



Analysis of Chatbot Efficacy Determinants on Customer Satisfaction Metrics in E-Retail Platforms

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Abstract: The research here explores the effect of chatbots use on Customer Satisfaction in India's e-retail market. Based on quantitative analysis of the experiences of 124 Indian e-retail customers the study explores how Usability, Responsiveness, and Extrinsic and Intrinsic Values impact Customer Experience. Correlation analysis showed significant positive correlations between chatbot characteristics and Customer Satisfaction, with Usability ($r=0.809$) showing the highest correlation, followed by Intrinsic Values ($r=0.798$), Extrinsic Values ($r=0.652$). Multiple regression analysis ($R^2=0.761$) showed Intrinsic Values ($\beta=0.359908$) and Usability ($\beta=0.375336$) as the most significant predictors of Customer Satisfaction, with Responsiveness having no significant direct effect. The results imply that e-retailers should create chatbots that are easy to use but also offer personalised, enjoyable interactions. This study offers empirical findings on certain qualities of chatbot interactions that promote Customer Satisfaction in the Indian e-retail context.

IndexTerms - Chatbots; Customer Satisfaction; E-retail; Artificial Intelligence; Customer Experience; Intrinsic Values; Extrinsic Values; Indian Retail.

I. INTRODUCTION

The fast-moving transformation of retail into the digital world has changed fundamentally how businesses communicate with their customers. Also, moving into e-retail platforms is being seen as a trend among businesses, making effective, efficient customer support very important today. Chatbots-the most recent innovation in technology- have been very significant in using artificial intelligence in customer service delivery, providing 24/7 availability and quick response to customers' queries.

Among such unprecedented growth states in the last few years, chatbots in the Indian e-retail background today offer a possible solution with a strategic perspective as the volume of customer interaction is increasing, yet the service quality will still be ensured. According to the India Brand Equity Foundation (IBEF), the Indian e-retail sector is expected to grow significantly, reaching about \$200 billion by 2026, leading to great demand for scalable customer support solutions to meet increasing customer demand without compromising service quality. The change in the delivery of customer service has made organisations rethink how it would affect the various dimensions of Customer Satisfaction with the implementation of chatbots.

Even though Chatbots are fast catching up with most e-retail platforms, there is still a need to study their perspective from the customer's end, especially in the Indian context. Studies have discussed the role of chatbots in banking and financial services; however, specific in-depth research focusing on e-retail customer service chatbots and their effects on Indian consumers' overall satisfaction is limited. The present study aims to bridge this gap by assessing how customers perceive chatbot use in terms of Usability, Responsiveness, and extrinsic and Intrinsic Values, thereby impacting Customer Satisfaction levels in the e-retail sector.

This research specifically portrays the relationship between using chatbots in e-retail customer support and Customer Satisfaction through quantitative analysis of the experiences of 124 Indian users. The study tries to capture multiple dimensions of chatbot interaction, namely, Usability, Responsiveness, and value creation. It gives a good understanding of how these technological solutions measure customers' satisfaction levels in the current e-retail scenario. This makes the investigation particularly timely, given the fast pace at which retail operations are being converted digitally and the growing dependence on automated customer service solutions in the post-pandemic world.

Gaining insights into such relationships is important for online retailers, as they constantly implement and invest in chatbot technologies. The outcome of this study will widen the base of knowledge on customer service automation and provide practice-oriented insights to e-retailers who seek to improve their customer support operations through chatbots.

II. NEED FOR THE STUDY

In India, e-retail has quite literally changed the way customers view things and has revolutionised retailing pretty much for a lifetime. Now that the e-retail industry is on its way to healthy growth and, thus, tremendous projections through 2026, it has become pertinent to understand the factors that determine Customer Satisfaction, specifically in the case of AI-performing end-user interactions with chatbots, for maintaining the competitive edge in this fast-changing business environment.

Today's e-retail ecosystem is such that it is invariably driven by ever-new whims of consumerism and an ever-growing portfolio of products, requiring super technological solutions to establish truly personalised and delivery-effective customer services. With the set-up of such an emerging field, chatbots are the most viable technology creating a paradigm shift in service provision by permitting all-the-time sustenance, instant gratification, and the capacity to serve more than one customer simultaneously. However, despite much hype, it has not been quite possible to bring to the ground, the relationship between the interaction between chatbots and Customer Satisfaction in the Indian e-retail contexts, which significantly differ in consumer behaviour and social acceptance patterns from the globe at large.

Therefore, it becomes necessary to seek answers to key questions such as how customers can rate the chatbot interaction in terms of Usability, Responsiveness, extrinsic dimensions, and intrinsic ones in the Indian context. Identifying these key dimensions of chatbot interaction, therefore, complements such initiatives with a more elaborate view of a defining framework for establishing drivers of satisfaction in support systems enabled by chatbots.

With Indian e-retailers closely linking chatbots to their customer service architectures, the lack of empirical evidence on key attributes driving Customer Satisfaction becomes a critical problem. In the absence of an understanding of these factors, businesses risk putting in place chatbot solutions that do not adequately meet consumer expectations, resulting in customer dissatisfaction, reduced loyalty, and possible negative effects on brand health.

This study exists for multifarious reasons. Primarily, it sheds pertinent light on the desolate corners of literature by bringing forward the empirical evidence into the granular qualities of chatbot interactions that foster better Customer Satisfaction concerning e-retailing within the Indian context. Second, in the row, the study could work on actionable recommendations for e-retailers to optimise the design and functionality of chatbots toward orienting and fulfilling customers' expected experiences. Finally, it serves to understand better AI-enabled customer service in e-retail businesses- worth to practitioners and researchers in digital retailing and customer experience management.

III. SCOPE OF THE STUDY

This research has a prime focus on the use of chatbots in today's e-retailing customer service and reinforces the fact that the findings will be applicable in other associated industries. The study covers the evaluation of chatbot installations in major e-retailers and also other smaller online retailers that use those main customer support functions granted by artificial intelligence. It examines the specific roles of the chatbots in the e-retail context, focusing on their impact on Customer Satisfaction through handling frequently asked customer queries, product information inquiries, provision of package status, and after-sales support. Thus, it is significant to those established in e-commerce as well as to new online retailers intending to optimise customer service operations while keeping a close eye on quite several operation costs.

The study also extends into the adjacent sectors where the relevant applications of chatbots are becoming increasingly common, such as banking and telecommunications, whereby many automation features of customer service from these sectors have been borrowed wholly or partially from e-retail applications. Cross-industry solutions, therefore, add insights into best practices and potential blind spots in chatbot customer support. Although the research investigates the e-retailing environment, its implications are generalisable in determining how AI-driven customer service solutions affect the entire service industry's customer support operations, transaction processing, and personalised service delivery. All these contrivances contribute to the overall Customer Satisfaction in the digital retail space.

IV. OBJECTIVES OF THE STUDY

4.1 Primary Objective

The primary objective of this study is to evaluate the impact of chatbot usage in e-retailing customer support on Customer Satisfaction, with a specific focus on Usability, Responsiveness, extrinsic and Intrinsic Values, and the overall customer experience.

4.2 Secondary Objectives

1. To analyse the level of significance of the factors through the demographic variables.
2. To determine the level of association between chatbot Usability and Customer Satisfaction.
3. To examine the relationship between chatbot Responsiveness and the perceived quality of customer support.
4. To assess the impact of extrinsic and Intrinsic Values on the customer's e-retail experience and satisfaction.
5. To evaluate the potential of chatbots to enhance customer engagement and business outcomes in e-retailing.
6. To establish the relationship among the various factors of the model.

V. REVIEW OF LITERATURE

Jing Ziyi et al. (2024) examined how these chatbots can personalise customer interactions and enhance healthcare experiences, particularly for the ageing population seeking convenient healthcare services.

Mohamed Al-Shafei (2024) investigated banking chatbots in Qatar. 24 everyday users and 18 banking experts were interviewed. How chatbots communicate—and how human-like they appear—does influence how satisfied users are. It also highlighted the importance of negative emotions and privacy concerns in shaping how consumers interact with chatbots.

Khan et al. (2023) explored the relationship between AI and customer loyalty in digital marketing. 104 customers from hotels and restaurants in Pakistan were surveyed. The findings showed that AI does have a positive impact on customer loyalty. Chatbots can bridge that gap between AI implementation and consumer loyalty.

Amelia et al. (2024) looked at what drives Customer Satisfaction with chatbots. 150 users were surveyed and found that perceived usefulness and ease of use are key factors. Perceived usefulness was the real driver of satisfaction. Most of the respondents were young men aged 18-29 who used banking chatbots to resolve complaints.

Yimin Zhu and colleagues (2023) conducted three scenario-based experiments to examine how different chatbot response styles affect Customer Satisfaction. The results indicated that concrete responses lead to greater satisfaction than abstract ones, with empathic accuracy being a significant factor. Perhaps incorporating a touch of charm in the chatbot's design could help mitigate any negative effects caused by the lack of empathic accuracy.

In another study, **Chen et al. (2021)** looked at how AI chatbots affect the online customer experience in Taiwan's e-retailing industry. 425 participants were surveyed. Chatbot Usability positively impacted customer experience's extrinsic factors. Responsiveness positively impacted the intrinsic factors. The chatbot's personality influenced the relationship between Usability and customer experience.

Heba Abdelwahab (2023) found that the reliability, Responsiveness, interactivity, and Usability of chatbots significantly enhance the overall customer experience. This, in turn, led to increased Customer Satisfaction and advocacy.

VI. RESEARCH METHODOLOGY

A descriptive research approach within a quantitative framework was used and this study investigated the influence of chatbots on Customer Satisfaction in e-commerce customer care. Data was acquired from 124 individuals through an online survey, without the limits of a controlled environment.

The conceptual model looked at how adopting chatbots—measured by their Usability and Responsiveness—affects Customer Satisfaction. Online customer experience was also considered, including both extrinsic and Intrinsic Values, as mediating variables, while personality was a moderating variable.

A structured questionnaire with a 5-point Likert scale was used to measure these aspects:

- Usability (9 items)
- Responsiveness (4 items)
- Extrinsic Values (6 items)
- Intrinsic Values (3 items)
- Customer Satisfaction (4 items)
- Personality (4 items)

Before the main study, a pilot test with 50 participants was conducted to ensure the survey was effective. Correlation analysis and regression analysis were used to understand the relationships between variables.

VII. DATA ANALYSIS

7.1 Correlation Analysis

Table 7.1: Correlation Analysis

Correlation		Usability	Responsiveness	Extrinsic Values	Intrinsic Values	Customer Satisfaction	Personality
Usability	Pearson Correlation	1.000	0.698	0.815	0.748	0.809	0.595
	Sig. (2-tailed)	-	0.000	0.000	0.000	0.000	0.000
Responsiveness	Pearson Correlation	-	1.000	0.767	0.716	0.652	0.524
	Sig. (2-tailed)	-	-	0.000	0.000	0.000	0.000
Extrinsic Values	Pearson Correlation	-	-	1.000	0.749	0.775	0.576
	Sig. (2-tailed)	-	-	-	0.000	0.000	0.000
Intrinsic Values	Pearson Correlation	-	-	-	1.000	0.798	0.609
	Sig. (2-tailed)	-	-	-	-	0.000	0.000
Customer Satisfaction	Pearson Correlation	-	-	-	-	1.000	0.637
	Sig. (2-tailed)	-	-	-	-	-	0.000

Personality	Pearson Correlation	-	-	-	-	-	1.000
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The correlation analysis showed strong positive relationships between chatbot attributes and Customer Satisfaction. Usability had the strongest correlation with Customer Satisfaction ($r=0.809$), showing ease of use has a big impact on user experience. Intrinsic Values followed closely ($r=0.798$), meaning enjoyment and personalisation are key satisfaction drivers. Extrinsic Values ($r=0.775$) and Responsiveness ($r=0.652$) also showed strong positive correlations. This confirms that functional aspects (Usability, Responsiveness) and experiential elements (intrinsic and Extrinsic Values) work together to shape Customer Satisfaction in e-retail chatbot interactions.

7.2 Regression Analysis

Table 7.2: Regression Analysis

Variables	Unstandardised Co-efficient	SE of B	Standardised Co-efficient	t Value	P Value
Constant	-0.055634	0.197883	-	-0.281146	0.779091
Usability	0.375336	0.091104	0.348646	4.119862	0.000071
Responsiveness	-0.073816	0.078163	-0.070505	-0.944393	0.346899
Extrinsic Values	0.220875	0.099454	0.201244	2.220873	0.028268
Intrinsic Values	0.359908	0.079111	0.355476	4.549393	0.000013
Personality	0.130356	0.057366	0.134250	2.272346	0.024876

In the multiple regression analysis ($R^2=0.761$, $F=75.343$), the factors predicting Customer Satisfaction were revealed with Intrinsic Values as the strongest predictor, $\beta=0.359908$, $p=0.000013$, which confirms that enjoyment and customisation mean a lot to the customer. Usability is also a significant predictor, $\beta=0.375336$, $p=0.000071$, further confirming the importance of Usability. Extrinsic Values ($\beta=0.220875$, $p=0.028268$) and personality features ($\beta=0.130356$, $p=0.024876$) also presented their significance. The Responsiveness of e-retailers did not hold any significance ($p=0.346899$), inferring that while it is related to satisfaction, its effect is probably mediated by other variables.

VIII. PRACTICAL IMPLICATIONS

Therefore, e-retailers must develop chatbots that are not only easy to use but also allow for the creation of personal and enjoyable experiences. The strong influence of Intrinsic Values means that chatbots that make customers feel valued and provide effortless benefits will yield the highest satisfaction. E-retailers should combine both functional elements (Usability) and experiential aspects (intrinsic and Extrinsic Values) to make chatbots effective and overall customer experience better.

IX. DISCUSSIONS

The study identified strong correlations between chatbot features and Customer Satisfaction in e-retail settings. Correlation analysis showed Usability ($r=0.809$), Intrinsic Values ($r=0.798$), and Extrinsic Values ($r=0.775$) had strong correlations with satisfaction, indicating multiple dimensions had synergistic contributions to the customer experience. The regression model ($R^2=0.761$) shows that intrinsic value ($\beta=0.359908$, $p=0.000013$) and Usability ($\beta=0.375336$, $p=0.000071$) predicted satisfaction better than the other variables included in the model: Extrinsic Values and personality traits.

These findings complement existing knowledge by stressing the importance of experiential factors during the online interaction parameters. While technical performance is essential, in all probability, emotional engagement in the form of enjoyment and personalisation has been more dominant in deciding satisfaction. This implies that e-retailers have to concentrate on custom-designed chatbots that are user-friendly and functionally effective while ensuring that enjoyment-enhancing conversational elements are not compromised. In particular, businesses should deploy chatbots that save preferences and suggest personalised recommendations; with simple conversation flows and personality traits in alignment with brand values. Beyond transactional, chatbots must also deliver product-related knowledge that assists customers in making informed choices thus extending the brand experience, rather than just being functional assistants.

The lack of significance of Responsiveness deserves further research, as it defies current assumptions regarding technical performance measures. These studies may be used in future studies to examine how changes in satisfaction are manifested over several contacts and lead to ever-greater insights into the customer relationship cycle in the digital retail environment. Generally, the findings suggest that the best way to increase satisfaction and engagement with e-retail is to develop bots which customers like using rather than simply tolerating them.

X. CONCLUSION

The findings of the research state that customers' satisfaction with e-retailing chatbots is predominantly influenced by Usability factors and Intrinsic Values rather than technical Responsiveness alone. The intercorrelation between the parameters ($r>0.75$) and

their ability to tremendously explain the regression model ($R^2=0.761$) denote that different complex dimensions define the successful implementation of chatbots. E-retailers looking to improve Customer Satisfaction need to aim at creating chatbots that are not only highly functional but also fun, engaging, and personalized experiences that reward customers with feelings of appreciation. By striking the right balance between functional design and experiential aspects, companies can turn chatbots from basic customer service utilities into rich brand touchpoints that significantly add to the overall customer experience. As digital interactions become more sophisticated, emphasizing these human-focused aspects of chatbot design is a strategic move towards establishing more robust customer relationships and a competitive edge in the e-retail market.

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