



Consumer Perception and Preferences towards AI Chatbots: An Empirical Study of E-Commerce Users in Ludhiana

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ABSTRACT

How to Cite this Article:

Sethi, A. & Gulati, I. (2026). Consumer Perception and Preferences towards AI Chatbots: An Empirical Study of E-Commerce Users in Ludhiana. International Journal of Creative and Open Research in Engineering and Management, 2(6).

<https://doi.org/10.55041/ijcope.v2i6.411>

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<https://doi.org/10.55041/ijcope.v2i6.411>

Artificial Intelligence (AI) chatbots have become a defining feature of the online shopping experience, reshaping the way e-commerce platforms communicate with and serve their customers. This study examines consumer perception, trust, and attitude toward AI chatbots in the context of online retail, and identifies the key factors that drive their preference and adoption among shoppers. An analytical research design was adopted, with primary data gathered through a structured questionnaire administered to 145 respondents from Ludhiana who had prior experience using AI chatbots while shopping online. Respondents were selected through random sampling, and the resulting data were examined using mean analysis and exploratory factor analysis. The findings indicate that consumers hold a broadly favourable view of AI chatbots, rating them positively for their helpfulness, ease of use, and convenience during the purchase process. Attitudes toward chatbot usage were equally encouraging, pointing to a growing willingness among consumers to rely on AI-driven assistance while shopping online. Trust, while moderately high overall, was tempered by lingering concerns over data privacy, security, and the reliability of chatbot responses. Exploratory factor analysis further revealed three underlying dimensions shaping chatbot adoption: User Acceptance, Perceived Convenience, and Behavioural Intention. Taken

together, the results suggest that while AI chatbots are increasingly seen as valuable shopping companions, e-commerce businesses must continue to invest in stronger data security, deeper personalization, and more responsive design if they are to fully earn consumer trust and sustain long-term adoption.

Keywords: Consumer Perception, Trust, Attitude, AI Chatbots, Consumer Preferences, Customer Satisfaction, E-commerce



1. INTRODUCTION

The digital transformation of commerce has fundamentally altered the way businesses interact with consumers. What was once a domain dominated by human customer support has, in recent years, given way to Artificial Intelligence (AI) as one of the most consequential technological shifts in retail. AI chatbots, built on Natural Language Processing (NLP) and Machine Learning, are designed to interpret human language and simulate conversation, allowing them to offer suggestions, resolve queries, and respond to customers in real time. Their reach now extends well beyond e-commerce into banking, healthcare, hospitality, and food delivery, where they are increasingly used to improve operational efficiency and elevate customer satisfaction.

The COVID-19 pandemic served as a turning point in the adoption of conversational AI, as businesses moved rapidly online and customers came to expect round-the-clock service. This shift was reinforced by the growing penetration of smartphones, wider availability of affordable internet, the expansion of online retail platforms, and the rise of fintech solutions. In the Indian context, platforms such as HDFC Bank's EVA, Flipkart, Amazon India, Swiggy, and Axis Bank's Aha have integrated chatbots to handle queries, generate recommendations, and facilitate transactions — evidence that Indian consumers have grown increasingly receptive to this mode of interaction.

Yet consumer responses to chatbots remain far from uniform. While many appreciate the convenience, round-the-clock availability, and responsiveness that chatbots provide, others remain wary of their inability to replicate the empathy and nuance of human interaction. This tension makes it essential for businesses to understand not only what consumers prefer — chatbot-based assistance versus traditional human support — but also how they perceive these systems in terms of reliability, trustworthiness, and data privacy.

Against this backdrop, the present study sets out to examine consumer preferences and perceptions toward AI chatbots within India's e-commerce sector, with particular attention to how attributes such as speed, reliability, and personalization shape trust, attitude, and overall perception during the online purchase journey. By connecting the technical capabilities of AI chatbots with the psychological drivers of consumer behaviour, the study aims to offer both academic insight and practical guidance for businesses seeking to design more consumer-centric chatbot experiences in the Indian market.

2. REVIEW OF LITERATURE

Chen, Wang, and Wood (2025) examined how different dimensions of service quality shape consumers' inclination to move from human agents to AI chatbots during online shopping. Drawing on a survey of 575 respondents and using Structural Equation Modelling, the study isolated four dimensions — synchronization, perceived humanity, problem-resolution capability, and comprehension ability — and found that each exerted a distinct degree of influence on consumer perception.

Kim and Priluck (2025) compared consumer responses to chatbots built on large language models against those relying on more traditional architectures, with a focus on how each shapes purchase decisions and product information-gathering behaviour. By examining consumer awareness and preference patterns, the authors addressed a gap in earlier literature, which had largely concentrated on the functional aspects of chatbot use rather than direct, comparative evaluation.

Dewanti and Ikhsan (2025) investigated whether chatbot interaction enhances consumer performance within the service industry, drawing on the concepts of e-lifestyle and anthropomorphism. Surveying 336 Indonesian consumers and applying PLS-SEM, they found that chatbot experience, consumer competence, and overall performance were positively linked — suggesting that chatbots do more than imitate human behaviour; they actively support consumers in decision-making and, by extension, help refine service delivery.



Nehra et al. (2024) explored the role of conversational tools in shaping the user experience within grocery retailing, focusing specifically on perceived usefulness and trust. Using Structural Equation Modelling, the study found that a favourable attitude toward online grocery shopping strengthened the influence of these factors on consumer decision-making.

Gu, Zhang, and Zeng (2024) investigated why some consumers continue to trust AI chatbots even after experiencing service failures. Through a scenario-based experiment involving 436 customers and Partial Least Squares Path Modelling, they showed that chatbots exhibiting social warmth and empathetic, human-like behaviour were more likely to retain consumer trust despite occasional service breakdowns.

Ranieri, Di Bernardo, and Mele (2024) studied both the favourable and unfavourable effects of chatbot interaction on the broader customer experience, drawing on a large sample of 7,167 respondents. The study found that while chatbots build trust through instant, accessible support, rigid or impersonal responses can just as easily generate frustration — underscoring the double-edged nature of chatbot-mediated service.

Mäkinen et al. (2024) explored consumer perception of AI chatbots in digital customer service settings, centring the analysis on engagement, trust, usability, satisfaction, and ease of use. Using descriptive and regression analysis, the study found that higher levels of trust and satisfaction translated directly into greater willingness to use chatbots.

Khan et al. (2024) examined the role AI chatbots play in strengthening customer service across industries, drawing on case studies, industry practice, and user feedback alongside Natural Language Processing and machine learning techniques. The findings pointed to chatbots' capacity to enhance satisfaction and foster brand loyalty by providing assistance whenever it is needed.

Timothy et al. (2024) studied how AI chatbots influence consumer behaviour within Nigeria's e-commerce sector, focusing on usage patterns and adoption levels among 206 university students. Correlation and descriptive-inferential analysis revealed meaningful links between demographic characteristics — age, education, and digital literacy — and the intensity of chatbot use, with real-time service and ease of use emerging as key reasons for preference.

Huseynov (2023) traced how AI chatbots have reshaped marketing, sales, and customer service while helping to reduce operational costs. By classifying chatbots according to purpose, interaction style, and underlying technology, the study illustrated their diversification across sectors such as travel, education, e-commerce, and healthcare, and their growing influence on engagement, business agility, and sales efficiency.

Chen, Guo, Ren, Li, and Ham (2024) investigated how a chatbot's conversational style shapes consumer perception and visual attention. Using eye-tracking analysis and ANOVA across 76 participants and 18 chatbot prototypes representing varying levels of anthropomorphism, the study found that chatbots combining high anthropomorphism with a human-like conversational style produced stronger satisfaction and a greater sense of social presence.

Marjerison, Zhang, and Zheng (2022) analysed how different chatbot engagement strategies influence consumer behaviour during online purchasing, using scenario-based experiments alongside moderation and mediation analysis involving psychological distance and performance expectancy. The results showed that non-verbal cues, such as the use of emojis, meaningfully strengthened engagement and trust.

Collectively, this body of research underscores a consistent pattern: convenience, responsiveness, and a degree of human-like warmth tend to strengthen consumer trust and satisfaction with AI chatbots, while concerns over impersonal or rigid responses, data privacy, and service reliability continue to temper adoption. The present study builds on this literature by examining these dynamics specifically among e-commerce consumers in Ludhiana, India.



3. OBJECTIVES OF THE STUDY

This research is guided by the following objectives:

1. To analyse consumer perception, trust, and attitude toward the use of AI chatbots on e-commerce platforms in enhancing the online shopping experience.
2. To identify and evaluate the key factors influencing consumer preference and adoption of AI chatbots in making online purchasing decisions.

4. RESEARCH METHODOLOGY

4.1 Research Design

The study adopts an analytical research design to examine consumer perception and preference toward AI chatbots in the context of online purchasing. The target population comprised consumers who actively use e-commerce platforms and have prior experience interacting with AI chatbots. Data were collected from respondents based in Ludhiana between December and January, using a structured questionnaire. A sample of 145 respondents was drawn through random sampling to ensure an unbiased and representative dataset.

To analyse the data, several complementary statistical techniques were employed. Mean analysis was used to assess respondents' average level of agreement with statements relating to perception, trust, and attitude. Exploratory Factor Analysis (EFA) was applied to uncover the underlying factors driving chatbot adoption, while correlation analysis was used to examine the relationships among these factors. Regression analysis was subsequently conducted to assess the impact of the identified factors on consumers' perceived adoption of AI chatbots in online purchasing.

5. DATA ANALYSIS AND INTERPRETATION

5.1 Mean Analysis

Mean scores were computed to gauge respondents' average level of agreement with statements concerning their perception of, trust in, and attitude toward AI chatbots. All statements were measured on a five-point Likert scale (1 = Strongly Agree, 5 = Strongly Disagree), with a sample size of 145.

5.1.1 Consumer Perception toward AI Chatbots

Statement	Mean Score	Interpretation
AI chatbots provide helpful and relevant information during my shopping.	1.86	Agree
I find AI chatbots easy to use and interact with.	2.03	Agree
AI chatbots improve the convenience of online shopping.	2.10	Agree
AI chatbots respond quickly and save my time.	2.12	Agree
Overall Mean	2.03	Agree

The mean scores range from 1.86 to 2.12, pointing to a consistently positive perception of AI chatbots among respondents. Consumers particularly agree that chatbots are easy to use and meaningfully improve the convenience of online shopping. With an overall mean of 2.03, the data suggest that consumers view AI



chatbots as a genuinely useful tool for enhancing the online shopping experience, reflecting a favourable disposition toward their continued use.

5.1.2 Trust toward AI Chatbots

Statement	Mean Score	Interpretation
I trust AI chatbots to provide accurate information.	2.02	Agree
I believe my personal data is safe when interacting with chatbots	2.43	Moderate Agreement
I feel confident that chatbots handle my queries properly.	2.37	Moderate Agreement
I trust chatbots to help me make better shopping decisions.	2.34	Moderate Agreement
Overall Mean	2.29	Agree

Trust scores range from 2.02 to 2.43, somewhat lower and more tempered than the perception scores. While respondents largely trust the accuracy of information provided by chatbots, moderate agreement on statements relating to data safety and query handling suggests that concerns about privacy and reliability have not been fully resolved. This indicates that trust, while reasonably solid, remains an area requiring continued attention from e-commerce businesses.

5.1.3 Attitude toward AI Chatbot Usage

Statement	Mean Score	Interpretation
I enjoy interacting with AI chatbots while shopping online.	1.99	Agree
I am willing to use AI chatbots regularly for shopping assistance	2.26	Agree
I believe chatbots improve my overall online shopping experience.	2.32	Moderate Agreement
I have a positive attitude toward using AI chatbots in e-commerce.	2.10	Agree
Overall Mean	2.17	Agree

Attitude scores range from 1.99 to 2.32, with an overall mean of 2.17, indicating that consumers genuinely enjoy interacting with AI chatbots and are willing to continue using them for shopping assistance. The comparatively moderate agreement on whether chatbots improve the overall shopping experience suggests that, while attitudes are favourable, consumers remain somewhat measured in attributing broader experiential gains directly to chatbot use.



5.2 Exploratory Factor Analysis

Factor analysis was used to identify and evaluate the key underlying factors influencing consumer preference and adoption of AI chatbots. As a data-reduction technique, it groups correlated variables into a smaller number of common factors, helping to simplify the data structure and reveal the latent dimensions shaping consumer behaviour.

5.2.1 KMO and Bartlett's Test

Measure	Value
Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy	0.910
Bartlett's Test of Sphericity — Approx. Chi-Square	989.299
Degrees of Freedom (df)	120
Significance (Sig.)	0.000

A KMO value of 0.910 indicates excellent sampling adequacy, confirming that the variables share sufficient common variance to justify factor analysis. The Bartlett's Test of Sphericity yielded a Chi-Square value of 989.299 ($df = 120$, $p < 0.05$), confirming statistically significant correlations among the variables. Together, these results affirm that the dataset is well suited to exploratory factor analysis.

5.2.2 Total Variance Explained

Using Principal Component Analysis, three components emerged with eigenvalues greater than 1, satisfying the Kaiser criterion for factor retention. The first component recorded an eigenvalue of 6.989, accounting for 43.68% of the total variance and contributing the largest share among the three. The second component had an eigenvalue of 1.121, while the third recorded an eigenvalue of 1.073, together explaining a cumulative 56.77% of the total variance — a result consistent with prior chatbot-adoption studies and indicative of a coherent factor structure.

5.2.3 Rotated Component Matrix

The Rotated Component Matrix groups the sixteen observed variables into three underlying components based on their factor loadings, representing the principal dimensions shaping consumer preference and adoption of AI chatbots.

Factor 1 — User Acceptance: This factor comprises six variables with the highest factor loadings, including personalized responses, friendly communication style, and chatbot assistance in decision-making. It highlights the central role that ease of use and perceived reliability play in shaping consumer acceptance of AI chatbots.

Factor 2 — Behavioural Intention: This factor includes four variables relating to consumers' comfort with repeated chatbot use, the time savings they offer, and respondents' willingness to use chatbots for future purchases.

Factor 3 — Perceived Convenience: This factor consists of five variables capturing round-the-clock availability, prompt responses, and the usefulness of chatbots for tracking orders and resolving straightforward queries.

One variable — preference for chatbots because they eliminate the need to wait for human agents — recorded a factor loading of 0.479, falling below the conventional 0.5 threshold and was therefore not retained under



any factor. Together, the three retained factors capture the principal dimensions shaping consumer perception and usage of AI chatbot technology in e-commerce.

6. FINDINGS

- Consumer perception scores range from 1.86 to 2.12, with an overall mean of 2.03, indicating that respondents regard AI chatbots as relevant, helpful, and easy to use, and agree that chatbots enhance the convenience of online shopping.
- Trust scores range from 2.02 to 2.43, with an overall mean of 2.29. While respondents generally trust chatbots to deliver accurate information, moderate agreement on data safety and query-handling reflects a comparatively more cautious stance than that observed for perception.
- Attitude scores range from 1.99 to 2.32, with an overall mean of 2.17, suggesting that consumers enjoy interacting with chatbots and are willing to use them regularly, signalling broader acceptance of AI-driven assistance in e-commerce.
- Exploratory factor analysis identified three key factors underlying chatbot adoption: User Acceptance, Perceived Convenience, and Behavioural Intention.
- User Acceptance emerged as a particularly influential factor, indicating that consumers are more inclined to adopt chatbots they perceive as easy to use and reliable.
- Overall, the factor analysis points to convenience, ease of use, and positive behavioural intention as the principal dimensions driving consumer preference for AI chatbots.

7. CONCLUSION

This study set out to examine consumer perception and preferences toward AI chatbots among e-commerce users in Ludhiana. The mean analysis reveals a broadly positive consumer response, with scores for trust, perception, and attitude all falling within the range of agreement. Among the three constructs, consumer perception emerged as the strongest, particularly in relation to the helpfulness and ease of use of chatbots. Respondents also expressed a favourable attitude, reflecting a clear willingness to continue using chatbot services in the future. At the same time, concerns surrounding data safety, privacy, and security continue to generate moderate apprehension, suggesting that trust, while reasonably solid, remains the most fragile of the three dimensions. Overall, the study's objectives were met, with consumers expressing a positive response to the use of AI chatbots on online shopping platforms.

The exploratory factor analysis identified three key factors shaping chatbot adoption — User Acceptance, Perceived Convenience, and Behavioural Intention Acceptance — which together explained a substantial proportion of the total variance, underscoring their role as the primary dimensions influencing consumer preference. Among these, Perceived Convenience and User Acceptance exerted the strongest influence on perceived adoption, while Behavioural Intention, though positive, showed a comparatively weaker effect. These results affirm that convenience and ease of use remain the most decisive considerations for consumers deciding whether to adopt AI chatbots for online purchasing.

In sum, this research positions AI chatbots as a valuable technological development within India's e-commerce landscape — one that is already contributing meaningfully to improved customer service, more confident decision-making, and broader consumer acceptance of AI-driven digital experiences. For e-commerce businesses, the path forward lies in strengthening data security, deepening personalization, and improving responsiveness, so as to convert the current moderate levels of trust into the sustained confidence needed for long-term chatbot adoption.



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