International Journal of Research in Education: Theory and Practices
ISSN: 3048-8486
Volume 3 Issue 3, May-Jun 2026

The Impact of Artificial Intelligence on Customer Service Marketing in Online Retail Platforms: Evidence from Tamil Nadu, India

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Abstract. Rapid advancement in the field of Artificial Intelligence (AI) in e-commerce has revolutionized customer service marketing strategies around the world. Although significant advancements have been made in recent years, there is limited empirical documentation about consumer awareness, perception, and behavior towards AI-enabled retailing services, especially in developing countries like India. This paper seeks to examine the influence of AI technology in customer service marketing strategies in some of the leading e-commerce websites in India such as Amazon, Flipkart, Myntra, and Ajio.The adoption of a descriptive research approach and non-probability convenience sampling technique saw the collection of primary data from 109 online retailers. The data was analysed using Percentage Analysis, Mean Score Analysis, Cronbach's Alpha Reliability Test, Chi-Square Test, Pearson Correlation Analysis, and Multiple Regression Analysis in IBM SPSS. Some of the key findings include the fact that AI awareness among the respondents was moderate (mean score of 2.83-3.06), while AI-based personalization stood out as the best predictor of consumer satisfaction with mean value of 0.648 and P-value of 0.001, accounting for 69.4% of variance ($R^2 = 0.694$). Pearson correlation analysis revealed a positive correlation between the enhanced shopping experience offered by AI and consumer satisfaction ($r=0.534$, $p<0.001$).

Keywords: Artificial Intelligence; Customer Service Marketing; E-Commerce; Consumer Satisfaction; Personalisation; Online Retail.

I INTRODUCTION

Artificial Intelligence (AI) including machine learning, natural language processing, predictive analytics, and computer vision technologies has emerged as a crucial driver behind the international retail landscape through hyper-personalized marketing, artificial intelligence-based customer service, and data-oriented business decisions. The case of India is especially noteworthy in this regard: With its rapidly growing e-commerce sector, digital retail sites like Amazon India, Flipkart, Myntra, and Ajio have made substantial investments in their AI-related features, which range from advanced chatbots

and personalized recommendations to dynamic pricing strategies that benefit hundreds of millions of consumers. Nevertheless, academic scholarship focused on understanding consumers' reactions to artificial intelligence within the online retail environment of emerging nations is scarce, with the majority of existing studies focusing primarily on Western societies. Consumer attitudes driven by issues related to trust, privacy, and the inherent "naturalness" of AI-based interactions are continually developing, thus calling for further investigation.

II. STATEMENT OF THE PROBLEM

Though AI technology has been widely accepted and utilized in top-tier e-commerce portals for customer service marketing by means of chatbot technology, personalized recommendations, and predictive analytics, the common Indian consumer might not be fully aware of the use of AI in their purchasing experience. Issues such as non-relevant AI recommendations, lack of emotional intelligence, and possible misuses of private information may still exist. In addition, there seems to be a lack of context-based literature that studies consumer perception of AI-based customer service marketing in Tamil Nadu and India as a whole, its advantages, disadvantages, and overall effects on consumer satisfaction and behavior.

Objectives

- To identify the level of awareness and usage of AI among customers of online retail platforms.
- To assess the impact of AI-based tools on customer service marketing effectiveness.
- To examine the relationship between AI-based customer service tools and consumer satisfaction, brand loyalty, and shopping experience.
- To derive actionable findings and suggestions for AI-based customer service marketing strategies.

III. RESEARCH METHODOLOGY

The research design used in this study is Descriptive Research Design which describes consumer awareness, usage, impact, challenges, and satisfaction with AI in online retail without manipulating any variables. This research made use of both primary and secondary data sources. The primary data collection involved the use of a structured questionnaire distributed among 109 participants actively involved in online retailing and living in Tamil Nadu, India, who have experienced interacting with AI-based customer service in online retailing. The secondary data were derived from various books, journals, and reports, used for the literature review and theoretical framework. The sampling technique used in the research is the Non-Probability Convenience Sampling where respondents who are consumers of Amazon, Flipkart, Myntra, and Ajio in Tamil Nadu were selected. The questionnaire consisted of five parts; demographic profile, AI awareness and usage, impact on customer service marketing, challenges and concerns, and satisfaction with AI, based on a five-point Likert scale.

Scope of the Study

The study will focus only on the awareness, perception, and satisfaction level of consumers towards artificial intelligence in marketing services of Amazon, Flipkart, Myntra, and Ajio among the consumers residing in Tamil Nadu between 2025 to 2026.

The study will involve analysis only in terms of AI applications such as chatbots, virtual assistants, personalisation of products, and AI marketing communications.

IV. REVIEW OF LITERATURE

Increasingly, research literature indicates that AI technology brings about significant transformations in customer service and marketing in retailing. Nuraeni et al. (2025) prove that customer satisfaction could be achieved by implementing personalization and omnichannel via AI. Further, Wang (2025) proves that AI brings greater marketing performance, yet poses certain data privacy risks. Subhakar (2025) proved that the use of AI could contribute to higher CRM efficiency and increased customer loyalty. Moreover, Aktaş and Durmaz (2025) proved that repurchases result from improved interaction via chatbots. Furthermore, Lopes et al. (2025) coined a new term related to AI use, called 'invisible touch'. Thus, the process is related to customers' feeling of awe and contributes to their feeling of control and purchases. Tiutiu and Dabija (2023) prove that AI that operates ethically and customer-friendly improves the online retail experience. Murugan and Kumar (2024) found out that AI-driven recommendations accounted for 96.1% of the behavioral variability of Indian consumers of retail. Khandelwal and Singh (2025) discovered that lack of trust and lack of transparency constitute the two leading obstacles in the introduction of AI technology, and data protection becomes the most prominent one.

V. RESULTS

1. Demographic Profile

In the sample size of 109 consumers, 60.55% were male and 39.45% were females. The 21–30 age group was prevalent (91.74%), showing digital natives' consumer behavior. Postgraduate education was the leading educational category (54.13%), and undergraduates followed (39.45%). Students were the primary occupation category (49.54%), and more than one-third (36.70%) had a monthly income less than ₹10,000.

2. Reliability Test

The Cronbach's Alpha of the whole questionnaire (31 questions) was found to be 0.957, which shows that the questionnaire was highly reliable and valid.

3. Analysis of Mean Scores

The mean scores for section B varied between 2.83 and 3.06, showing moderate consumer awareness of AI technology. Highest mean score (3.06) was observed in the question assessing trust in AI technologies (B4); meanwhile, the lowest mean score (2.83) was recorded for consumer preference of using AI than humans for simple queries. In section C, the mean scores varied between 3.01 and 3.14, with recommendation for future searches being assessed as most relevant (C2); the least relevant assessment was for AI marketing messages (C3). These mean scores suggest neutral to mild agreement.

4. Chi-Square Test (Hypothesis 1)

Chi-Square test results indicated that none of the demographic variables showed any statistically significant association with AI satisfaction (E1): gender (χ^2=5.358, p=.253), age group (χ^2=14.872, p=.531), educational qualification (χ^2=12.650, p=.398), occupation (χ^2=18.340, p=.302), and monthly income (χ^2=16.210, p=.182). The p-value

for each variable was greater than 0.05; therefore, H_0 is accepted. This implies that the level of satisfaction with AI technology is the same across all demographics.

5. Pearson Correlation Analysis (Hypothesis 3)

For all pairings of variables considered in the study, there existed positive significant correlation at $p < 0.01$. The pair with highest correlation value was B7 and E1 where $r=0.534$ ($p<0.001$). In addition, there was correlation between C5 and E1 giving $r=0.335$ ($p<0.001$) while the other pair was C5 and B7 having $r=0.328$ ($p=0.001$). Hypothesis 3 was therefore rejected, whereas the alternative was accepted.

6. Multiple Regression Analysis (Hypotheses 2 and 4)

With 16 independent variables, the regression analysis showed that $R = 0.833$, $R^2 = 0.694$, Adjusted $R^2 = 0.640$, with statistical significance at [$F(16, 92) = 13.013$, $p < 0.001$] to explain about 69.4% of the total variance of consumer satisfaction (E1). Personalization with the use of AI technology (C1) was the most influential variable ($\beta = 0.648$, $p < 0.001$), followed by customer satisfaction improvement using AI technology (C5; $\beta = 0.326$, $p = 0.014$), search recommendations (C2; $\beta = 0.279$, $p = 0.031$

VI. DISCUSSION

This research is consistent with current literature while offering unique findings particular to the Indian retail setting. The prominence of AI-driven personalization ($\beta = 0.648$) being the primary determinant of customer satisfaction supports Zhang et al. (2020) and Murugan and Kumar (2024) since recommendation algorithms play an essential role in consumer behavior. The high level of model fit ($R^2 = 0.694$) demonstrates the economic rationale behind investing in artificial intelligence by Amazon, Flipkart, Myntra, and Ajio. Average AI recognition levels (2.83–3.06) in alignment with Khandelwal and Singh (2025) and Hasan (2025) imply that customers use AI technologies without necessarily realizing what they are doing, pointing to the importance of educating retailers about the value of AI for their customers' trust. The lowest mean for B6 ($M = 2.83$), which is in line with Zeng et al. (2023), reiterates the consumers' preference for personal interaction.

The findings from the Chi-Square test on the non-existence of significant demographic variations in customer satisfaction with the application of AI technology in Tamil Nadu indicate that there is a level of democratic adoption of AI-powered retail services, probably due to widespread penetration of digital technologies via accessible smartphones and affordable data packages. This is aligned with the positive correlation findings ($r = 0.328–0.534$) reported by Aktaş and Durmaz (2025) and Tiutiu and Dabija (2023).

VII. IMPLICATIONS TO SOCIETY

The study has many implications from several different perspectives. For retail managers and developers of AI technologies, prioritising personalization ($\beta = 0.648$) implies allocating resources to the development of advanced algorithms and context-based AI technologies. Consumer ambivalence regarding completely replacing human customer representatives emphasizes the need for implementing an efficient combination of AI and human interaction, where the former handles all regular queries, while the latter takes care of emotionally complex situations. The necessity for transparent data collection practices is critical when maintaining consumer trust. From a policymaking

perspective, the ongoing issue of data privacy and risks related to information asymmetry imply the implementation of appropriate data protection regulations and guidelines concerning AI ethics, focusing on transparency, accountability, and fairness. Considering that the key users of AI technologies in the study were mostly young and educated consumers, it becomes important to allocate more resources to increasing digital literacy levels among older and poorer consumers. Finally, the study contributes to academic knowledge by expanding the applicability of the Technology Acceptance Model and Service Quality approaches in the field of AI-based retail services, especially in developing countries.

VIII. CONCLUSION

The current investigation offers credible empirical proof that there exists a significant positive impact of AI on customer service marketing effectiveness in the Indian online retail sector. It can be stated that AI personalization is by far the most influential factor in ensuring consumer satisfaction ($\beta = 0.648$, $R^2 = 0.694$). Additionally, the use of AI in the shopping experience process has been found to have a positive relationship with brand loyalty and consumer satisfaction. The level of satisfaction with AI technologies remains stable for all the demographic categories in the state of Tamil Nadu, which means that AI is generally well-received among consumers. Nevertheless, low levels of awareness, privacy issues, and the necessity to interact with people need to be overcome in the future.

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