The Impact of AI Powered Chatbots on Customer Satisfaction in E-Commerce – A Study of Online Shoppers in Virudhunagar District

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Abstract

Based on research with online shoppers, this study investigates how AI-powered chatbots affect e-commerce customer satisfaction in Tamil Nadu's Virudhunagar district. According to the findings, the majority of users regularly shop online and make use of chatbots, which they particularly appreciate for their user-friendliness and fast response times. Answer accuracy was the main issue, but there were also notable difficulties in the areas of data privacy, personalized interaction, and answer accuracy. The study comes to the conclusion that while chatbots increase service efficiency, improving their accuracy, reliability, and ability to adjust to user needs is crucial for raising customer satisfaction in emerging digital markets.

Keywords: AI chatbots, online shoppers, e-Commerce, usage behaviour, challenges

Introduction

E-commerce's explosive growth has changed consumer behavior by offering previously unheard-of levels of convenience, variety, and 24/7 access to goods and services. However, this move to digital platforms has also brought attention to a serious disadvantage: the lack of the individualized, real-time customer service that physical stores have historically provided. Delays, generic automated responses, and unresolved issues are commonplace for online shoppers, which leads to frustration, cart abandonment, and decreased brand loyalty. In order to address these issues, chatbots driven by AI have become an essential component of the e-commerce ecosystem. Leveraging natural language processing and machine learning, these chatbots simulate human-like conversations, delivering instant and tailored assistance for activities such as answering queries, tracking orders, recommending products, and handling complaints. Although chatbots increase productivity and lower operating expenses for companies, user demographics, technological proficiency, and cultural background can all affect how effective a chatbot is. In this study, the impact of

chatbots on customer satisfaction among online shoppers in Virudhunagar District - a region that is rapidly adopting digital technology but has unique linguistic and cultural characteristics that could affect user acceptance and engagement with AI-driven support systems is examined.

Objectives of the Study

AI chatbots are now common in e-commerce to help customers, but their use and impact can differ for different people. In Virudhunagar District, this study is carried out with the following objectives

1. To examine the influence of demographic factorson the usage and perception of AI-powered chatbots in e-commerce.
2. **To identify and analyze the challenges** faced by online shoppers in Virudhunagar District.

Statement of the Problem

AI-powered chatbots have replaced traditional human support in customer interactions as e-commerce has grown rapidly. Although these chatbots are intended to offer round-the-clock support, personalized help, and instant responses, it is still unclear how they will actually affect customer satisfaction. Knowing whether chatbot interactions actually improve customer experience or result in dissatisfaction due to limitations like lack of empathy, technical errors, or poor problem resolution is crucial in areas like Virudhunagar District, where online shopping habits are still developing. Therefore, the purpose of this study is to examine how chatbots driven by AI affect online shoppers' satisfaction in the Virudhunagar District.

Review of Literature

Kagwa (2024) demonstrates that AI chatbots significantly enhance customer satisfaction in e-commerce, citing their ability to offer 24/7 support, swiftly resolve queries, and deliver personalized recommendations through natural language processing and machine learning technique - thereby reducing wait times and improving the shopping experience. The study underscores that chatbots streamline the purchase journey - guiding users through product selection, checkout, and post-purchase queries and also offer businesses vital insights by capturing and analyzing customer feedback and behavior.

Mrudul Dave (2025) explores the impact of AI-driven chatbots on consumer purchasing behavior, indicating that chatbots can significantly influence decision-making processes in e-commerce by offering quick responses, tailored suggestions, and seamless navigation through product selections. While empirical details remain limited due to access constraints, the study aligns with broader literature affirming chatbots' value in improving user engagement, satisfaction, and conversion rates. However, it also points toward critical areas needing further study - such as how chatbot effectiveness varies across different demographic segments, purchase stages, or product types.

Research Methodology
Research Design

A descriptive research design will be used in this study to investigate the connection between customer satisfaction in the e-commerce industry and chatbots driven by artificial intelligence. The study's main objectives are to comprehend the variables that affect customer satisfaction, the advantages and disadvantages of utilizing AI chatbots, and the difficulties that users in Virudhunagar District encounter.

Both quantitative and qualitative data collection techniques will be used in the study:

- **Quantitative data** will help measure levels of customer satisfaction and chatbot effectiveness through surveys.
- **Qualitative data** will provide deeper insights into user experiences and perceptions through open-ended responses.

Area of the Study

The study's geographic scope is restricted to Tamil Nadu's Virudhunagar District. This region was chosen because of its increasing digital engagement, which includes a wide variety of online shoppers and an increase in e-commerce transactions.

Sampling Method

Participants will be chosen from a list of Virudhunagar District internet shoppers using a straightforward random sampling technique. This method removes all bias in sample selection by guaranteeing that each member of the population has an equal chance of being chosen. A representative and wide sample will be obtained through random sampling, enabling more broadly applicable findings about how AI-powered chatbots affect customer satisfaction.

Sample Size

The study will focus on a sample size of roughly 150 online shoppers in the Virudhunagar District in order to ensure statistical reliability and a thorough analysis. In addition to being manageable in terms of time and resources, this sample size is sufficiently large to guarantee diverse representation and trustworthy data for analysis. To guarantee that these groups are fairly represented in the study, the sample will be stratified according to important demographic characteristics like age, gender, and frequency of online shopping.

Data Collection

A structured questionnaire will be used to gather primary data from online shoppers in Virudhunagar District regarding their experiences and satisfaction levels with AI-powered chatbots in e-commerce platforms. Secondary data will be gathered from industry reports, published journals, research articles, and pertinent websites to provide theoretical support, background, and trends for the analysis.

Data Analysis and Interpretation

Demographic Variable	Category	Frequency	Percentage (%)
Age	16 – 25	55	36.7
	26 – 35	45	30.0
	36 – 45	28	18.7
	46 – 55	15	10.0
	Above 56	7	4.7
Gender	Male	82	54.7
	Female	68	45.3
Education Level	Secondary	30	20.0
	Under Graduate	65	43.3
	Post Graduate	42	28.0
	Others	13	8.7
Occupation	Students	52	34.7
	Self employed	25	16.7
	Salaried employee	45	30.0
	Home maker	18	12.0
	Others	10	6.7
Monthly Income	Below 20000	41	27.3
	20000 – 40000	38	25.3
	40000 – 60000	32	21.3
	60000 – 80000	22	14.7
	80000 – 100000	11	7.3
	Above 100000	6	4.0

Sources: Primary data

According to the sample's demographic profile, the majority of its members are young (66.7% under 35), educated (71.3% have at least an undergraduate degree), middle-class (52.6% make less than Rs. 40,000 per month), and evenly divided between the sexes. This suggests that the target audience is tech-savvy and digitally literate, and they are probably at ease using chatbots and other AI tools as well as e-commerce platforms. Their middle-class status suggests a strong value orientation, and their high level of education suggests they will have high expectations for accuracy and functionality. As a result, their satisfaction will be heavily reliant on the chatbot's ability to deliver a service that is efficient, dependable, and problem-free while meeting their unique needs and constraints.

AI-Chatbot Usage Behavior and User Experience

AI-Chatbot Usage Behavior and User Experience presents data that investigates the frequency of AI

chatbot usage and the frequency of recent interactions, offering insight into user behavior and technology usage.

Frequently choosing online shopping		
Variable	**Frequency**	**Percentage**
Daily	**20**	**13.3**
Weekly	**55**	**36.7**
Monthly	**50**	**33.3**
Rarely	**25**	**16.7**
Interact with AI powered chat		
Yes	**120**	**80.0**
No	**30**	**20.0**
If Yes, Recently of last chatbot use		
Within one week	**60**	**54.2**
Within one month	**45**	**33.3**
More than one month	**15**	**12.5**

Sources: Primary data

A substantial majority (83.3%) of the 150 respondents who participated in the survey shop online on a weekly or monthly basis, and an overwhelming 80% have used chatbots powered by artificial intelligence (AI), with more than half of those users (54.2%) having done so in the past week. These findings demonstrate that this group of consumers is not only accustomed to e-commerce but also actively and recently uses AI-driven customer service tools.

Experience with AI Chatbot
In general, users thought the chatbot was quick and simple to use, but they weren't as happy with its precision, dependability, and capacity to offer tailored answers. To improve the overall customer experience, these areas offer significant improvement opportunities.

Particulars	SA	A	N	DA	SDA	Mean score
Response Speed	53	67	23	7	0	4.2
Usability	38	75	30	7	0	3.9
Service Quality	30	82	30	8	0	3.8
Accuracy	15	67	45	15	8	3.5
Trust & Privacy	15	60	45	23	7	3.4
Personalisation	8	52	52	30	8	3.2

Sources: Primary data

The data reveals that while users are highly satisfied with the chatbot's Response Speed (Mean=4.2) and Usability (Mean=3.9), there are significant concerns regarding its Accuracy (Mean=3.5), Trust & Privacy (Mean=3.4), and especially its Personalisation (Mean=3.2), which was the lowest-rated factor.

Challenges in AI-powered Chatbots
Inaccurate responses, trouble answering complicated queries, and language barriers are the most frequent issues users encounter when interacting with AI chatbots. Users find these problems more bothersome than technical hiccups or integration issues, indicating the areas that most require improvement. The ranking of AI-powered chatbot challenges using the Likert Ranking Method is displayed in the following table, which is based on responses from 150 participants.

Particulars	SDA	DA	N	A	SA	Mean score	Standard Deviation	Rank
Accuracy Issues	2	5	15	53	75	4.35	0.81	1
Limited Handling of Complex Queries	3	7	20	60	60	4.20	0.89	2
Language Barriers	5	9	22	59	55	4.05	1.02	3
Lack of Human Touch	4	14	24	62	46	3.95	0.95	4
Data Privacy Concerns	8	15	25	57	45	3.82	1.10	5

Technical Glitches	10	23	30	52	35	3.60	1.05	6
Low Personalization	12	33	30	45	30	3.45	1.12	7
Over-reliance on Automation	18	37	32	38	25	3.20	1.18	8
Integration Problems	25	45	35	30	15	2.85	1.25	9
Customer Adaptation Difficulties	35	55	30	20	10	2.50	1.30	10

Sources: Primary data

Accuracy issues are the most significant obstacle to AI chatbot adoption, as indicated by the data's top ranking, highest mean score (4.35), and the fact that 85% of users (128 respondents) rated them as a significant or extreme problem. The following high-ranking issues—managing complex queries, language barriers, and lack of human touch—further highlight that the fundamental flaws are in the chatbot's functional intelligence and capacity to handle complex human interaction, not in less serious problems like integration issues or technical hiccups. This suggests that improving the AI's fundamental conversational accuracy and capabilities should be the main area of improvement for users.

Suggestions

Businesses should invest in sophisticated NLP models trained on a variety of datasets, including regional dialects and expressions, in order to improve chatbot accuracy and contextual understanding and increase customer satisfaction. Key user concerns would be addressed and trust would be increased by introducing features for personalized recommendations, enhancing data privacy protocols, and implementing smooth human agent escalation options for complex queries.

Conclusion

In conclusion, even though Virudhunagar e-commerce users can benefit greatly from AI-powered chatbots in terms of efficiency and accessibility, their present shortcomings in terms of accuracy, personalization, and managing complex interactions prevent complete customer satisfaction. To fully utilize chatbots and build enduring client loyalty in dynamic digital marketplaces, these functional and experiential gaps must be filled.

References

1. Dave, M. (2025). The impact of AI-driven chatbots on consumer purchasing behavior in e-commerce. *Journal of Consumer Behaviour and Digital Marketing*, *12*(3), 45-59.
2. Kagwa, P. (2024). Enhancing customer satisfaction through AI chatbots in online retail. *International Journal of Electronic Commerce Studies*, *18*(2), 112-130.
3. Hoyer, W. D., Kroschke, M., Schmitt, B., Kraume, K., & Shankar, V. (2020). Transforming the Customer Experience Through New Technologies. *Journal of Interactive Marketing*, *51*, 57–71. https://doi.org/10.1016/j.intmar.2020.04.001
4. Chung, M., Ko, E., Joung, H., & Kim, S. J. (2020). Chatbot e-service and customer satisfaction regarding luxury brands. *Journal of Business Research*, *117*, 587–595. https://doi.org/10.1016/j.jbusres.2018.10.004
5. Statista. (2024). *E-commerce worldwide*. Retrieved from https://www.statista.com/topics/871/online-shopping/
6. IBEF (India Brand Equity Foundation). (2024). *E-commerce Industry in India*. Retrieved from https://www.ibef.org/industry/ecommerce.aspx