

The Effect of Artificial Intelligence and Chatbot on Consumer Satisfaction of Shopee platform users in Medan City

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Abstract. *This study aims to analyze the impact of the use of artificial intelligence (AI) and Shopee's chatbot on consumer satisfaction of the Shopee e-commerce platform in Medan. The research method uses a quantitative approach with data collection techniques through online surveys of 120 active Shopee users. The regression analysis results show that AI and Shopee chatbot have a positive and significant impact on customer satisfaction ($p < 0,000$). The ease of use features, response speed, and information accuracy of chatbots are key factors contributing to increased consumer satisfaction. The implications of this research provide insight into the development of AI technology in improving customer service in the e-commerce industry.*

Keywords: *artificial intelligence, chatbots, consumer satisfaction*

I. RESEARCH BACKGROUND

The development of digital technology has significantly changed the landscape of the retail industry, specifically e-commerce has become one of the fastest growing sectors. As a result, e-commerce platforms are forced to work tirelessly, innovating better shopping experiences and focusing on customer satisfaction. One of the innovations that has received increasing attention is the use of artificial intelligence (AI) and chatbots for customer service (Xu et al., 2017). In Indonesia, chatbots are already widely used in a number of ecommerce industries. Shopee, as one of the major players in the e-commerce industry in Southeast Asia, has implemented AI and chatbots in its platform. The Chatbot service in Shopee is named “Choki” as a means of communication between visitors and Shopee parties that can be accessed 24/7. This means that the chatbot is designed to assist site visitors or consumers in asking questions to buy products on e-commerce sites. E-commerce platform Shopee has integrated AI and chatbots in its system to enhance the shopping experience and customer service. Shopee offers chat contact capabilities, accommodating and helpful customer service, and promotional and discount elements that can emotionally thrill or satisfy customers. In addition, Shopee also offers promotional activities, games, and online entertainment that can make shopping more fun. However, despite the widespread adoption of this technology, questions remain about its effectiveness in the context of customer satisfaction.

Customer satisfaction is a crucial factor in the success of e-commerce businesses. According to Oliver (2017), customer satisfaction is the result of evaluating the experience of purchasing and using a product or service. In a digital environment, factors such as service

speed, information accuracy, and ease of use are key determinants of customer satisfaction (Blut, 2016). Consumer satisfaction is also referred to as the customer's perception of product performance and expectations regarding a particular product or brand. Fulfillment of consumer expectations contributes to increasing customer satisfaction, while the difference between consumer expectations and the performance of a product causes a state of disconfirmation (Sukanya, 2021).

Several previous studies have shown mixed results regarding the impact of chatbots on customer satisfaction. Chung et al. (2020) found that the use of chatbots can increase consumer satisfaction through fast response and 24/7 service. On the other hand, Zhu et al. (2018) identified some limitations of chatbots, such as the lack of contextual and emotional understanding, which can reduce their effectiveness. Despite the various conveniences offered and provided, chatbots often cause problems that lead to complaints such as the inability to understand user language correctly, the inability to provide accurate responses, especially when there are problems processing requests or lack of data or information. So in this case it becomes important to understand more deeply how AI and chatbots affect consumer satisfaction of shopee users in Medan. This research aims to fill the gap in the literature with a specific focus on the influence of Shopee's AI chatbot on the platform's consumer satisfaction. The results of this study are expected to provide valuable insights for e-commerce platform developers and digital marketing practitioners in optimizing the use of AI and chatbots to increase consumer satisfaction. In addition, the findings of this study can also contribute to theory development in the field of digital consumer behavior and the adoption of AI technology in the context of e-commerce.

II. LITERATURE

1. Artificial Intelligence (AI)

Artificial Intelligence (AI) refers to computer systems that can perform tasks that typically require human intelligence, such as visual perception, speech recognition, decision making, and translation between languages (Russell & Norvig, 2020). A common definition of artificial intelligence (AI) is technology that allows machines to mimic a variety of complex human skills (Sheikh et al., 2023). Computers now not only function as calculation tools, but are expected to be empowered to carry out various tasks that are generally performed by humans (Jaya et al., 2018). Artificial intelligence includes the ability to learn from previous data, draw conclusions based on experience, and is adaptive to changes in the environment and AI also has the ability to change or adapt the internal parameters of the system automatically,

showing its independence in operation (Jaya et al., 2018). Artificial intelligence has advantages in terms of logic and problem-solving capabilities, capable of thinking, and utilizing logic similar to the human mind, although not fully resembling human capabilities. In addition to its advantages, there are also several weaknesses, such as the limitation of logic and problem solving capabilities only in certain domains, the use of natural language (specially created language), and limitations in its development (Azizah et al., 2021).

2. Chatbot “Choki”

A chatbot is defined as a computer program designed to interact with users through text- or voice-based conversations (Adamopoulou & Moussiades, 2020). Modern chatbots use natural language processing (NLP) and machine learning technologies to understand and dynamically respond to user queries (Przegalinska et al., 2019). In e-commerce, chatbots have become an important tool for improving customer service. The power of Chatbot to be able to talk to users like humans is utilized by companies with functions as customer service that can provide product suggestions, questions about products, and also as a personal assistant (Nithuna & Laseena, 2020). Xu et al. (2017) showed that chatbots can handle a variety of customer service tasks, including answering general questions, assisting in the buying process, and handling complaints. So it can be concluded that Chatbot is a computer program that uses the science and theory of artificial intelligence, which can serve as a substitute for customer service with live humans. In order for a Chatbot implementation to be organized, it must be able to feel useful to consumers.

3. Kepuasan Konsumen dalam *E-commerce*

Consumer satisfaction is an overall evaluation of the experience of purchasing and using a product or service (Kotler et al., 2017). In the context of e-commerce, meeting satisfaction levels is a must. An approach that has proven effective is through the implementation of brand experience strategies that can influence customer emotions and psychology (Beig & Nika, 2022). Blut (2016) identified several factors that contribute to consumer satisfaction in e-commerce, including:

- Information quality
- Ease of use
- Website design
- Security and privacy
- Order fulfillment

In the digital age, the speed and efficiency of customer service is becoming increasingly important. Based on these factors, it can be concluded that customer satisfaction is an assessment of feelings after comparing product performance with expectations. If customers are satisfied with the service provided, they tend to share this positive experience with other potential customers, if customers are not satisfied with the service, they will also share negative experiences, disappointing experiences from customers can harm the company's image and existence, service quality is a crucial factor to retain customers in the long term (Rohaeni & Marwa, 2018).

4. The Effect of AI and Chatbot on Consumer Satisfaction

Research on the impact of AI and chatbots on consumer satisfaction has shown mixed results. Some studies found positive effects of using AI and chatbots:

- **Speed of Response:** Chatbots can provide instant responses, which are highly valued by consumers in an online environment (Chung et al., 2020).
- **24/7 Service:** Round-the-clock service availability increases accessibility and convenience for consumers (Zumstein & Hundertmark, 2017).
- **Information Consistency:** Chatbots can provide consistent information, reducing errors that may occur in human interaction (Xu et al., 2017).

However, some studies also identify challenges in the use of chatbots:

- **Contextual Understanding Limitations:** Chatbots may struggle to understand nuances and context in complex conversations (Zhu et al., 2018).
- **Lack of Empathy:** Some consumers feel that chatbots are less able to provide emotional support compared to human agents (Prentice et al., 2020).
- **Privacy Issues:** Concerns about how conversational data is used can affect consumer trust (Følstad et al., 2018).

III. RESEARCH METHOD

This study focuses on 3 main variables, namely Artificial Intelligence (X1), Chatbot (X2) and Customer Satisfaction (Y) using a quantitative research approach. This study has a target population, namely the people of Medan city who have used shopee Chatbot services (Choki), with a sample of 120 respondents through purposive sampling method with inclusion criteria: (1) Shopee users for at least 6 months, and (2) have used Shopee's AI and chatbot features at least 3 times. Data analysis used descriptive statistics and multiple linear regression analysis to test the research hypothesis.

IV. RESULT AND DISCUSSION

1. Respondent Characteristics

Table 1. Respondens Characteristic

	Demografic	Frequency	Percentage
Gender	Male	57	47.5
	Female	63	52.5
Age	< 20	24	20.0
	20-25	63	52.5
	26-30	20	16.7
	> 30	13	10.8
Background education	SMA	81	67.5
	S1	27	22.5
	S2	12	10.0
Job	Student	25	20.8
	Mahasiswa	47	39.2
	Pegawai Swasta	17	14.2
	PNS	19	15.8
	entrepreneur	12	10.0
Last time using a Shopee chatbot	1 day ago	33	27.5
	3 days ago	17	14.2
	>7 day ago	70	58.3

2. Descriptive Analyze

The data were analyzed using SEM-PLS to validate the research construct model using SmartPLS software version 3.0. Partial Least Square (PLS) is used to make appropriate assessments. The research calculation stages include the outer model and the inner model. The data in table 1 illustrates the outer loading value of all questionnaire items that are above the threshold value of 0.7 which is categorized as valid. In terms of reliability, Cronbach's alpha and composite reliability values are considered greater than 0.6, which means reliable or consistent. In addition, the variables in the study have an AVE of more than 0.5, which means that the indicator is valid if its AVE is more than 0.5. Thus, each variable has a valid discriminant value (Tugas et al., 2022). VIF values were evaluated to test for multicollinearity, and all constructs in this study had VIF values ranging from 1.596 to 3.110, which is considered acceptable.

Table 2. Validity and Reliability Test Results

Constructs	Validity			Reliability		
	Items	Outer loading	VIF	Cronbach's Alpha	Composite Reliability	AVE
AI	AI1	0.766	1.596	0.836	0.907	0.634
	AI2	0.807	1.991			
	AI3	0.772	2.031			
	AI4	0.833	2.181			

	AI5	0.836	2.178			
Chatbot	CB1	0.713	1.675	0.856	0.911	0.645
	CB2	0.857	2.401			
	CB3	0.771	1.806			
	CB4	0.865	2.586			
	CB5	0.819	2.311			
Kepuasan Konsumen	KK1	0.856	2.498	0.914	0.934	0.736
	KK2	0.889	3.110			
	KK3	0.764	2.056			
	KK4	0.863	2.517			
	KK5	0.838	2.336			

3. Inner Model

Tabel 4.3 Hypothesis

	Hipotesis	Path Coefficient	Standard Deviation	T Statistics	P Value	Decision
H1	AI → KK	0.623	0.089	6.783	0.000	Signifikan
H2	CB → KK	0.752	0.046	16.329	0.000	Signifikan

Inner model assessment is used to test hypothesis testing. Testing the path coefficient using the bootstrapping process to see the t statistic or p value (critical ratio) and the original sample value obtained from the process. A p value <0.05 indicates a direct effect between variables, while a p value > 0.05 indicates no direct effect between variables. Based on the analysis from table 4.3, it shows that the AI and Chatbot variables have a significant effect on Customer Satisfaction. The first hypothesis (H1) Artificial Intelligence variable has a significant effect on customer satisfaction with t statistics 6,783 (p-value 0.000). The second hypothesis (H2) Chatbot variable has a significant effect on customer satisfaction with t statistics 16.329 (p-value 0.000).

4. Coefficient of Determination Analysis

Table 4.4 R Square Test Results

Variabel	R Square
Kepuasan Konsumen	0.586

Based on Table 4.4, it can be seen that the R Square value for the Consumer Satisfaction variable is 0.586, which means that the influence of AI and Chatbot on Consumer Satisfaction is 58.6%, while the remaining 41.4% is explained by other variables not included in this study.

V. CONCLUSION

This study analyzes the relationship of AI and Chatbot technology-based services to consumer satisfaction of Shopee platform users. The findings of this study confirm that Shopee's use of AI and chatbots plays an important role in increasing the platform's customer

satisfaction. The results of multiple regression analysis confirm that about 58.6% of the influence of customer satisfaction comes from AI and Chatbot technology, while the rest is influenced by other factors such as service quality, price or promotion. With the participation of 120 respondents, this study succeeded in proving that shopee AI and Chatbot technology have a significant influence on consumer satisfaction of shopee platform users. This result is in line with the research of Chung et al. (2020) which shows the positive impact of chatbots on customer experience in e-commerce. Response speed is the most influential factor, indicating that consumers value fast and efficient service. This is in accordance with the characteristics of online shopping which demands speed and convenience (Blut, 2016).

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