

The Impact of Artificial Intelligence on Consumer Behaviour in E-Commerce: A Study in Chennai City

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Abstract

Artificial Intelligence (AI) has a major effect on consumer behaviour in the field of E-Commerce by allowing customers to have personalized experiences on line. Which means of machine learning and data analysis, AI systems offer Customer service Chatbots, Personalized product recommendation feeds, Voice search assistants, Smart predictive features, Visual/image search tools, and AI-driven Virtual Try-On. The use of Artificial Intelligence (AI) contributes to the higher levels of consumer satisfaction in E-commerce which helps to influence customer to make purchase decisions and increases engagement. In this regard, the purpose of this article is to look at the impact of AI in e-Commerce on consumer behaviour, with a specific emphasis on how artificial intelligence affects consumer purchasing decisions and the buying process in E-Commerce. This study by means of a structured consumer survey. The study was carried out among 260 online consumers in Chennai city and showed that the incorporation of AI-based tools (such as chatbots, virtual try-on, personalized decision making, and product recommendations) into e-Commerce platforms has given a positive impact on the online shopping experience and affects the purchase decision-making process and also young consumers in particular viewing these tools as essential to their digital buying behaviour. Hence, this research provides insights into the developing relationship between technological advances and consumer behaviour in the E-commerce platform.

Keywords: (AI) Artificial Intelligence, E-commerce, Consumer Behaviour, Product Recommendations.

Introduction

E-commerce has evolved from a transactional platform into a data-powered ecosystem where Artificial Intelligence (AI) is a key factor in shaping how consumers discover, evaluate and purchase products. With digital markets booming in urban centres such as Chennai, businesses are increasingly adopting AI-powered tools to meet the growing customer expectations for speed, convenience and personalisation.

AI is used in various ways on modern e-commerce platforms. There are customer service chatbots that can provide instant support, personalized product recommendation engines that analyse browsing and purchase history, voice search assistants that make it easy to search for products, predictive analytics that can anticipate customer needs, visual and image search tools that improve product findability, and virtual try-on features that can reduce purchase uncertainty for categories such as fashion and cosmetics. Together, these technologies are fuelling a fundamental shift from generic, one-size-fits-all shopping experiences to highly personalized customer journeys.

The importance of this change is its measurable impact on consumer behaviour. AI-based personalisation can help reduce search costs, increase purchase likelihood, and improve overall customer satisfaction by tailoring product suggestions to individual preferences and needs. AI-powered chatbots have also transformed customer service by providing 24/7 support, faster query resolution, and more engaging interactions, all of which have a direct impact on customer retention and loyalty in competitive markets.

Chennai is a fast-digitizing metro city with an increasing population of tech-savvy consumers, thus an interesting setting to study this phenomenon. The AI-enabled features such as personalized recommendations and virtual try-ons are increasingly becoming an integral part of local consumers' digital shopping routines and not just an option that consumers consider when making their buying decisions on platforms like Amazon and Flipkart, especially among younger demographics.

But the increasing reliance on AI also prompts serious questions about data privacy, algorithmic transparency and consumer autonomy. As artificial intelligence systems capture and analyse increasingly fine-grained behavioural data to predict and influence purchasing decisions, questions of ethical use, trust and where helpful personalization ends and manipulative nudging begins have moved to the centre of academic and industry discourse. Therefore, the aim of this research is to study the influence of AI-enabled e-commerce applications on consumer buying patterns in Chennai city. The study explores the benefits of these technologies such as improved convenience, personalization and engagement and also the operational challenges faced by the organizations in deploying them responsibly such as cost challenges, lack of technical expertise, and consumer trust issues.

Review of Literature

Zhao, T. et al. (2022) found in many service industries, artificial intelligence (AI) is taking the place of humans, which will increase productivity and reduce labour costs. Examining how satisfied customers are with AI service representatives might be instructive. Examine while Study 2 employed 33 in-person interviews to create a theoretical model of consumer sentiment on AI services, Study 1 examined 17,673 Weibo postings. Customers' perceptions of AI customer service agents are more negative than those of their human counterparts, according to a study on Weibo posts. Although poor response times and a lack of personalization were also frequent complaints, customers' main criticism about AI-powered customer support centres on the technology's incapacity to resolve issues. Customers' readiness to offer praises was mostly influenced by the provider's voice traits and service attitudes. The results of the interviews support the general mistrust that consumers have of artificial intelligence in customer service roles. Consumers appreciate how these AI interactions are stress-relieving and human-like. Customer service representatives were empowered. When taken as a whole, these findings provide insight into Chinese consumers' perceptions of AI service solutions and practical suggestions for enhancing AI-powered customer support.

Sung, E. C. et al. (2021) contributed that because immersive technologies are becoming so popular, merchants need to adjust to a new consumer landscape. The findings of research conducted to find out how consumers felt about a \$17 million "artificial. A shopping and entertainment complex that blends state-of-the-art technology with conventional retail features a "embedded mixed reality (MR)" and "intelligence (AI)" exhibit. The findings showed that the quality of AI (in this case, machine learning-based speech recognition and synthesis) connected to an augmented object had a favourable impact on customer perceptions of unique experiences, MR enjoyment, and spatial immersion. All of these elements work together to motivate customers to get more active, which improves their behaviour. Essentially, the study's findings demonstrated how interactive AI and MR technology may pique consumers' interest even more.

Yau, K. L. A. et al. (2021) viewed earlier work to introduce a framework for "artificial intelligence marketing (AIM)" that gives self-sufficient computers access to large amounts of data and information, the capacity to interpret that data using AI to produce new information, as well as the tools to apply and share that information to improve customer connections in a knowledge-based economy. The study gathered and arranged the literature that went into creating the AIM framework, then applied the knowledge to actual cases and instances. Researchers offer an interdisciplinary description of the AIM framework as a crucial component of the marketing and artificial intelligence sectors. The pre-processor, main processor, and memory storage are the three essential components of the AIM architecture. Artificial intelligence is used by the system's brain, or main processor, to reason and make decisions in real time using the structured data from the pre-processor. The capacities, educational frameworks, and

human-cantered methods of operation that characterize The AI strategy was likewise speculative. The AIM framework, which was developed based on the literature, can be strategically used to increase customer connections, including trust, satisfaction, commitment, engagement, and loyalty. Lastly, potential follow-up research was mentioned to advance this interdisciplinary area.

Suresh, A. & Rani, N. J. (2020) explored that People today anticipate constantly evolving technologies to simplify their everyday routines and free up their valuable time because they are more wired than ever before. Artificial intelligence (AI) would therefore be among those technologies that are applicable to almost every aspect of the typical person's life. The technology known as artificial intelligence (AI) enables computers and other machines to simulate human intelligence. Finding out how online buyers feel about employing AI in different e-commerce scenarios was the main goal of the study. Regression analysis and factor analysis were the statistical techniques used in the study, which had a sample size of 100 individuals. The study used a random sampling strategy. It was demonstrated that there was a high association between the elements pertaining to the methodologies employed to reach these conclusions and the factors relating to compensation and utilization did not. The most notable examples of AI's influence on the e-commerce sector are voice-powered search, virtual personal shoppers, and real-time product targeting.

Xia Song et al. (2019) started that rapid development of science, technology, and the economic society, the application of artificial intelligence (AI) became increasingly common, and its development had a profound impact on work and lifestyle. In the field of e-commerce, AI technology was also well applied and achieved notable results. AI emerged as an important driving force for the development of e-commerce. By using AI algorithms, it became possible to perform deep learning, statistical programming, and the prediction and analysis of customer behaviour across massive data sets, enabling the prediction of which products were likely to attract customers. First, based on recent searches by potential customers, the machine learning algorithm in the recommendation engine was able to record key details of the searched products based on the calculation results. The recommendation engine then generated appropriate suggestions for the browser and displayed them on a personal page, ultimately helping consumers find products more quickly. It was concluded that artificial intelligence became a significant driving force for the transformation of e-commerce. With the support of AI technology, e-commerce experienced broader development prospects, which contributed to the establishment of improved customer relationship management and the promotion of sales, helping bridge the gap between personalization and privacy.

Pappas, N. (2016) assessed that the growing popularity of online shopping; little was understood about the relationships between consumers' trust in items and online sellers, their perceptions of risk, and the impact of marketing. The findings demonstrate the relationships between consumers' perceptions of Internet risk and the proportional impact of e-channel and product risks on their trust, as well as the fact that consumers' inclination to make purchases online is equally influenced by their level of confidence in both variables.

Rastogi, A. K. (2010) understands the study examines a number of elements to determine what drives people to make purchases online. A study of customers' online buying habits looked at a wide range of socioeconomic criteria. According to the study's findings, analysing consumer purchasing patterns can provide insight into how consumers make online purchases.

Doolin, B. et al. (2005) considered that to present the findings of an online survey that was completed by 700 New Zealanders. The purpose of the poll was to find out how Internet users' happiness with their online purchasing experiences and risk aversion impacts their tendency to use the Internet to make purchases. Concerns about security threats and the lack of human interaction that comes with online shopping were negatively correlated with the amount of money spent. The results of the study demonstrate that websites that support electronic selling would benefit from features that enhance online customer support and reduce consumer risk perception.

Research Gap

The above literature review highlights that the majority of these studies have been conducted overseas. Hence, this study intends to create new insights on Impact of Artificial Intelligence on Customers Behaviour and wish to extend the existing literature. This study looks into the artificial Intelligence tools used in E-Commerce and their impact on Consumer Behaviour.

Objectives

- To identify the key AI tools and applications commonly used in e-commerce and assess their role in enhancing customer experience.
- To study the impact of AI-driven recommendations, chatbots, and targeted marketing on consumer behaviour.
- To evaluate the effectiveness of AI tools in improving customer experience.

Methodology

The methodological research framework adopted to investigate the Impact of Artificial Intelligence (AI) on consumer purchasing behaviour within E-commerce platforms across Chennai City. The research gap of literature review highlights that the majority of these studies have been mostly conducted overseas. Hence, this study intends to create new insights on Impact of Artificial Intelligence on Customers Behaviour and wish to extend the existing literature.

Hypotheses

- H₀ (Null Hypothesis):** There is no significant relationship between the age group of online consumers in Chennai City and their dependence on AI-based product recommendations.
- H₁ (Alternative Hypothesis):** There is a statistically significant relationship between the age group of online consumers in Chennai City and their dependency on AI-based product recommendations.

Research Design

The analytical study is based on the primary data collected from online customers through a well-structured questionnaire. In order to carry out research, a convenient sampling method is used. The sample size of this research was 260 online consumers.

Results and Discussions

Percentage Analysis

Table 1

Particulars	Categories	Frequency (f)	Percentage (%)
Gender	Male	118	45.38%
	Female	142	54.62%
Age Group	Below 20 years	35	13.46%
	20 – 30 years	148	56.92%
	31 – 40 years	52	20.00%
	Above 40 years	25	9.62%
AI Tools Used (Multiple Choice)	Personalized Recommendations	215	82.69%
	AI Chatbots	178	68.46%
	Virtual Try-On / AR	112	43.08%
	Visual / Image Search	94	36.15%

As shown in the Table 1, the demographic profile indicates a young sample, with (56.92%) of participants aged 20–30 years. Regarding the awareness of AI tools, the most used feature was Personalized Product Recommendation Feeds (82.69%), and the second most used feature was AI Customer Service Chatbots (68.46%). This implies that the urban shoppers in Chennai had good familiarity with the automated decision-support mechanisms.

Weighted Average Calculation**Table 2**

AI Application	SA (5)	A (4)	N (3)	D (2)	SD (1)	Total Weight ($\sum f_i w_i$)	Weighted Mean ($\bar{X}_w$)	Rank
Personalized Recommendations: Tailored product feeds help me discover relevant items faster	115	98	32	11	4	1,049	4.03	I
Virtual Try-On / AR: Virtual fitting room tools reduce my purchase uncertainty	95	102	41	15	7	1,003	3.86	II
Overall Experience: AI features make online shopping more efficient and enjoyable	88	105	45	14	8	983	3.78	III
Conversational Chatbots: AI chatbots provide quick and effective query resolutions	72	94	58	24	12	906	3.48	IV
Visual Search Tools: Image search features accurately match uploaded photos with products	58	88	71	28	15	856	3.29	V

Table 2 show, the findings of the relative effectiveness of various AI tools in enhancing customer experience among online shoppers in Chennai City. Personalized Product Recommendations emerged as the most impactful AI application, securing Rank I with the highest weighted mean score of 4.03. This indicates the algorithmic product discovery feeds strongly drive efficiency and customer convenience.

Virtual Try-On / AR tools achieved Rank II with a weighted mean of 3.86, confirming that visual pre-purchase evaluation features significantly mitigate purchase hesitation in online market. Overall shopping experience enhancement (Mean = 3.78) ranked III, while conversational chatbots (Mean = 3.48) and visual search tools (Mean = 3.29) occupied rank IV and V respectively. All mean scores fell above the neutral midpoint (> 3.00), demonstrating a generally favourable consumer perception towards AI-driven E-commerce applications.

Chi-Square Analysis**Table 3**

Test Statistic	Computed Value	Degrees of Freedom (<i>df</i>)	Asymptotic Sig. (2-sided) <i>p</i> -value	Statistical Decision
Pearson Chi-Square (χ^2)	21.842	6	0.001	Reject H_0
Likelihood Ratio	22.105	6	0.001	Significant
Linear-by-Linear Association	18.312	1	0.000	Significant
N of Valid Cases	260	-	-	-

a. Degrees of Freedom Calculation: $3 \times 2 = 6$

b. Level of Significance (α): 0.05 (5%)

In Table 3, A Pearson Chi-Square test of independence was performed to examine the relationship between age group and consumer reliance on AI product recommendations. As detailed in the relationship between these variables was statically significant, $\chi^2 (6, N = 260) = 21.842$, $p = 0.001$. Since the asymptotic p -value (0.001) is strictly less than the standard significance threshold of $\alpha = 0.05$, the Null Hypothesis (H_0) is rejected in favor of the Alternative Hypothesis (H_1).

Conclusion

This research investigated the impact of Artificial Intelligence (AI) applications on the buying behaviour of online consumers in Chennai City, using a structured sample of 260 active E-commerce shoppers. By analysing consumer interactions across various descriptive, evaluative, and demographic factors, the study offers important insights into how intelligent retail technologies influence contemporary digital shopping experiences. In conclusion, the integration of AI into e-commerce platforms has evolved beyond just a tool for backend operational efficiency; it now plays a vital role in enhancing front-end customer engagement, fostering brand trust, and improving conversion rates in today's urban Indian retail market.

Limitations

The study was conducted in Chennai City. Future research could expand sampling across Tier-2 and Tier-3 Indian cities to compare urban versus semi-urban AI adoption areas.

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