



## Determinants of Customer Satisfaction in Chatbot Use

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**Abstract:** Chatbots are becoming increasingly popular in business due to their ability to deliver immediate responses to customers. However, there is limited empirical evidence focusing on customers' perspectives. This study aims to investigate the determinants of customer satisfaction in chatbot use as well as provide an overview of chatbot users in Indonesia. The research uses quantitative methods and descriptive types of research, with the number of samples being 150 chatbot users. All data collected met the criteria for validity and reliability and were analyzed descriptively and quantitatively through multiple linear regression methods. The research showed that most of the respondents were male chatbot users, aged 18–29 years, had last used chatbots between 1–3 months ago, and used chatbots to convey their complaints/problems. It is also known that banking chatbots are the most frequently used chatbots. Additionally, perceived usefulness and perceived ease of use are the determinants of customer satisfaction in chatbot use. Of these two factors, perceived usefulness has a dominant influence on chatbot consumer (user) satisfaction in Indonesia.

**Keywords:** Chatbot; Customer Satisfaction; Perceived Ease of Use; Perceived Usefulness; Social Presence

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## INTRODUCTION

In today's fast-paced world, providing prompt and efficient service is no longer a luxury but a necessity. The ability to offer quick service is essential in ensuring customers have a positive experience and increasing their satisfaction (Mahendra, Santosa, & Haryanto, 2021; Oscar & Keni, 2019). To achieve this, companies must embrace innovative technologies, such as robots, including chatbots, to facilitate customer communication and deliver speedy services (Amelia, Mathies, & Patterson, 2022). This is important as neglecting to do so could lead to unhappy customers and damage the company's reputation.

Chatbots are an excellent business tool to provide fast and responsive service to their customers. They can process input in text and generate keywords to provide feedback or answers to users, making them highly effective (Bariah, Pratiwi, & Imania, 2022). Customers also tend to appreciate the presence of chatbots, making it easier for them to connect with businesses in terms of responding to customer requests or questions (Amalia & Suprayogi, 2019). In Indonesia, the popularity of chatbots has increased by 170% in early 2022 and is widely used by well-known companies such as Telkomsel (with its chatbot Veronika) or Bank Syariah Indonesia (with chatbot Aisyah). These show their effectiveness in meeting customers' needs (katadata.co.id, 2022). Although chatbot capabilities are currently limited, their 24/7 availability and ability to handle general questions make them a valuable addition to any business's customer service strategy.

Prioritizing customer satisfaction is crucial for companies and service providers as it can drive increased customer loyalty, profitability, and competitiveness (Devi & Yasa, 2021; Kurniasari & Sugiyanto, 2020; Lungsae & Maika, 2021). In this context, the chatbot application is one effective tool that can help achieve this goal. However, from an academic perspective, more research still needs to be done to evaluate customer satisfaction with chatbots in Indonesia. Existing research on chatbots is generally found



in information technology or computer science. Customer evaluations and attitudes (e.g., satisfaction) play a crucial role in the success of chatbot applications. From the limited studies available, extant studies present an opportunity for further exploration and improvement, particularly in terms of emphasizing the customer perspective and exploring additional supporting factors (Nugraha, Masnita, & Kurniawati, 2022; Sanny et al., 2020). These imply a need for improvement in terms of the number of studies and the relevance between practical application and academic research. Indeed, these two aspects must be compatible and complement each other to support and enhance the practical world.

Therefore, considering the gaps above, this study aims to analyze the factors influencing customer satisfaction towards chatbot use in Indonesia while also determining the general profile of chatbot users in Indonesia. The results of this research will contribute to the marketing management literature and assist businesses in developing and implementing chatbots that can meet needs and increase customer satisfaction.

To achieve the purpose of the study, we highlight the Technology Acceptance Model (TAM) by Davis (1989) as a theoretical background. The TAM model is a widely respected theory used to understand how users respond to technology in various fields (Al-Maroof et al., 2021). It describes two factors, perceived usefulness and perceived ease of use, that are critical in determining user responses. While perceived usefulness focuses on the extent to which users believe that technology can help them achieve their goals, perceived ease of use refers to the level of effort required to use technology. These two factors are central to TAM's framework and have been extensively tested by researchers in various fields, including education, health, and marketing (Pratiwi, Wiyono, & Lalu, 2020). By emphasizing these key factors, this research focuses on their effectiveness in predicting user behavior.

Previous research in online context studies has found that perceived usefulness and perceived ease of use are associated with several positive impacts, such as customer satisfaction, intention to purchase, and technology adoption (Soares, Camacho, & Elmashhara, 2022). In the context of chatbots, users' perception of the ease of interacting with a chatbot can significantly influence their satisfaction with the experience (Ashfaq et al., 2020). Similarly, a chatbot that is perceived as both useful and easy to use is likely to lead to higher levels of customer satisfaction (Yun & Park, 2022). Hence, in line with previous research, this research hypothesizes that customer satisfaction can be influenced by perceived usefulness and perceived ease of use.

H1: Perceived usefulness is positively related to customer satisfaction,

H2: Perceived ease of use is positively related to customer satisfaction

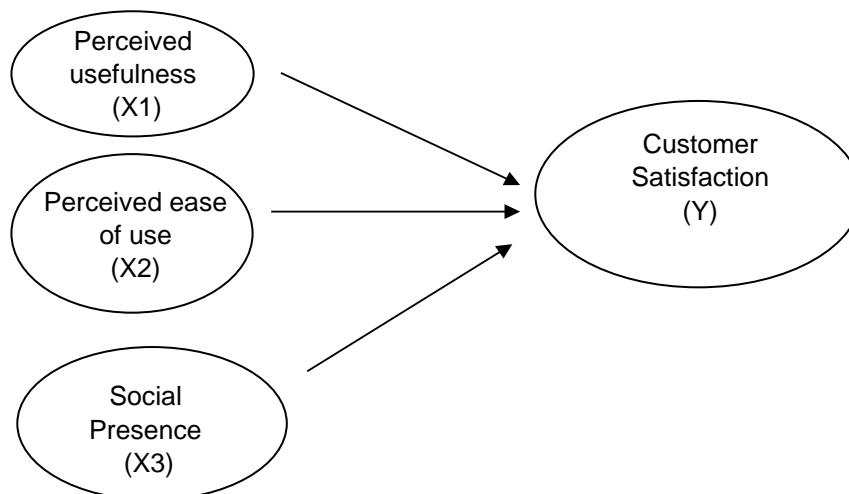
Given the capability of the chatbot to understand and respond to the customer, another chatbot attribute that should be considered is social presence. Social presence refers to the degree to which a person can feel the presence of other people during the communication process, as well as being part of the social interaction (Blut et al., 2021). When interacting with the user, the chatbot responds to questions posed in understandable language. As a result, even though they are not face-to-face interactions, users feel as if they are "meeting" the chatbot. They can feel as if the chatbot is socially present in the user's life. Social presence has been proven to change the user's perception of the technology, making it more friendly, warm, and socially competent

(Adam, Wessel, & Benlian, 2021; Akram et al., 2021). There have been several attempts by developers of chatbot applications to increase the sense of the social presence of these applications in users, including naming the chatbot (Feine et al., 2020) and adding emoji to the conversing field (Almeida, Menezes, & Dias, 2022).

Previous research explains the relationship between social presence and satisfaction. The higher a person's sense of social presence, the higher their level of satisfaction (Singh, Olson, & Tsai, 2021). Social presence also makes users feel more comfortable interacting with technology (Toader et al., 2019). In line with the previous research, this variable will be used in the present study to measure the satisfaction of the consumers with the chatbots. Thus, the hypothesis is:

H3: Social presence is positively related to customer satisfaction

Figure 1 provides a summary of the research hypotheses:



**Figure 1. Research Model**  
Source: Data by the author (2023)

## METHODS

This study uses the quantitative method with the empirical research technique of the associative research approach, which is a study that aims to determine the effect or relationship between two or more variables (Sugiyono, 2022). The respondents in this study are consumers who are (have been) users of chatbot services in Indonesia. Respondents who meet these criteria are instructed to complete a questionnaire designed to determine respondents' views on chatbots and to provide empirical evaluations of the three factors studied (namely, perceived usefulness, perceived convenience, and social presence) on respondents' satisfaction with using chatbots in Indonesia. Data collection (customers' responses) is conducted online. Initial questions will be given as a prelude to capturing potential respondents with experience(s) using a chatbot in Indonesia. Potential participants who meet these conditions can answer a questionnaire (list of questions) that the research scientist has adapted from previous studies. The questions are assessed using a scale of Likert 1-5 with provisions 5 = strongly agree until 1 = strongly disagree.



Given that the population cannot be determined precisely, to determine the sample size, this research uses the Purba formulation to determine the minimum sample (Sugiarti, 2022), namely:

$$n = \frac{z^2}{4(Moe)^2}$$

where:

n: sample size

z: normal distribution level at the 95% significance level, which is 1.96

Moe: Margin of Error or the maximum tolerable error rate, which is 10% or 0.1

Therefore,

$$n = \frac{z^2}{4(Moe)^2} = \frac{1.96^2}{4(0.10)^2} = 96.04 = 97$$

Based on the formula above, this study's minimum number of samples is (at least) 97 people. However, as long as it meets the established criteria, researchers will take more samples to facilitate the generalization of the research results. Statistical methods, namely multiple linear regression, including t-test and F-test, will be used to test the functional relationship between the dependent and independent variables.

## RESULTS AND DISCUSSION

The questionnaire received a response from a total of 150 people (who met the criteria), with details of 88 people, or 58.7% male, and the remaining 62 people, or 41.3% female. In terms of age characteristics, the majority of the participants in this study, namely 71 persons (47.3 %) are in the 18-29 age group, 68 persons (45.4 %), are in the 30-44 age group, nine persons (6.0 %) are in the 45-59 age group, and the remaining two persons (1.3 %) are in the 60+ age group.

In total, this study has collected responses from chatbot users that are spread across 22 provinces in Indonesia. The five provinces with the most participants are West Java, DKI Jakarta, East Java, Central Java, and, Banten. Most respondents, 32 or 21.33%, came from West Java, followed by other provinces, as shown in Table 1.



**Table 1. Distribution of Respondents**

Province	Frequency	Percentage
Jawa Barat	32	21,33
DKI Jakarta	26	17,33
Jawa Timur	25	16,67
Jawa Tengah	14	9,33
Banten	10	6,67
DI Yogyakarta	6	4,00
Kalimantan Timur	5	3,33
Sumatera Selatan	4	2,67
Sumatera Barat	4	2,67
Sumatera Utara	4	2,67
Sulawesi Selatan	3	2,00
Bali	3	2,00
Kalimantan Utara	2	1,33
Lampung	2	1,33
Kepulauan Riau	2	1,33
Kalimantan Barat	2	1,33
Gorontalo	1	0,67
Kalimantan Selatan	1	0,67
Aceh	1	0,67
Sulawesi Barat	1	0,67
Riau	1	0,67
Jambi	1	0,67

Source: Processed data (2023)

Furthermore, the study found that most customers have used chatbot services within 1-3 months (89 respondents or 59.3%). The next largest group, 42 respondents or 28 percent, used chatbots within the last month. Then the rest, as many as 19 people or 12.7% of respondents, used a chatbot more than three months ago.

Indonesian consumers are most interested in using chatbot services for resolving issues or making complaints. The questionnaire results show that 92 respondents or 61% chose this purpose. Another 55 people, or 37 percent, use them for information about company products or services. The rest, namely three people or 2% of respondents, use chatbots because they want to try something out and follow up on it. From these results, chatbots are effective as a service channel for companies, especially for receiving consumer complaints and solving simple problems.

The research also reveals the type of chatbot service provider that customers most commonly use. The majority of respondents, namely 63 people or 42% of respondents, use chatbots from banking companies. In addition, telecommunications is a type of chatbot service provider company frequently used by 51 people, or 34 percent of respondents. Meanwhile, 36 people, or 24% of respondents, use chatbot services from fashion companies. From these findings, it can be concluded that chatbots can be used as a service channel for various businesses.

Validity and reliability tests are conducted on the questionnaire before testing the hypothesis. As a first step, the validity test is conducted to test the data's validity level, which indicates that the question items can measure what should be measured. The findings of the validity test show that all question items are declared valid as their



Pearson correlation coefficient is less than 0.05. Table 2 shows the analysis results of the validity test.

**Table 2. Results of the validity test**

Item	Pearson Correlation score	p-value (Sig.)
Perceived usefulness (X1):		
X11	0,874**	0,000
X12	0,833**	0,000
X13	0,872**	0,000
Perceived ease of use (X2):		
X21	0,801**	0,000
X22	0,835**	0,000
X23	0,821**	0,000
Social presence (X3):		
X31	0,851**	0,000
X32	0,807**	0,000
X33	0,857**	0,000
Customer satisfaction (Y):		
Y11	0,711**	0,000
Y12	0,693**	0,000
Y13	0,799**	0,000
Y14	0,738**	0,000
Y15	0,774**	0,000

\*\* Correlation is significant at the 0,01 level (2-tailed)

Source: Processed data (2023)

In addition, a reliability test is carried out, which aims to test the level of reliability of the data, such as the level of accuracy and precision of the data. The criterion of reliability is measured using a Cronbach alpha value greater than 0.6. Table 3 shows the results of the reliability test in this study. Based on this value, all the questions related to this research variable are reliable and appropriate.

**Table 3. Results of the reliability test**

No	Variable	Number of item(s)	Cronbach's Alpha
1	Perceived usefulness (X1)	3	0,821
2	Perceived ease of use (X2)	3	0,754
3	Social presence (X3)	3	0,788
4	Customer satisfaction (Y)	5	0,795

Source: Processed data (2023)

To answer the proposed hypotheses, this study uses multiple linear regression tests intending to see the effect of the independent variable on the dependent variable, together with the direction and the magnitude of the impact. Table 4 presents the results of the regression test.

**Table 4. Results of regression test**

Model	Coefficients <sup>a</sup>			t	Sig.
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta		
1 (Constant)	11,460	1,872		6,122	0,000
Perceived usefulness	0,492	0,138	0,325	3,563	0,000
Perceived ease of use	0,331	0,140	0,217	2,367	0,019
Social presence	0,053	0,108	0,0360	0,491	0,624

a. Dependent Variable: Customer satisfaction

Source: Processed data (2023)

Based on the results, a multiple linear regression equation is obtained:

$$Y = 11.460 + 0.492X_1 + 0.331X_2 + 0.053X_3$$

From this formula, we can see that out of the three independent variables examined, perceived usefulness (X1) has a significant effect of 49,2% compared to other independent variables (X2s and X3s) on consumer satisfaction (user) of chatbots in Indonesia. Additionally, table 4 provides explanations of the impact of each variable, as follows:

- (1) There is an effect of perceived usefulness (X1) on customer satisfaction (Y). This is indicated by the t-value, which is 3,563 with a p-value below .05 (here .000). Thus, it can be said that perceived usefulness significantly affects customer satisfaction (users) of chatbots in Indonesia.
- (2) For perceived ease of use, the t-value was 2.367 and significant at  $0.019 < 0.05$ . Thus, it can be said that perceived ease of use significantly affects customer satisfaction (users) with chatbots in Indonesia.
- (3) The test results indicate that the t-value for the variable social presence was .491 with a significance of  $.624 > .05$ . The p-value is greater than 0.05, or, in other words, insignificant. Therefore, it can be concluded that in this study, the variable of social presence does not significantly affect the satisfaction of customers (users) of chatbots in Indonesia.

Next, the results of the analysis output in Table 5 show that the coefficient of correlation in this study is 0.486, meaning that there is a relationship between the independent variable and the dependent variable of 48.6%. This value explains that the three factors, namely perceived usefulness (X1), perceived convenience (X2), and social presence (X3), have a strong enough relationship with consumer satisfaction (users) of chatbots in Indonesia.

**Table 5. Correlation coefficient**

Model Summary <sup>b</sup>				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,486 <sup>a</sup>	,236	,220	2,181

a. Predictors: (Constant), Perceived usefulness, Perceived ease of use, social presence

b. Dependent Variable: Customer satisfaction

Source: Processed data (2023)



In addition, the F-test will be applied to test the influence of the three factors simultaneously: perceived usefulness, perceived ease of use, and social presence. Table 6 shows the results of the F-test.

**Table 6. Analysis of Variance (ANOVA)**

ANOVA <sup>a</sup>						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	214,174	3	71,391	15,010	,000 <sup>b</sup>
	Residual	694,419	146	4,756		
	Total	908,593	149			

a. Dependent Variable: Customer satisfaction  
 b. Predictors: (Constant), Perceived usefulness, Perceived ease of use, social presence

Source: Processed data (2023)

Based on the results, the F-value is 15.010, with a significant value of 0.000 < 0.05. Hence, the three independent variables, namely perceived usefulness (X1), perceived ease of use (X2), and social presence (X3), simultaneously have a significant effect on customer satisfaction (users) of chatbots in Indonesia.

### CONCLUSION

To conclude, this study found that the majority of chatbot users are male, young adults, are familiar with chatbot services in Indonesia, and use them fairly frequently, as evidenced by the last period they used a chatbot being between one and three months, and use chatbots to submit complaints or problems about the product or service they use. The research also found that banking chatbots are the most used by customers. Furthermore, the analysis shows that two factors, namely perceived usefulness and perceived ease of use, determine customer satisfaction in chatbot usage. This finding is consistent with the technology acceptance model (TAM) and previous research on the vital role of perceived usefulness and perceived ease of use in determining customer attitudes or evaluations of technology. Regarding the social presence factor, the analysis showed that the respondents felt that the chatbots in Indonesia were not "natural" enough to make them feel like they were talking to a real person. Additionally, compared to the other two factors, perceived ease of use and social presence, perceived usefulness has a dominant (most significant) influence on customer (user) satisfaction with chatbots. So, customers value chatbots more in terms of their usability. Practically, these findings can be used by companies that are deploying or have already deployed chatbots to improve customer satisfaction and the development of chatbots as part of the service channel.

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