



RESEARCH ARTICLE

Determinants of Gen Z's adoption of chatbots in online shopping: An empirical investigation

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Abstract

Online shopping is in a growth phase in India. Most of the online shopping companies are leaving no stone unturned to attract customers to their websites or apps. The companies are introducing innovative website/app features to engage their prospects and customers. *This study is an exploratory study followed by descriptive analysis to find out the preference of Gen Z customers towards the usage of Chatbots.* The sample includes 171 Gen Z customers from Bengaluru, India comprising of different backgrounds. Their preferences have been ascertained with the help of a well-structured questionnaire. The study uses judgment sampling. A conceptual framework has been proposed comprising four factors, namely Brand Perception, Service Quality, Personalization and Demographics. Different statistical techniques like frequency tables, Dimension Reduction methods (Principal Component Analysis) and Multiple Linear Regression are used for data analysis. Authors found the factors viz Brand Perception, Service Quality and Personalization to be significant in the varying levels of their importance. The output of the analysis is interpreted and its implications on online shopping companies have been highlighted.

Keywords: Chatbots, Gen Z, online shopping, Trust, Customer Satisfaction, Customer Preference.

Introduction

In the new millennium, advancements in technology have impacted almost all facets of human life. Shopping is definitely one of those aspects where technological advancements have made human life convenient. In metropolitan and class 1 cities in India, online shopping has been accepted well by the target segment. Online shopping is innovative in 2 areas- customer interface and back end, Steward S (1999). Online shopping organizations of today are leaving no stone unturned to attract customers to their websites. Their primary objective is to enhance the customer experience and capture their customer's mindshare. They must keep up with new and changing innovations to stay competitive, Bhakuni, S. (2023). Hence, innovative features are being added to their websites and apps to fulfill this

objective. Chatbot in an online shopping, simply put, is an electronic version of recommending products to the customer. Generally, individuals are inclined to depend on the assessments and recommendations provided by other consumers, Verma, N. (2024). One of the features that has revolutionized the customer experience is the introduction of Chatbots. This paper explores multiple factors that have led to the adoption of Chatbots among Gen Z users.

Statement of the problem

The adoption of chatbots among Gen Z was quite swift and smooth. Gen Z, people born between 1995 – 2010, Mahapatra, GP *et al.* (2022), are known for embracing new technology immediately. In recent times, there are examples of technologies like virtual reality, blockchain, and IoT, which were adopted swiftly, whereas there are other technologies like Segway and Google glass, which were rejected by Gen Z (TOI, 2024). So it is very important to understand the motivations and reservations of Gen Z towards adopting a new technology. Moreover, online shopping companies are also looking to enhance customer engagement. The higher the customer engagement, the higher the chances of making a sale. Hence the new technological features may play an important role in better customer engagement and hence sales. *The research in the field of technology adoption by Gen Z is quite limited and rare in the Indian context.* This study aims to unravel the factors influencing the adoption of chatbots among Gen Z users.

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Objectives of the Study

1. To identify the primary factors influencing Gen Z's adoption of chatbots in online shopping.
2. To find out the impact of the identified factors on Gen Z's preference for usage of chatbots.
3. To evaluate the demographic profile of Gen Z consumers in relation to chatbot usage.
4. To provide recommendations for enhancing the effectiveness of chatbots in online shopping.

Literature Review

Consumers' perception of chatbot functionalities plays an important role in chatbot usage. The adoption of chatbots increases when it aids in giving pertinent responses to the customer's query, saving time and making the task at hand simple Alalwan *et al.* (2018). Luo and Remus (2020) further supported the above study by finding out the positive impact of accurate and timely responses of a chatbot on perceived usefulness, encouraging quicker adoption and enhanced usage. A hassle-free experience and a friendly interface also enhance the customer usage of chatbots. If a customer is able to receive information on his query with minimal effort, the chatbot is preferred. Tussyadiah and Miller (2019) in their study established a direct correlation between ease of usage and customer satisfaction, especially with the less tech savvy customers unfamiliar with digital interfaces. Additionally, Vakhrushve (2024) also found out that a friendly interface contributes immensely to customer satisfaction on famous online shopping websites. This further motivates customers to use this technology in the near future.

Trust is an important component that drives the usage of chatbots by customers. In a lot of cases, chatbot wants customer information and other whereabouts to authenticate his identity, a customer should have trust in technology to perform these actions. Apart from showing reliability and competence in answering customer queries Liu and Hung (2021), trust is also built through transparency in the functioning of chatbots. As it's a new technology, privacy concerns regarding handling personal customer data will be there and certain confidence measures need to be built to mitigate the same Fu *et al.* (2024). Prokofieva and Miah (2019) observed that customers generally do not like to deal with technologies that ask for extensive customer data to operate. Customers are generally uncomfortable with technologies that probe a lot unless there are clear advantages to providing that data. Furthermore, Sharma *et al.* (2024) show that privacy concerns act as a moderator, which has the ability to reduce the positive effect of trust on adoption intention.

Personalization is another important reason for the adoption of chatbots. Personalization is the ability of the chatbot to remember your preferences and provide results that suit one's past liking and browsing experience.

Studies by Paschen, Wilson, and Ferreira (2020) reveal that personalization increases the perceived usefulness as customers are able to get recommendations suited to them. It also increases the likelihood of repeated interaction with a chatbot, as consumers appreciate the relevance and convenience of tailored suggestions. Tussyadiah and Park (2012) found that personalization enhances the customer experience. It reduces the effort for them to search and helps them find the products faster and easier. Research by Pillai and Sivathanu (2024) shows it is not only the utilitarian aspect of chatbots that leads to customer satisfaction, but peripheral features like humor, casual language and gaming-like elements further add to it. According to Ashfaq *et al.* (2020), chatbot's acceptability with customers goes up because of their ability to build an emotional connection with the customer. They found a connection between customer's enjoyment and emotions while chatbot usage. Lin *et al.* (2020) found that recommendations of peers enhance one's preference for chatbots. Cheng *et al.* (2022) also showed that positive reviews on online shopping and other websites enhance the customer's perceptions, leading to the adoption and subsequent usage of chatbots.

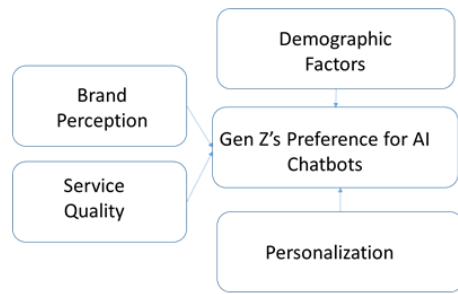
Yoo, Lee, and Park (2010) observed that customer satisfaction with the chatbot depends on how swiftly and accurately a chatbot can solve a problem. Chatbots that are empathetic to customer queries are much more likely to be adopted compared to chatbots that fail to appreciate the user's questions. This is in line with Liu *et al.* (2021) study which highlights the emotional aspect between a user and a chatbot. Chatbots who are empathetic to user queries have the ability to shape positive perceptions and subsequent usage.

Pantano and Pizzi's (2020) research demonstrates how an affable tone of a chatbot gets more positive reviews from users. The users found these chatbots more human and less robotic. Other factors that contribute to customer satisfaction include the ease of interaction, layout, and aesthetics. This synergizes with the findings of Bulmer *et al.* (2018), who suggested that a chatbot that can interact continuously without faltering on the facts and can converse constantly enhances the customer experience.

The accuracy in responses and clarity in conversations are two main aspects that define the usability metric of a chatbot. As the chatbot technology evolves, further usability will also get enhanced because of the fusion of new technologies like virtual reality, storage devices, machine learning capabilities etc.

Conceptual Framework

Figure 1 depicts different variables impacting the usage of chatbots in online shopping. Independent variables like communication style, offers and discounts discovery, understanding the user, response of chatbot, satisfied results, query transfer to humans, good customer experience, human



Source: Primary data collected by authors

Figure 1: Demographics details of data collected from Gen Z

like conversational style, 24/7 availability, promptness in response, accurate information, secure, multiple channel integration are mentioned in the literature. The authors have developed a conceptual framework by reducing these variables into broad factors as depicted in Figure 1.

Methodology

Research Design

This study employs a descriptive and exploratory research design, focusing on identifying and explaining the factors that influence Gen Z consumers' use of chatbots in online shopping. Given the study's aim of testing theoretical constructs through real-world data, a deductive approach was adopted, starting with a conceptual framework based on literature review and expert opinions. This design is particularly suitable for quantifying relationships between variables related to chatbot use (e.g., Brand Perception, Service Quality, Personalization, and Demography) and consumer preference. The results provide insight into key factors driving chatbot engagement among Gen Z and allow the exploration of targeted strategies to enhance chatbot-based services in online shopping.

Sampling and Data Collection

A cross-sectional survey was conducted to gather responses from Gen Z consumers aged 15 to 28 who engage in online shopping and interact with chatbots during their shopping journey. The study used judgment sampling, enabling a diverse representation within the target demographic. An

online questionnaire was distributed, and data collection spanned two months, resulting in a final sample size of 171 respondents, which is sufficient for robust factor analysis and regression modeling.

The questionnaire was structured to measure multiple factors associated with chatbot use in online shopping. The literature review and discussion with experts revealed 16 variables. Each of these variables was scored on a 5-point scale (1 = Strongly Disagree to 5 = Strongly Agree) with the help of a structured questionnaire. This setup provided a clear, quantifiable measure of respondents' attitudes and experiences with chatbots. A factor analysis was conducted and three factors were extracted from these 16 variables.

Results and Discussions

Extracted Factors

To ensure clarity, the following three factors have been extracted. The factor loadings on individual factors are mentioned below:

Brand perception

In this study, eight variables are loaded on the first factor, Brand Perception. Brand perception includes variables like Brand building, Communication style match, discovering offers and discounts, Understanding and responding appropriately, satisfied results, query transfer to humans, good customer experience and human-like conversational style.

Service quality

In this study, five variables are loaded on the second factor, service quality. Service quality comprises variables like 24/7 availability, prompt and timely response, information is accurate and reliable, security implementation, and responses are clear and easy.

Personalization

In this study, three variables are loaded on the third factor, personalization. The variables loading on the factor personalization are proactively initiated conversations Integrated across multiple channels and products based on my interests.

Table 1: Conceptual framework of determinants of chatbot usage

Age	(%)	Gender	(%)	Annual Household Income	(%)	Frequency of Buying	(%)	Occupation	(%)
25 – 28	39%	Male	54%	< 5 lacs	27%	Fortnightly	6%	Private Job	9%
21 – 24	28%	Female	46%	5 lacs – 8lacs	21%	Monthly	25%	Professional	27%
15 – 20	33%			8 lacs – 12 lacs	20%	Quarterly	47%	Business	12%
				12 lacs – 15 lacs	21%	Yearly	22%	Student	44%
				> 15 lacs	11%			Unemployed	8%
Total	100%	Total	100%	Total	100%	Total	100%	Total	100%

Source: Based on Focus Group Discussion conducted among Gen Z

Table 2: KMO and Bartlett test

KMO and Bartlett's Test			
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.			0.896
Bartlett's Test of Sphericity	Approx. Chi-Square	2118.624	
	Df	120	
	Sig.	0.000	

Statistical Tools Used

Data was analyzed using SPSS software. The primary statistical tools applied include:

Factor analysis

To identify underlying dimensions among measured variables and ensure construct validity.

Reliability analysis

To confirm the internal consistency of the factors using Cronbach's alpha.

Regression analysis

To assess the impact of each factor on overall preference for chatbot interactions.

The study analyzed customer perceptions of chatbot usage using factor analysis and multiple linear regression. The factor analysis helped identify three primary components that capture significant variance in the dataset, followed by

a regression model to determine the predictive strength of these factors on a specified dependent variable (Customer Preference for Chatbot Usage). Below are the tables summarizing the key findings from both analyses.

Table 2 shows the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test (Field 2005, Ch11 and Ch12). The KMO measure of sampling adequacy is 0.896, which is more than 0.5. Since KMO shows whether the sample for the study is adequate or not, the KMO value of 0.896 shows that the sample for the study was more than adequate.

The rotated component matrix (Table 3) summarizes factor loadings for each item across the three main components identified. Communality values, indicating the proportion of each variable's variance explained by the factors, are also included in Table 3.

Interpretation of Factor Analysis

- Factor 1 (Brand Perception) explains 30.20% of the total variance.
- Factor 2 (Service Quality) accounts for an additional 25.90% of the variance.
- Factor 3 (Personalization) explains 17.22% of the variance. The three factors together explain 73.32% of the cumulative variance, suggesting a strong representation of customer service and perception aspects in the data.

Table 3: Rotated component matrix and communalities

Variable/Component	Brand Perception	Service Quality	Personalization	Communality
Brand building	0.788			0.724
Communication style match	0.761			0.788
Discover offers and discounts	0.733			0.689
Understands and responds appropriately	0.682			0.822
Satisfied result	0.663			0.731
Query transfer to humans	0.646			0.684
Good customer experience	0.628			0.711
Human-like conversational style	0.608			0.623
24/7 availability		0.824		0.751
Prompt and timely response		0.810		0.751
Information is accurate and reliable		0.759		0.820
Security implementation		0.706		0.735
Responses are clear and easy		0.686		0.737
Proactively initiate conversation			0.847	0.772
Integrated across multiple channels			0.790	0.717
Products based on my interest			0.705	0.678
Cronbach's Alpha	0.930	0.908	0.790	
% of Variance Explained	30.20%	25.90%	17.22%	
Cumulative % of Variance	30.20%	56.10%	73.32%	

Table 4: Multiple linear regression model

Dependent Variable: Customer Preference	Unstandardized Coefficient (B)	Standardized Coefficient (Beta)	t-value	p-value
(Constant)	3.548		103.415	0.000
Brand Perception (Factor 1)	0.468	0.613	13.502	0.000
Service Quality (Factor 2)	0.295	0.384	8.452	0.000
Personalization (Factor 3)	0.310	0.412	9.076	0.000
Model Summary				
R	0.824			
R Square	0.679			
Adjusted R Square	0.673			
Standard Error of the Estimate	0.43375			
Durbin-Watson	2.328			
ANOVA				
F-value	109.890			0.000

The regression analysis (Table 4) shows how the three factors predict the dependent variable Customer Preference, highlighting each predictor's unstandardized and standardized coefficients, significance, and explanatory power.

Interpretation of Multiple Linear Regression

The regression model is statistically significant ($F = 109.890$, $p < 0.001$) and explains approximately 67.9% of the variance in the dependent variable, customer preference, as indicated by the R Square value. This high explanatory power suggests that the three factors effectively predict the dependent variable.

- **Brand perception** (Factor 1) has the highest standardized coefficient (Beta = 0.613), indicating it is the strongest predictor.
- **Personalization** (Factor 3) follows as the second strongest predictor (Beta = 0.412).
- **Service Quality** (Factor 2) is also significant (Beta = 0.384), though its effect size is comparatively lower.

Each factor significantly contributes to the dependent variable, customer preference ($p < 0.001$), supporting the model's robustness and practical relevance in understanding customer satisfaction and experience. The equation for the multiple linear regression model is:

$$Y = 3.548 + 0.468 * X_1 + 0.295 * X_2 + 0.310 * X_3$$

Where Y = Customer Preference for chatbot usage

X1 = Brand Perception

X2 = Service Quality

X3 = Personalization

Conclusion and Implications

This research was to find out the customer preference for the usage of chatbots during online shopping. All three factors

extracted from 16 variables are found to be significant. Even though all three factors are significant but, their importance varies from the customer's viewpoint. Brand perception is the most important factor followed by personalization, followed by Service Quality. So, an online shopping company should invest in building a strong brand perception in its marketplace. This positive brand perception can be built through multiple ways and chatbots play an important role in the same. Personalization is the art of suggesting the right product at the right time. Again, chatbots play a very important role here, and lastly, service quality ranks 3rd in the level of importance. Even though it is ranked last among the three factors but, its importance should not be undermined. The organizations should invest in all three factors to enhance the preference for chatbot usage by its customers.

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Conflict of Interest

The following details, which could be viewed as possible conflicts of interest made to this study are something we would like the editor to be aware of. We would like to certify that there are no known conflicts of interest related to this article and that this research work was not funded, which

could have affected its results. We attest that all named authors have read and approved the article, and that no additional individuals who meet the requirements for authorship are left out from the list. We also certify that we all agree with the authors' order as stated in the manuscript. We attest that we have carefully considered the protection of intellectual property related to this work and that there are no intellectual property-related barriers to publishing this manuscript.

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