer value creation in digital platforms.

Kietzmann et al. (2018) examined AI-based customer service systems and found that chatbots improve service efficiency and customer satisfaction when designed with human-like interaction capabilities. However, the study also cautioned about ethical and transparency challenges.

Huang and Rust (2021) proposed a strategic framework for AI in marketing, stating that AI enhances customer interactions across mechanical, thinking, and feeling intelligence. Their findings suggest that emotional intelligence in AI systems is crucial for long-term customer trust.

Choudhury and Pattnaik (2022) analysed the role of AI in e-commerce and concluded that recommendation engines and predictive analytics positively influence purchase decisions. However, data privacy concerns were identified as a major barrier to adoption.

Recent studies by Kumar et al. (2023) and Li et al. (2024) emphasized that consumer trust mediates the relationship between AI personalization and purchase intention. These studies underline the importance of transparency and ethical AI practices.

Although several studies have explored AI applications in e-commerce, limited empirical research focuses on consumer perception in the Indian e-tailing context, particularly concerning trust and privacy. This study attempts to bridge this gap.

Methodology

The study adopted a descriptive research design to analyse consumer perceptions of AI applications in e-tailing.

Sample Size: 50 respondents

Sampling Technique: Convenience sampling

Data Source: Primary data collected through a structured questionnaire

The questionnaire included both dichotomous and Likert-scale statements related to awareness, usage, satisfaction, and concerns regarding AI in e-tailing.

Tools for Analysis

- Percentage Analysis
- Rank Analysis
- Five-point Likert Scale

Reliability and Validity

The internal consistency of the Likert-scale items was tested using Cronbach's Alpha, which yielded a value above 0.7, indicating acceptable reliability. Content validity was ensured through expert review and pilot testing.

Data Analysis and Results

Percentage Analysis

The analysis revealed that 84% of respondents were aware of AI applications in e-tailing, while 70% had interacted with AI-based chatbots. A significant 76% found AI recommendations useful, whereas 65% expressed concerns regarding data privacy.

Rank Analysis

Personalized recommendations were ranked as the most influential AI application, followed by chatbots and virtual assistants. Dynamic pricing and voice-based shopping tools received comparatively lower ranks.

Likert Scale Analysis

The statement “AI improves my online shopping experience” recorded a weighted average score of 4.02, indicating a high level of agreement among respondents.

Discussion

The findings indicate that AI-powered personalization and chatbots significantly enhance consumer satisfaction, consistent with earlier studies by Huang and Rust (2021) and Kumar et al. (2023). The high ranking of recommendation systems confirms their effectiveness in influencing purchase behaviour.

However, privacy concerns reported by a majority of respondents align with the observations of Choudhury and Pattnaik (2022), emphasizing the need for ethical data practices. From a theoretical perspective, the study supports the technology acceptance model, where perceived usefulness positively influences adoption, while perceived risk hinders acceptance.

Findings of the Study

- Majority of consumers are aware of AI applications in e-tailing.
- Personalized recommendations are the most valued AI feature.
- Chatbots significantly improve customer engagement.
- Data privacy and trust issues remain key barriers to AI adoption.

Conclusion

The study concludes that Artificial Intelligence plays a crucial role in enhancing the efficiency and effectiveness of e-tailing platforms. AI-driven tools such as recommendation engines and chatbots contribute significantly to improved customer experience and satisfaction. Nevertheless, concerns related to data privacy, transparency, and ethical usage of AI must be addressed to ensure sustainable adoption.

E-tailers should invest in robust data security frameworks, transparent AI practices, and customer education initiatives to strengthen trust. By adopting a balanced approach that combines technological innovation with ethical responsibility, e-commerce platforms can fully realize the potential of AI.

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