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The Impact of Chatbots on Customer Satisfaction in Online Shopping

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Abstract: Online shopping has changed as a result of our increased reliance on digital technologies, and chatbots are now a crucial conduit between customers and e-commerce platforms. This study looks into how customer satisfaction with online shopping is affected by chatbot features, particularly those related to personalisation, response time, information quality, and ease of use. It also looks at how perceived usefulness functions as a mediator in these connections. In order to evaluate direct and indirect effects, data gathered from online shoppers via a structured questionnaire was analysed statistically. According to the results, each of the four chatbot attributes has a major impact on customer satisfaction, both directly and indirectly through perceived utility. The study emphasises how crucial it is to optimise chatbot features in order to improve customer satisfaction and experience in digital retail settings. E-commerce platforms looking to improve their customer engagement tactics through intelligent automation will find value in the study's implications.

Key Words: Chatbots, Customer Satisfaction, Online Shopping, Ease of Use, Information Quality, Response Time, Personalization, Perceived Usefulness, E-commerce, Digital Customer Experience

1.INTRODUCTION

Online shopping has become a crucial component of consumer behaviour in the quickly changing digital landscape, driven by both the growing demand for convenience and technological advancements. Chatbots, or AI-powered conversational agents, are one of these technological advancements that have revolutionised customer service and engagement in e-commerce platforms. Chatbots are made to mimic human-like interactions by responding to consumer questions instantly, helping them choose products, handling complaints, and completing transactions. Chatbot effectiveness in online shopping is based on a number of important factors, including personalisation, response time, information quality, and ease of use. These characteristics have a big impact on the user experience as a whole and, eventually, customer satisfaction, which is a crucial component of online retailers' success. However, users' cognitive assessments, particularly their perception of the chatbot's usefulness, frequently act as a mediator in the relationship between chatbot features and customer satisfaction, which is not always a direct one. Users are more likely to form positive opinions about the platform and feel more satisfied if they believe the chatbot to be a useful and efficient tool during their shopping experience. Even though chatbots are being used more and more in digital commerce, little is known about how particular features of chatbots affect customer satisfaction, particularly when perceived utility acts as a mediating factor. By investigating the effects of chatbot personalisation, response time, information quality, and ease of use on customer satisfaction—with perceived usefulness acting as a mediating factor—this study seeks to close this gap. By identifying these connections, the study adds to the body of knowledge in academia and useful tactics for improving online shopping experiences for customers through clever chatbot design. It gives e-commerce companies information on how to best implement chatbot features that meet customer demands and raise satisfaction levels in a cutthroat online market.

2.REVIEW OF LITERATURE

Customer service dynamics have changed dramatically as a result of chatbot integration into e-commerce platforms. The Technology Acceptance Model (TAM), which holds that perceived utility and ease of use are important factors in determining the adoption of technology, is at the heart of this change (Davis, 1989). The ease with which consumers engage with chatbots during online shopping has a direct impact on how helpful they believe the chatbot to be, which in turn affects how satisfied they are. Bhattacherjee (2001) goes on to stress that users' initial impressions of the ease and utility of information systems have a significant impact on their intention to continue using them. Customer satisfaction is also significantly impacted by the quality of the information. According to Xu, Zhang, and Deng (2022), chatbots that deliver pertinent and accurate information increase customer satisfaction and trust. In a similar vein, Trivedi (2022) emphasised that chatbots that provide high-quality information improve consumer relationships with brands. Misischia et al. (2022) also pointed out that chatbots' useful features, such as the calibre of the information they offer, are crucial for raising customer satisfaction and service quality. In

chatbot interactions, response time is a crucial factor in determining customer satisfaction. According to Hari et al. (2024), chatbots that respond quickly increase customer satisfaction, especially in the banking industry. On the other hand, customers may become frustrated and lose faith in the chatbot's abilities if there are delays or slow responses (Casadei et al., 2023). The customer experience is greatly improved when chatbot interactions are personalised. According to Alsharhan et al. (2024), customised chatbot services increase customer satisfaction by fostering social presence and trust. Additionally, a more engaging shopping experience is facilitated by chatbots' capacity to customise responses according to user preferences (Xu et al., 2022). Through the perception of warmth, it has been demonstrated that chatbots' use of socially focused communication styles increases customer satisfaction (Xu et al., 2022). Customer satisfaction with chatbots is also heavily influenced by social presence and trust. Cheng et al. (2024) investigated how chatbots' friendliness and empathy increase trust, which influences users' readiness to depend on them. Al-Oraini (2025) discovered that customer satisfaction with AI-driven services is greatly increased by socially focused communication, perceptions of competence and warmth, and trust. Customer satisfaction and chatbot attributes are mediated by perceived usefulness. According to Nagy and Hajdu (2022), users' attitudes towards chatbots improve and their satisfaction levels rise when they believe the technology is helpful. This emphasises how crucial it is to create chatbots that successfully help users reach their objectives. The best indicator of a chatbot's efficacy is customer satisfaction. Oliver (1980) suggested that expectations being confirmed leads to satisfaction. Users are satisfied with chatbots when their expectations are met or surpassed in terms of personalisation, response time, information quality, and ease of use. Evans and McColl-Kennedy (2000) also underlined that happy consumers are more likely to become brand loyal. User demographics, including age and cultural background, have an impact on how effective chatbots are perceived. Different user groups may have different expectations and experiences with chatbots, as evidenced by a study conducted in Malaysia on Generation Y that found that perceived usefulness and ease of use did not significantly affect satisfaction (Nagy & Hajdu, 2022). User satisfaction is impacted by the intricacy of the tasks given to chatbots. Higher task complexity has a detrimental effect on trust and satisfaction, according to Casadei et al. (2023), suggesting that chatbots should be built to efficiently complete tasks that fall within their purview. Openness about chatbot capabilities affects user satisfaction and trust. The relationship between empathy and trust can be moderated by revealing the identity and limitations of the chatbot, according to Cheng et al. (2024), underscoring the importance of being transparent about what chatbots can and cannot do. Customer experience is impacted by chatbots' role during the purchasing process. Customer satisfaction rises when chatbots efficiently help users from product discovery to purchase completion. Nevertheless, if problems are not addressed or accurate information is not given, customers may become dissatisfied and stop shopping (Misischia et al., 2022). Users who are hesitant to interact with chatbots that serve as middlemen before connecting with human agents may display gatekeeper aversion. According to Kagan, Hathaway, and Dada (2025), this aversion can be lessened by being open about chatbot capabilities and providing choices for interacting with human agents when needed. Creating chatbots with human-like traits can increase user interaction. According to Silva and Canedo (2023), adding anthropomorphic components—like avatars or conversational styles—can increase satisfaction by making interactions more relatable. Emotionally intelligent chatbots are better able to comprehend and react to user emotions, which increases user satisfaction. Chatbots can offer more effective and sympathetic support by identifying user sentiments and modifying responses accordingly (Xu et al., 2022). User trust is increased when chatbots operate consistently and dependably. Maintaining customer satisfaction requires chatbots to deliver accurate information and operate flawlessly (Hari et al., 2024). Chatbot services can be continuously improved by integrating user feedback mechanisms. Organisations can improve user experiences and satisfaction by identifying areas for improvement through the analysis of user interactions and feedback (Misischia et al., 2022).

3. OBJECTIVES OF THE STUDY

- To examine the influence of independent factors—ease of use, information quality, response time, and personalization—on the perceived usefulness of chatbots in online shopping.
- To analyse the mediating role of perceived usefulness in the relationship between chatbot features and customer satisfaction in the context of online shopping.

4. SCOPE OF THE STUDY

- This study focuses specifically on AI-powered chatbots used in online shopping platforms (e-commerce websites or apps), excluding voice-based assistants or human-based live chat services.
- The research is limited to customers who have interacted with chatbots while shopping online within [insert region or country, e.g., India], allowing the results to be contextually relevant to that digital commerce environment.

- The study analyses customer perceptions and experiences related to key chatbot service factors—ease of use, information quality, response time, and personalization—and how this influence overall customer satisfaction.
- The study examines perceived usefulness as a mediating factor between the independent variables (chatbot attributes) and the dependent variable (customer satisfaction), aiming to understand both direct and indirect effects.

5. LIMITATIONS OF THE STUDY

- The study may be limited by non-random sampling or limited geographic coverage, which can affect the generalizability of the findings to all online shoppers or markets.
- The study relies on self-reported perceptions from respondents, which can be influenced by personal bias, memory errors, or social desirability, potentially affecting the accuracy of the data.
- Chatbots differ in design, intelligence, and capabilities across e-commerce platforms. This variation may make it difficult to standardize and compare user experiences across different platforms.
- The study focuses only on a specific set of factors (ease of use, information quality, response time, personalization, and perceived usefulness), potentially overlooking other important elements like emotional intelligence, trust, privacy concerns, or brand loyalty.

6. STATEMENT OF THE PROBLEM

With the rapid growth of e-commerce, businesses are increasingly adopting chatbots to enhance customer service and streamline user interactions. While chatbots are designed to offer real-time support, reduce response time, and provide personalized experiences, there remains uncertainty about how effectively these digital tools contribute to overall customer satisfaction. Despite technological advancements, many users still report dissatisfaction due to delayed responses, lack of personalized engagement, or irrelevant information provided by chatbots. Moreover, the perceived usefulness of chatbot interactions can significantly mediate the relationship between chatbot features and customer satisfaction, yet this dynamic is not fully understood. Existing literature often examines chatbot adoption or usability in isolation, without a comprehensive analysis of how multiple service quality dimensions—such as ease of use, information quality, response time, and personalization—interact to shape perceived usefulness and ultimately affect customer satisfaction. Therefore, this study seeks to bridge this gap by investigating the collective and individual impact of these key chatbot attributes, with perceived usefulness as a mediating factor, on customer satisfaction in the context of online shopping.

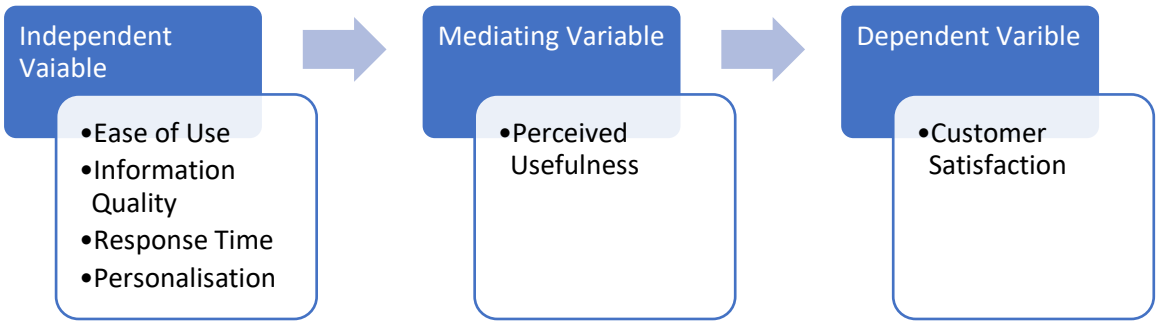
7. RESEARCH GAP

Although the adoption and efficacy of chatbots in customer service have been the subject of numerous studies, the majority have mostly concentrated on discrete elements like usability or trust, frequently ignoring a comprehensive perspective of how various functional attributes work together to influence customer satisfaction. Additionally, there isn't a thorough framework in the literature that combines key service aspects like personalisation, response time, information quality, and ease of use into a single model. Though perceived usefulness is emphasised by the Technology Acceptance Model (TAM) and related theories, little research has examined how chatbot features affect customer satisfaction, especially when it comes to online shopping. Furthermore, there aren't many empirical studies that take into account how technological and experiential factors interact in chatbot interactions. In emerging markets, where user expectations and digital maturity differ greatly, this disparity is even more noticeable. In order to close this gap and provide a more comprehensive understanding of customer experiences in digital commerce, this study will methodically investigate the ways in which chatbot design attributes affect customer satisfaction, with perceived usefulness acting as a mediating factor.

8. RESEARCH METHODOLOGY

A random sampling technique was used to gather 100 samples in total for this investigation. Although the study uses both primary and secondary data, it mostly depends on primary data collected via structured questionnaires from consumers in the Chengalpattu district. IBM SPSS (version 2020) was used to analyse the data that was gathered. The study's results were interpreted using statistical methods like regression analysis, chi - square, percentage analysis.

9. FRAMEWORK



9.1 FRAME WORK EXAPLANATION

In this framework, independent variables such as ease of use, information quality, response time, and personalization play a crucial role in shaping the customer's overall experience with a service or product. Ease of use refers to how effortlessly customers can interact with the system, while information quality pertains to the accuracy, relevance, and completeness of the data provided. Response time measures how quickly the system reacts to customer requests, and personalization reflects the system's ability to tailor the experience according to individual preferences. These factors collectively influence the mediating variable, perceived usefulness, which is the customer's belief that the system enhances their performance or meets their needs effectively. When customers perceive the system as useful, they are more likely to develop a positive attitude toward it, which subsequently leads to higher levels of customer satisfaction. Therefore, perceived usefulness acts as a bridge, explaining how the quality and functionality of the system's features translate into overall satisfaction, highlighting the indirect effect of the independent variables on customer satisfaction through this mediating factor.

10. DATA ANALYSIS AND INTERPRETATION

10.1 Demographic Variables

Table 1

Demographics	Options	Percent
Gender	Male	65
	Female	35
Age	13 – 25	35
	26 – 35	22
	36 – 46	23
	46 above	20
Educational Qualification	High/Higher Secondary	10
	Under Graduate	37
	Post Graduate	28
	Professional Degree	25
Income	Below 25000	30
	25000 – 45000	60
	45000 and above	10

Primary Source,

Table 1 reveals that the majority of respondents (65%) were male, 35% of the respondents are between the ages of 13 and 25, and had an undergraduate degree (37%). 60% of responders, the majority, fell in the 25000–45000 range.

10.2 Online Platforms Used by Consumers

Platforms – Buying Platforms	Rate (%)
Amazon	37
Flipkart	28
Meesho	15
Blinkit	12
Others	08

INTERPRETATION

Based on their purchasing patterns, the table displays the distribution of customer preferences for different e-commerce platforms as percentage rates. According to the data, Amazon is the most popular platform among customers, accounting for 37% of the online shopping market. Amazon's extensive product selection, dependable delivery system, affordable prices, and robust customer support infrastructure may all be responsible for its dominance. With 28%, Flipkart comes in second, demonstrating its significant market presence, especially in India, where it is frequently regarded as Amazon's fiercest domestic rival. Meesho has established a niche for itself with 15%, particularly in the social commerce market and among small resellers and consumers on a tight budget. Its increasing popularity demonstrates the trend towards value- and community-based shopping. The rise of instant delivery platforms in urban areas is demonstrated by Blinkit, which accounts for 12% of the total, and is mainly known for quick commerce and grocery deliveries. A fragmented but competitive e-commerce ecosystem is indicated by the remaining 8% falling under "Others," which can include niche or up-and-coming platforms like Ajio, Nykaa, or Snapdeal. According to the data's overall interpretation, the market is dominated by Amazon and Flipkart, but there is a discernible trend towards diversification as customers look into platforms like Meesho and Blinkit for particular purposes. This change highlights the increasing significance of speed, affordability, and specialisation in determining consumer platform preferences for online purchasing.

10.3 Hypothesis

H_0- There is no significant difference between the Impact of factors of chatbots and Customer Satisfaction

H_1- There is a significant difference between the Impact of factors of chatbots and Customer Satisfaction

10.4 Chi – Square Analysis

Table 2

Factors associations with Perceived Usefulness	Pearson Chi – Square Value	Degree of Freedom	Asymptotic Significance (2 – Sided)
Ease of Use	33.541	16	0.006
Information Quality	15.161	8	0.056
Response Time	102.018	16	0.000
Personalisation	34.302	16	0.005

INTERPRETATION

The table displays the findings of a Chi-square test that looked at the relationship between a number of variables and how helpful people thought chatbots were for online shopping. The statistical significance of these associations is ascertained with the aid of degrees of freedom, asymptotic significance (p-values), and Pearson Chi-Square values. According to the findings, there is a statistically significant correlation between Ease of Use and perceived usefulness at the 0.01 level, with a p-value of 0.006 and a Chi-square value of 33.541 with 16 degrees of freedom. This implies that users are more likely to view a chatbot as helpful when they find it easy to use. In a similar vein, personalisation also demonstrates a significant correlation (Chi-square = 34.302, df = 16, p = 0.005), suggesting that users value chatbots that offer tailored responses. With a p-value of 0.000 and a very high Chi-square value of 102.018 with 16 degrees of freedom, Response Time shows the strongest correlation. According to this,

chatbots' perceived usefulness is significantly increased by quicker response times, which makes them a crucial factor in determining user satisfaction and engagement. Conversely, Information Quality has a p-value of 0.056, 8 degrees of freedom, and a Chi-square value of 15.161. The relationship between perceived usefulness and information quality is not statistically significant because the p-value is marginally higher than the typical significance threshold of 0.05, but it might still be useful in some situations. In conclusion, the analysis shows that consumers' perceptions of chatbots' usefulness are strongly correlated with their ease of use, response time, and personalisation, with response time having the greatest impact. Even though there isn't a statistically significant correlation in this instance, information quality might still improve user experience overall and shouldn't be disregarded when designing chatbots.

10.5 Regression Analysis

Table 3

Model Summary			
R	R Square	Adjusted R Square	Std Error of the Estimate
0.614	0.378	0.371	0.551

INTERPRETATION

The model summary table displays the findings of a regression analysis that looks at the relationship between a dependent variable (like customer satisfaction or the perceived value of chatbots in online shopping) and a set of independent variables (likely elements like personalisation, response time, and ease of use). A moderately strong positive correlation between the independent and dependent variables is indicated by the R value of 0.614. This indicates that the dependent variable tends to increase along with the values of the independent variables. The model explains about 37.8% of the variance in the dependent variable, according to the R Square (R^2) value of 0.378. This is a significant percentage in social science research, suggesting that the variables chosen have a significant impact on outcome prediction. The R Square value is somewhat higher than the Adjusted R Square, which is 0.371. This adjustment provides a more accurate estimate of the model's explanatory power, particularly when multiple variables are involved, by taking into account the number of predictors used in the model. The average difference between the values predicted by the model and the observed values is 0.551, which is the Standard Error of the Estimate. Better model fit and higher predictive accuracy are indicated by a lower standard error. The regression model shows that the independent variables and the dependent variable have a statistically significant and moderately strong relationship. In the context of chatbot use in online shopping, the model predicts customer satisfaction or perceived usefulness with a reasonable degree of accuracy (37.8% of the variance explained). This implies that the selected elements—like responsiveness, personalisation, information quality, and ease of use—have a big impact on how users feel and how satisfied they are. Even though the model accounts for a sizable amount of the variance, more variables could be investigated or the current model could be improved for even more explanatory power.

Table 4

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	18.045	1	18.045	59.452	.000[b]
	Residual	29.745	98	.304		
	Total	47.790	99			
a. Dependent Variable: Satisfaction						
b. Predictors: (Constant), PU						

INTERPRETATION

In order to evaluate the effect of Perceived Usefulness (PU) on Customer Satisfaction in relation to chatbot usage in online shopping, an analysis of variance was performed. The results are summarised in the ANOVA table. The F-value of 59.452 and the p-value (Sig.) of 0.000, which are significantly below the traditional significance threshold of 0.05, show that the regression model is statistically significant. This implies that the dependent variable (satisfaction) is significantly impacted by the independent variable (perceived usefulness). Perceived usefulness alone accounts for a significant amount of the overall variation in customer satisfaction (Total Sum of Squares = 47.790), as evidenced by the regression's Sum of Squares of 18.045 and Residual Sum of Squares of 29.745. The model's strength is further supported by the fact that the regression's Mean Square is significantly higher than the residuals' (18.045 vs. 0.304). The findings demonstrate that, when it comes to chatbot interactions during online shopping, perceived usefulness is a significant predictor of customer satisfaction. The relationship is not the result of chance, as indicated by the high F-statistic and extremely low p-value. Because this directly and statistically significantly affects customer satisfaction, companies and e-commerce platforms should concentrate on making their chatbots more useful.

***Table* 5**

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.635	.262		10.055	.000
	PU	.447	.058	.614	7.711	.000
a. Dependent Variable: Satisfaction						

INTERPRETAION

In the context of chatbot use in online shopping, the coefficients table offers comprehensive insights into the relationship between Perceived Usefulness (PU) and Customer Satisfaction. Assuming all other variables remain constant, the unstandardised coefficient (B) for PU is 0.447, meaning that for every unit increase in perceived usefulness, customer satisfaction rises by 0.447 units. This indicates that the two variables have a positive linear relationship. With a standardised beta coefficient of 0.614, perceived usefulness appears to have a moderately strong impact on customer satisfaction. This indicates that PU is a major driver of satisfaction in this model and has a significant impact in comparison to other possible predictors (if included). The relationship is statistically significant, according to the t-value of 7.711 and the significance level (p-value) of 0.000. The high t-value indicates that the coefficient estimate is accurate, and the p-value of less than 0.001 indicates that the relationship between perceived usefulness and satisfaction is highly significant and not the result of chance. The findings unequivocally show that customer satisfaction with chatbots used for online shopping is significantly and favourably impacted by perceived usefulness. The high level of significance and strong standardised coefficient highlight how crucial it is to create chatbots that users actually find useful. E-commerce platforms can effectively improve user satisfaction and foster enduring customer loyalty by raising the perceived utility of chatbots—through precise, pertinent, and prompt assistance.

11. RESEARCH DISCUSSION

The study "The Impact of Chatbots on Customer Satisfaction in Online Shopping" provides insightful information about how different chatbot functionalities impact customer satisfaction and experiences. Chatbots have emerged as crucial tools for boosting user interaction, increasing service efficiency, and offering real-time assistance as online shopping keeps growing. Customers are more likely to interact with chatbots that have user-friendly interfaces and require little effort to use, so the conversation emphasises how important ease of use is. Accurate, pertinent, and understandable responses have a major impact on customer trust and decision-making, making information quality another crucial component. Additionally, response time is a major factor in determining customer satisfaction because prompt responses make shopping easier and less frustrating. Stronger

customer relationships are fostered by personalisation, or the chatbot's capacity to modify responses according to past interactions and customer preferences. This enhances the sense of being understood and appreciated. Furthermore, overall satisfaction is significantly impacted by perceived usefulness, or how much customers think the chatbot enhances their shopping experience. According to the study, chatbots that successfully handle these five elements not only answer consumer questions but also raise customer satisfaction by facilitating a smooth, customised, and effective online buying experience. According to these findings, e-commerce companies can gain a competitive edge and increase customer retention by carefully crafting chatbot interactions that meet customer expectations.

12. CONCLUSION

The study "The Impact of Chatbots on Customer Satisfaction in Online Shopping" concludes that by providing effective and knowledgeable assistance, chatbots significantly improve customer experience and satisfaction. The results show that customers' perceptions and interactions with chatbots during their online shopping journey are directly influenced by elements like perceived usefulness, response time, personalisation, information quality, and ease of use. Fast and smooth interactions are facilitated by features like ease of use and response time, while relevant and customer-focused support is guaranteed by information quality and personalisation. Furthermore, customers' trust and confidence in the online shopping environment are reinforced by chatbots' perceived utility. Chatbots can greatly increase customer satisfaction when these components are properly combined, which will boost customer loyalty, retention, and brand perception. To keep a competitive edge in the online market, e-commerce platforms should thus keep spending money on cutting-edge chatbot technologies that are responsive, easy to use, and customised to meet the needs of specific customers.

13. CONFLICTS OF INTEREST

There is no Conflicts of Interest among authors

14. FUNDING

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