# Power Up with Chatbot Platform: Analysis on the Impact of E-Commerce Chatbots on Customer Satisfaction

Melvin V. Moraga\* De La Salle University, Far Eastern University & Philippine Cultural College

Paul Anthony Rodriguez De La Salle University

Joshua Peter M. Chan De La Salle University

Andrei Richard P. Faminial De La Salle University

Faith Victoria M. Flores De La Salle University

Kena Gabriel;e R. Valencia De La Salle University

## ABSTRACT

The integration of chatbots in e-commerce has become increasingly significant due to their transformative role in enhancing customer experience, streamlining operations, and driving business growth. This paper explores the critical importance of chatbot adoption in the e-commerce sector, highlighting the benefits that span across customer service, sales optimization, and operational efficiency. Chatbots, powered by artificial intelligence and natural language processing, enable businesses to provide 24/7 customer support, offering instant responses to queries, personalized product recommendations, and seamless shopping experiences. The study identifies five key chatbot factors influencing satisfaction: usability, responsiveness, perceived trust, accessibility, and empathy. A total of 361 e-commerce chatbot users were collected and analyzed using partial least square structural equation modeling. The findings show that responsiveness, perceived trust, and accessibility significantly influenced satisfaction. Interestingly, when considering interaction terms, only accessibility remained significant.

Keywords: Chatbot, usability, responsiveness, perceived trust, accessibility, empathy, customer satisfaction.

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## **1. BACKGROUND THE STUDY**

The e-commerce industry has grown exponentially as they have utilized technology in modern customer service. Chatbots play a role as a substitute as they converse with potential customers online. It is programmed to imitate the responses of a human while being a piece



of technology. Although chatbots are used as a cost-effective alternative to manage customer service, these chatbots still fail to meet certain customer expectations, which can influence the individual's user satisfaction and experience. Some of the weak points include an unwelcoming user experience, limited interaction or engagement, and limited scope (Arora, 2023). Customers may feel a noninteractive or unwelcoming conversation, given that chatbot responses lack personalization as these are programmed to answer queries the same way, leading to a scripted and robotic-like response. My Vu et al. (2022) identified several factors that contribute to the customers' satisfaction with chatbots. Specifically, these factors include usability, responsiveness, perceived trust, empathy and accessibility. Usability is perceived to be the degree to which a software can be able to achieve goals, specifically, a program's effectiveness, efficiency, and satisfaction. Responsiveness refers to the ability to provide users/customers with prompt and comprehensive service that allows convenient use. In addition, it is related to the timeliness of response. Perceived trust has different connotations to its conceptualization, according to studies. However, the study suggests that trust indicates a sense of security received that enables dependence on the provider. Empathy recognizes an individual's feelings and emotions and can connect and understand their feelings. Customers can evaluate service quality through its implications of empathy which translates into the level of satisfaction. Finally, accessibility is defined as the state of an individual to access any type of web browser on any webpage. These attributes-usability, responsiveness, perceived trust, accessibility, and empathy-are critical in ensuring that chatbots can effectively support the needs of e-commerce businesses while enhancing customer satisfaction, loyalty, and engagement. A well-designed chatbot that excels in these areas can significantly improve the shopping experience and drive better business outcomes.

In the study by Irfan et al. (2019), customer satisfaction is often perceived as the key to a company's success and long-term competitiveness. With electronic commerce becoming an essential part of modern life due to the prominent advancements in digital technology, customer satisfaction plays a pivotal role that serves as the measure of success gauging chatbot effectiveness in enhancing e-commerce customer service. Satisfaction covers user's feelings and opinions toward the chatbots, and how these experiences influence their purchase intention with the e-commerce platform. Chatbot factors are positively linked and collectively play a part in customer satisfaction levels when interacting with chatbots; satisfaction, as the dependent variable, synthesizes these factors and experiences into a single measure that reflects upon the impact of chatbots toward e-commerce customer satisfaction.

The combined significance of usability, responsiveness, perceived trust, accessibility, and empathy in e-commerce chatbots lies in their collective ability to create a seamless, efficient, and emotionally engaging user experience, which is critical for enhancing customer satisfaction, loyalty, and business performance. Together, these factors contribute to the overall user experience (UX), directly impacting the success of chatbots in converting casual users into loyal customers and optimizing business operations. When chatbots excel in usability, they ensure that customers can easily navigate the interface, making interactions smooth and intuitive. This is foundational because if users struggle with the system, they are more likely to abandon the interaction, leading to lost sales opportunities (Kuligowska, 2015).

While the global e-commerce landscape has seen extensive research into the roles of usability, responsiveness, perceived trust, accessibility, and empathy as factors influencing customer satisfaction in chatbot interactions, there is a notable gap in studies focusing specifically on the Philippine e-commerce context. The Philippines presents unique socio-

economic and cultural characteristics that may influence how customers interact with and perceive chatbots in e-commerce. Identifying the research gaps for each of these factors as individual predictors of customer satisfaction in the Philippine market is crucial for optimizing chatbot performance.

#### 2. REVIEW OF RELATED LITERATURE

#### 2.1 Chatbot

Smart speakers or chatbot are software that carries out conversations through auditory or textual methods and are programmed to simulate human conversational behavior (Wang et al, 2022). Thorat and Jadhav (2020) described chatbot as a computer program designed to facilitate communication processes between humans and the machine, through voice or text methods. What differentiates the two types of chatbots is text and voice-based query support. Text-based chatbots are only capable of accepting customer queries through chat messages and respond through the same manner, while voice-based chatbots accept customer commands orally and respond through voice activation. With the expansion of customer service, the sector has had a significant impact on the chatbot market (Dahiya, M. 2017). Mahere (2021) averred that the chatbot market is expected to grow from USD 2.6 billion in 2021 to USD 9.4 billion by the end of 2024, with a high growth rate of approximately 29.7%. As defined by Dahiya (2017), chatbots identify user inputs, and retrieve information through pattern matching programmed by the software developers; with this, chatbots are able to answer inquiries asked to them by users. As this study only focuses on e-commerce platforms' chatbots, a similar study that also focuses on text-based chatbots by Oguntusin and Olomo (2021) asserted that text-based chatbots, which primarily communicate in the form of texts and messages, provide accurate and practical information, however, lack emotions that are apparent during human interactions.

As chatbots are programmed by developers, they have full ability to structure the chatbot into what chatbot category they want which may depend on user preferences. In his study, Haristiani (2019), chatbots are sorted into three types of chatbot categories namely structure, purpose, and audience chatbots. Under the structure category are flow, artificially intelligent, and hybrid chatbots. "Flow" chatbots are designed to reply with predetermined responses to user questions, given that the inquiry is present in the database. For artificial intelligence chatbots, they enhance their capabilities on their own as they improve based on past experiences with users, providing a more natural conversation. A hybrid chatbot has a mix of the previously mentioned subcategories, possessing abilities to understand users while operating based on patterns present in their databases. The chatbot category "purpose" comprises two subcategories, functionality and fun. Chatbots under functionality are designed to carry out a specific task depending on preference, while fun chatbots are primarily developed to serve as entertainment. The last chatbot category "audience" is composed of the generalist and specialist chatbot. A generalist chatbot like Apple's Siri has general knowledge of many topics, while specialists are designed to perform a specific task superbly.

## 2.2 Usability

Conceptually, usability pertains to how well a computer program may accomplish objectives about effectiveness, efficiency, and satisfaction in a specific use context (Portela & Granell-Canut, 2017; Pappas et al., 2014). Usability is viewed as the ease with which a chatbot or

any other information system can be utilized. The chatbot must be trustworthy to be used anytime and anywhere. (Jenneboer et al 2022). The extrinsic customer experience values were positively impacted by the chatbot's usability. (Chen et al. 2021). Customer satisfaction was significantly impacted favorably by chatbot usability. Customers who regard chatbots as highly usable are happier with their whole buying experience and are more inclined to tell others about it. (Jenneboer et al. 2022). Usability is a key factor in assessing user experience, and Finstad's (2010) Usability Metric for User Experience (UMUX) with four measures (effectiveness, satisfaction, overall, and efficiency) served as the framework for evaluating e-commerce platforms' chatbots. "Effectiveness" gauges the system's ability to meet user needs and prevent them from seeking alternatives. "Overall" measures the system's ease of use, "satisfaction" assesses user experience and contentment with usability, and "efficiency" evaluates performance quality, including errors or misunderstandings. This framework is foundational for concise and cross-validated user experience assessment.

#### 2.3 Responsiveness

Chung, N., & Kwon, S. J. (2009) described responsiveness as the ability to provide customers with quick and accessible services and give them a convenient experience. Users are more likely to confirm their original expectations regarding the chatbot's usage when it replies to inquiries immediately and offers instant services. (Park, A. & Lee, S. 2023) By making chatbots easier to engage with and more enjoyable to use, responsiveness may also help to enhance customer service (Li et al., 2021). Positive effects on the fundamental values of the customer experience were seen from the chatbot's responsiveness. (Chen et al. 2021). Responsiveness is one of the factors to measure user experience. This includes three measurements (relevance, contingency, and message interactivity) with five responsiveness-related items that were taken from Sweetser and Kelleher (2016) which served as the framework for evaluating e-commerce platforms' chatbots.

## 2.4 Perceived Trust

One of the rapidly developing technology trends is the usage of chatbots, software programs that simulate human communication by conversationally interacting with users. Through real-time interactions in an e-commerce context, chatbots help businesses better serve customers and meet their expectations. So, it is crucial to understand what influences customer trust in chatbots (Yen, C. & Chiang, M. 2020; Soares et al. 2022).

Multiple studies offer several conceptualizations of "perceived trust." It explains that something or someone that inspires a sense of trust in another has a feeling of dependability toward that person or item (Chung, N., & Kwon, S. J. 2009). Although trust has been conceptualized in various ways, the fundamental idea entails intentions to be exposed in anticipation of results. To engage in "trust-related behaviors" using web-enabled technology, people need to perceive that others are trustworthy to feel confident enough to do so (McKnight et al., 2002). According to Luhmann and Schorr (1979), perceived trust is the belief that others will act predictably as outlined in the trust-building process. The concept of perceived trust used in this study is based on the customers' individual trust perceptions developed throughout the trust-building process (Thomas M. et al., 2019).

## 2.5 Accessibility

Accessibility means easy access to information technologies (No, E. & Kim, JK. 2015; Ho et al., YL. 2015). Customers who feel pleased with accessibility are more likely to repurchase products, urge others to buy them and lose their sensitivity to price increases. (Hanh et al., 2022) According to studies, Gen Z customers have differing views on chatbots. While they appreciate the simplicity, speed, and 24/7 accessibility that chatbots provide, there are concerns concerning their capacity to comprehend complicated inquiries and offer customized responses (Gunawan, E., et al. 2023). The definition of accessibility used in this study pertains to how easily information and/or services provided by a website can be accessed and utilized. (Kim, J., & No, E., (2015).

## 2.6 Empathy

The ability of chatbots to exhibit empathy refers to "its ability to perceive, understand, and respond to human thoughts, feelings, behaviors, and experiences" (Simon, F. 2013). The concept of empathy used in this study is based on the combination of emotional reactions and cognitive understanding of other people's experiences and feelings. (Murphy, J., et al. 2019). Mechanical, analytical, intuitive, and empathic chatbots are the four phases of development for chatbot's empathy response (Huang et al., 2018). Understanding how chatbot's empathy affects consumer acceptance and trust in chatbot is vital since developing empathy response is essential in chatbot's customer service research (Lv, X. et al., 2022).

Diverse studies on chatbots and empathy has expanded recently to make them more humanlike and compassionate (Ho A., 2018; Paiva A. et al., 2017; Alam F. et al., 2017). According to Portela and Granell-Canut (2017), empathetic chatbots can recognize and comprehend the emotions of their users and reply to them appropriately (Carvache-Franco et al., 2023). However, more work has to be done to comprehend empathy and how to program chatbots to provide empathetic reactions rather than emotional ones (Liu et al., 2018).

## 2.7 Customer Satisfaction

The application of artificial intelligence in customer service is the most concerning topic recently, and the human-machine cooperation between human customer service and AI customer service to complete customer service is an important management research interest. The concept of customer satisfaction used in this study is described as a postconsumption response (Prentice, Weaven, and Wong, 2020; Gnewuch, Feine and Morana, 2019), is characterized as an overall feeling of pleasure or disappointment brought on by contrasting the perceived performance of a service with pre-service expectations as indicated by Oliver (1980). Customer satisfaction involves how customers feel after using the supplier's services or goods and how happy consumers are with their transactions and overall experience with the company. It is the full benefit that customers receive from doing business with that organization. In the case of online customers, satisfaction might influence their choice to continue using a particular website instead of switching to another (Chung et al., 2018). In the technology context, Bailey and Person (1883) and Doll and Torkzadeh (1988) defined satisfaction as "the outcome of emotional responses to system attributes." Lim and Tan (2023) also described user satisfaction as the degree to which users perceive that the information systems are accessible and capable of fulfilling their information requirements, which was interpreted in the study of Ives, Olson, and Baroudi (1983).

As e-commerce continues to grow and businesses are dependent on their customers, the online service environment will be crucial in ensuring customer satisfaction. As a result,

businesses strive to provide excellent service while exploring ways to increase customer satisfaction (Ali, Hussin, and Ping, 2019).

#### 2.8 Research Model

The research model (Fig. 1) asserts that all chatbot factors, usability, responsiveness, perceived trust, accessibility and empathy as independent variables individually and altogether have a positive and significant effect on customer satisfaction as the dependent variable. Additionally, the model presupposes that customer reliance has a moderating effect in the relationship between chatbot factors and customer satisfaction. The research model integrates the Information System Success Model and Expectation Confirmation Theory to provide a structured lens through which we examine the intricate relationships between key variables to our research question.



Figure. 1: Research model

**Note:** Predictor variables: usability, responsiveness, perceived trust, accessibility, empathy. Outcome variable: customer satisfaction.

#### 2.9 Hypotheses of the Study

H1: Usability has a positive and significant impact on customer satisfaction.

Customer satisfaction was positively impacted by chatbot usability in a considerable way. Customers who feel that chatbots are highly useful feel satisfied with their whole experience and are more inclined to tell others about it. This is consistent with other research showing that usability increases customer satisfaction levels. (Burton, J., et al., 2020; Chen, J. S., et al., 2021). It is discovered that satisfaction is an important factor to consider when assessing interfaces, as a system's Usability and usefulness further assess satisfaction (Tsakonas & Papatheodorou, 2008). "Effective, efficient, and satisfactory task accomplishment" is one

definition of Usability (Tsakonas & Papatheodorou, 2008). Therefore, usability is part of the user experience (Følstad & Brandtzæg, 2020).

H2: Responsiveness has a positive and significant impact on customer satisfaction.

Customers are likely satisfied when they use the chatbot to obtain advantages and more information with less effort, encouraging them to tell others about the chatbot. Based on empirical studies, customer satisfaction is created when customers have an excellent experience with a chatbot's responsiveness (Chen, J., et al., 2021).

H3: Perceived trust has a positive and significant impact on customer satisfaction.

Trust is also a fundamental element in the process of developing and maintaining loyalty and user satisfaction (Kamakura et al. et al., 1996; Aubert, B.A. et al., 2001) as cited in (Hanh T. et al., 2022). Customer satisfaction is favorably impacted by perceived trust. For customers to use online services satisfactorily, they must first trust the company or the service (Jarvenpaa et al., 2006). Which found perceived trust to have a significant impact on the continuance intention of customers (Akter et al., 2013) as cited in (Hanh T. et al., 2022).

H4: Accessibility has a positive and significant impact on customer satisfaction.

The term "accessibility" describes how simple it is to use and access the chatbot at any time or location. One element linked to STT usability is accessibility (Xiang et al., 2015). Accessibility plays an important part in the customer's experience and satisfaction (Lee et al., 2018). It serves an important part in the collaborative creation of customer experiences. (Buhalis & Amaranggana, 2013). In the same way, it showed that the most crucial factor influencing both customer satisfaction and the smart technology experience was accessibility. According to the Pai et al. study, the most significant element influencing customer satisfaction was accessibility (Pai et al., 2020).

H5: Empathy has a positive and significant impact on customer satisfaction.

Customer satisfaction is highly predicted by empathy. Customers are impressed by the emotional sentiments of chatbots, which enhances the experience and contributes to customer satisfaction (Brave et al., 2005). It was discovered that a technological agent's empathy has an important and positive effect on the opinions and perspectives of its users. Additionally, earlier research on empathy in technology supports this conclusion. (Perdue et al., 2002; de Kervenoael R. et al., 2020; Mulia et al.; N. B., 2020).

H<sub>6</sub>: Chatbot factors have a positive and significant impact on customer satisfaction.

## 2.10 Research Design

The study utilized a quantitative method approach with descriptive and causal explanatory research design. The data was analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM).

## 2.11 Sampling Design

The study employed purposive sampling which involves the selection of respondents through their accumulated knowledge and experience (Frey, 2018). A purposive sampling design was utilized to collect the data. Participants comprised of Gen Z and Millennial consumers of sustainable local craft products, specifically clothing and accessories, all of which are residing in NCR.

## 2.12 Data Sources

This study utilized primary data through a survey consisting of 361 chatbot users with accumulated reasonable experience and knowledge in chatbot usage. The data was collected through an online survey questionnaire, utilizing Google Forms and distributed through different social media platforms such as Facebook, Instagram and Messenger. The collection of data lasted for four weeks, starting from January 8, 2024, until February 8, 2024. With the initial target of 385 respondents, the researchers have gathered 456 respondents. However, only 361 responses are considered and accepted in the study given that they are users of chatbots from different e-commerce platforms in the Philippines.

The measures employed to operationalize the variables are adapted from prior research (Table 1). Usability consists of four dimensions, effectiveness, satisfaction, and overall efficiency. Responsiveness was measured with three dimensions – relevance, contingency and message interactivity. Perceived trust used measures six measures – fidelity, loyalty, reliability, security, integrity, and familiarity. Accessibility comprises of two measures – ease accessibility and availability access. Empathy has six measures - shared sense making, shared feedback, shared mental model, shared knowledge, shared goal, and shared consequences. Customer satisfaction adapted a single dimension, user experience. All items were recorded using the 5-point Liker scale.

Table 1. Source of Measure					
Construct	No. of items	References			
Usability (US)	4	Finstad, 2010			
Responsiveness (RS)	5	Jiang et al. 2022			
Perceived Trust (PT)	6	Jian et al., 2000			
Accessibility (AC)	5	Kim & No, 2015			
Empathy (EM)	7	Alam, 2022			
Customer Satisfaction (CS)	8	Lee & Choi, 2017			

Table 1: Source of Measure

# 2.13 Reliability Tests

A pre-test was conducted using a sample size of 25 to assess the reliability of the measurement items under project performance. The result registered Cronbach's alpha internal consistency of 0.957, which suggests that the questionnaire is reliable, consistent, and valid as it is higher than the acceptable level.

# **3 RESULTS AND DISCUSSION**

# **3.1 Descriptive Analysis**

The overwhelming respondents fall within the Gen Z age group, comprising 317 or 87.8% of the sample, indicating that chatbot usage in e-commerce platforms is particularly prevalent among younger demographics. This suggests a strong inclination among younger consumers towards engaging with chatbot technology for their online shopping needs. Millennials, representing 8.9% of the sample, also demonstrate a notable presence in the

study, albeit to a lesser extent compared to Gen Z. Additionally, Gen X individuals, aged between 43 to 45 years old, constitute only 3.3% of the sample. However, it is mentioned that the Millennial generation would likely edge out the Gen Z due to their spending power. Nevertheless, the increase of Gen Z e-commerce users is due to the majority being exposed to the digital age from an early age. The rise in internet and digital literacy enabled Gen Z to learn to value online shopping (Kamenov, 2023). In terms of gender distribution, the sample exhibits a slight skew towards females, with 53.5% of respondents identifying as female, while 45.4% identify as male, and a small proportion (1.1%) preferring not to disclose their gender. This gender distribution suggests a relatively balanced participation across genders, with a slightly higher representation of females.

Indicator	Level	Count	%
Age	Gen z (18-26 years old)	317	87.8%
	Millennials (27-42 years old)	22	8.9%
	Gen X (43-45 years old)	12	3.3%
Gender	Female	193	53.5%
	Male	164	45.4%
	Prefer Not to Say	4	1.1%
Occupation	Student	297	82.3%
	Working Student	1	0.3%
	Employed	40	11.1%

Table 3. Summary	v of Descriptive Statistics of Each Variable
rable 5. Summar	y of Descriptive Statistics of Each variable

Constructs	Mean	S.D.	Skewness	Kurtosis
US	3.85	0.82	-0.66	0.28
RS	3.94	0.80	-0.82	0.81
PT	3.69	0.73	-0.40	-0.21
AC	4.15	0.71	-0.80	0.24
EM	3.35	0.57	0.84	0.88
CS	3.82	0.79	-0.68	0.50

Note: US-usability, RS-usability, PT-perceived trust, AC-accessibility, EM-empathy and CS-customer satisfaction

Based on the descriptive analysis, usability has the weighted average of 3.85 with a standard deviation (SD) of 0.82, indicating a moderately positive perception of chatbot usability among the respondents. On average, users find chatbots reasonably easy to use and effective in fulfilling their requirements. Responsiveness accounts for an average score of 3.94, which suggests that users generally perceive chatbots as being prompt and effective in addressing their inquiries and concerns, reflecting a positive sentiment toward the responsiveness of these systems. With the average of 3.69, this indicates a moderate level of trust in chatbots among the respondents, suggesting that while users generally trust chatbots to some extent, there may still be room for improvement in building trust and confidence in these systems. Accessibility obtains the highest average score of 4.15 which indicates a strong perception of chatbot accessibility among the respondents, suggesting that users find chatbots easily accessible and navigable, contributing to a positive user experience. Interestingly, empathy receives a slightly lower average score of 3.35. This suggests that users perceive chatbots as having some limitations in understanding and empathizing with their needs and concerns, indicating potential areas for improvement in enhancing the empathy of these systems. With a mean score of 3.82, the chatbot users have a generally positive perception of chatbot satisfaction among the respondents, indicating that, on average, users are satisfied with their interaction experience and the services provided by chatbots.

Table 4: Model summary						
	R	R Square	Adjusted R	Std. Error	of the	
-	0.010	0	Square	Estima	ate	
_	0.813	0.690	0.686	0.443	3	
			Table 4: ANOV	Ϋ́A		
Model	S	um of square	s Dí	24		а:
Desmassion		1647	Df	Mean squ	are	$\frac{S1g.}{0.000a}$
Regression	n	164./	11	14.97		0.000a
Residual		59.7	349	0.171		
Total		5500	360	15.28		
Table 5: Coefficients						
Unstandardized Coefficients Standardized						
				Coefficients		
Mode	2	Beta	SE	Beta	t	Sig.
Constant						
US		0.669	0.034	0.726	20.03	0.000
RS		0.727	0.035	0.735	20.54	0.000
PT		0.833	0.036	0.766	22.56	0.000
AC		0.727	0.044	0.654	16.37	0.000
EM		0.296	0.071	0.213	4.14	0.000

#### **3.2** Inferential Statistics

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#### Dependent variable: customer satisfaction

The findings show that usability or the ease with which a chatbot or any other information system can be utilized has a positive and significant effect in enhancing customer satisfaction with a significant value of 0.000 which is lower than p-value of 0.05. Kuligowska (2015) underscores the significance of usability in commercial chatbots, emphasizing that usability directly impacts customer satisfaction. Customers are more likely to continue using ecommerce chatbots that are easy to navigate and provide effective support with minimal effort. In another study by Khoa, B. T. (2020), it found that usability is a significant factor in determining customer satisfaction with chatbots. Specifically, chatbots with intuitive designs, easy navigation, and clear communication significantly enhance customer experience, leading to higher satisfaction levels. Customers preferred chatbots that provided clear instructions and required minimal effort to use. Responsiveness or the ability to provide customers with quick and accessible services and give them a convenient experience found to have a positive and significant effect in enhancing customer satisfaction with beta coefficient of 0.735 and significant value of 0.000 which is lower than significance level of 0.05. Adam et al. (2020) found that responsiveness is a critical determinant of user satisfaction in AI-based chatbot interactions. Customers valued chatbots that could offer instant, accurate information, which increased their likelihood of completing transactions and improved overall satisfaction.

Individual trust perceptions developed throughout the trust-building process has a beta coefficient of 0.766 with a significant value of 0.000 which is lower than significant level of 0.05, hence perceived trust has a positive and significant effect on shaping customer satisfaction. Gefen et al. (2003) demonstrated that trust is a fundamental factor in online interactions, with perceived trust playing a crucial role in determining customer satisfaction and influencing purchasing decisions in e-commerce environments. Accessibility or easy access to information technologies has found to have a positive and significant effect in inducing customer satisfaction with beta coefficient of 0.654 and significance value below than 0.05 significance level. Lazar et al. (2012) examined the importance of accessibility in online platforms, highlighting that making systems usable for people with disabilities significantly improves overall user satisfaction. In e-commerce, accessible chatbots ensure equitable access to customer service. Empathy has a coefficient estimate of -0.024, suggesting a negative impact on customer satisfaction. The significance value of 0.582 also indicated no statistically significant relationship between empathy and customer satisfaction at the conventional significance level of 0.05.

Overall, among the predictors, usability, responsiveness, perceived trust, and accessibility all have statistically significant positive coefficients. This suggests that higher levels of the aforementioned factors are associated with greater satisfaction with chatbots. However, empathy does not show a statistically significant effect on satisfaction in this model. This indicates that, while isolated shows significant positive effect ( $\beta = 0.296$ , p = 0.000) in the simple linear regression model, loses significance when accounting for the effect of other variables. This means that the effect observed when considering empathy alone is already accounted for (i.e., controlled for) when including the other variables. Thus, in a more complete and robust analysis of the associations towards satisfaction, the contribution of empathy does not appear to be quite conclusive.

While the initial regression analysis shed light on the contributions of usability, responsiveness, perceived trust and accessibility in enhancing customer satisfaction, the

study expanded the investigation by assessing the combined effect of the independent variables on customer satisfaction.

# **3.3** Effect of usability, responsiveness, perceived trust and accessibility altogether on customer satisfaction

When chatbot factors, usability, responsiveness, perceived trust and accessibility are integrated as shown in Table 6, their combined effect is amplified with p-value lower than 0.001. The findings suggests that a usable chatbot that responds quickly builds an immediate positive impression, while trust and accessibility ensure long-term user loyalty and inclusivity. It appears that trust enhances perceived usability, while responsiveness reinforces trust. Accessibility ensures that a larger audience experiences these benefits. A study by De Keyser et al. (2021) on service technology confirms that combining ease of use, trust, responsiveness, and accessibility leads to higher customer satisfaction and long-term engagement.

Table 6: Linear Regression Analysis with combined effect of US, RS, PT and AC on CS

Variable	Coefficient	SE	t	Р
Intercept	0.0556	0.1452	0.383	0.702
US	0.1828	0.0489	3.735	<.05
RS	0.2314	0.0497	4.659	<.05
PT	0.4121	0.0503	8.201	<.05
AC	0.1520	0.0470	3.237	<.05

Note: F = 198, p = .05, R2 =.690, Regression Equation: 0.0556 + 0.1828\*US+ 0.2314\*RS+ 0.4121\*PT+ 0.1520\*AC

# **3.4** Effect of usability, responsiveness, perceived trust and empathy in a joint fashion on customer satisfaction

When usability, responsiveness, perceived trust, and empathy are tested together as shown in Table 7, they collectively show a significant combinatorial effect in enhancing customer satisfaction. However, the p-value for empathy being higher than 0.05 suggests that while empathy contributes to the overall framework, its individual statistical significance is less pronounced than the other factors. Users may prioritize functional aspects (e.g., getting accurate and quick responses) over emotional understanding in many chatbot interactions. Empathy may be more impactful in specific contexts (e.g., mental health or customer complaints) but less relevant in task-oriented scenarios.

Tabl	e 7: Linear Reg	ression Analysis with	combined ef	fect of US, RS, PT	and EM on CS
	Variable	Coefficient	SE	t	Р
	Intercept	0.1423	0.1820	0.782	0.435
	US	0.3155	0.0449	7.031	<.05

RS	0.4737	0.0507	9.350	<.05
PT	0.1970	0.0464	4.249	<.05
EM	-0.0381	0.0441	-0.865	0.388
Note: $\mathbf{E} = 888$ $\mathbf{p} =$	05 P2 - 600 Pagrossion Equation:	0.1423 +	0 3155*LIS + 0 4737*DS +	0 1070*DT

Note: F = 888, p = .05, R2 = .690, Regression Equation: 0.1423 + 0.3155\*US+ 0.4737\*RS+ 0.1970\*PT+ - 0.0381\*EM

#### 4. CONCLUSION

In the digital business landscape, where chatbots are vital for assisting and guiding customers, their likability holds significant importance. When users perceive a chatbot as likable, they are more inclined to engage with it, trust its advice, and follow its recommendations (Gelici, 2020). In line with Gelici's hypothesis (2020), this study advocates for digital businesses, especially e-commerce platforms heavily reliant on chatbots for customer service and support, to prioritize the functionalities or abilities of their chatbots to further improve user engagement. This involves identifying chatbot factors that contribute to user satisfaction and reliance, as highlighted in this study. These factors include usability, responsiveness, perceived trust, accessibility, and empathy, all of which have been shown to influence customer satisfaction.

The findings of study offer valuable insights into the critical factors shaping customer satisfaction in chatbot usage. The identified influence of each chatbot factor on customer satisfaction equips e-commerce platforms with actionable insights to enhance their customer service strategies effectively. Aligning chatbots with customer preferences is crucial for optimizing operational efficiency in today's digital landscape. It not only enhances user satisfaction and boosts retention rates but also streamlines support processes, thereby improving overall efficiency. Overall, the findings of this study can inform e-commerce companies about the factors that drive customer satisfaction in chatbot usage and provide guidance for optimizing their chatbot systems to enhance overall customer service performance, quality and competitiveness in the e-commerce market.

## **5. KEY RECOMMENDATION**

Usability and responsiveness as significant factors must be further developed. This includes creating chatbot interfaces that are easy to understand, simple to use, and responsive to user queries. Businesses can utilize prompts to guarantee an interface that is accessible for users to traverse. The user interface and functionality of the chatbot are improved by these prompts, which act as indicators for users. To gently direct users toward their desired outcome without overwhelming their expectations, carefully placed prompts are inserted into the conversation between the chatbot and users. Providing prompts will allow users to reduce any errors, enhancing their overall experience. Applying prompts will allow a streamlined conversation, eliminating additional steps, and making conversations more efficient. Improving the overall customer experience by prioritizing user-friendliness and ensuring that chatbots respond in a fast and accurate manner which may result in increased satisfaction. Building trust is another important aspect to develop. Customers must be confident in the reliability and accuracy of chatbot interactions. This can be accomplished by establishing transparent communication, delivering correct information, and ensuring consistency in responses. Incorporating systems for verifying information and promptly responding to user concerns may increase trust in chatbot interactions which can ultimately increase consumer happiness and loyalty.

It is essential to invest in improving chatbot functions to provide consistent experiences across several devices and operating systems. Chatbot designers may optimize the chatbot interface for both mobile and desktop devices that can accommodate all users from different devices seamlessly. In addition, enabling chatbot language support will be able to understand and respond to different languages that are prominent in the Philippines. Adding features like multi-language support and compatibility with assistive devices can make chatbots more

accessible to a wider group or demographics of consumers, therefore improving the overall customer satisfaction of chatbot users.

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