ANALYZING THE IMPACT OF USING ARTIFICIAL INTELLIGENCE (AI) CUSTOMER SERVICE ON SERVICE

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Abstract. The goal of this study is to analyze the consequences of using customer service artificial intelligence on services to improve service quality at shopee. In today's digital era, many e-commerce companies including shopee are using AI technology. Shopee is the top 5 leading e-commerce in Southeast Asia in 2022. This study uses quantitative methods with data collection coming from questionnaires. Respondents in this study were 100 people who were users or customers of the shopee application. Simple Linear Regression Analysis, processed by SPSS Version 29, was used for purposive sampling. The Independent Variable in this study is Customer Service Artificial Intelligence and the dependent variable is Service. The results of the study indicate that the impact of using Customer Service AI on Service has succeeded in improving service quality, especially in terms of responsiveness and customer satisfaction.

Keywords: service; artificial intelligence; shopee; customer service

I. INTRODUCTION

Technological advances are currently the focus of attention for people around the world. The development of information and communication technology has become the latest discovery and breakthrough, especially in Indonesia. [1]. Among them is the Industrial Revolution 4.0, which is very important for technological advancement [2]. Industrial Revolution 4.0 is an idea that illustrates that technology continues to develop and continues to interact with humans to improve the quality of life. [3]. The idea is the creation of Artificial Intelligence or artificial intelligence. Artificial intelligence according to Knight and Rich is a field of computer science that examines efforts to build computers that are as good as or even better than humans in certain fields.. [4]. Because AI technology can provide many benefits for system or process development. With the help of AI technology, systems or processes can operate faster and more efficiently, which improves quality and productivity. (Sulistyowati dkk., 2021). Service is one of the key aspects of business that can measure the success or failure of a company. [6]. Service involves a process of interaction between customers and service providers, which aims to fulfill customer needs or desires. [7] . Companies must focus on creating customer value and customer satisfaction through superior service. [8]. Shopee in its services has implemented this technology AI to provide the best service to its users [9]. Shopee utilizes Customer Service AI, through the use of chatbots and other automated systems that have become essential tools for companies to improve operational efficiency and customer satisfaction. (Alghaniy, 2024).

Reported on CNBC Indonesia news on June 02, 2022, Advances in information technology have brought significant changes in a number of industries, including e-commerce companies such as Shopee, Tokopedia, and others. [11]. Referring to data reported by CNBC Indonesia, Shopee is one of the leading e-commerce platforms in Southeast Asia.


Figure 1: E-Commerce Platform Users

Source : iPrice Group (based on the highest number of website visitors to iPrice 2022)

The previous few years have seen a significant increase in Shopee usage in Medan City due to the expansion of the platform across Indonesia. Being the largest city outside of Java Island, Medan has a diverse community that enjoys online shopping on Shopee [12].

Shopee's use of AI in customer service is for a number of reasons. it starts with examining users' purchase data and previous search history, in order to make product recommendations that are more interesting and relevant to them. [13] . Next is a chatbot that operates automatically to assist customers in finding information on the goods and services they need quickly. [14]. Chatbots respond to common questions and offer recommendations to assist users in resolving issues. AI is able to monitor user behavior, including login habits and transaction patterns, to identify possible fraud and identify appropriate alerts to recommend fraud prevention measures. (Alghaniy, 2024) . This approach aims to provide consumers with a better shopping experience, easier responses, and more appropriate solutions. This relates to market demand and technological advancements, and has the potential to significantly improve the quality of Shopee's e-commerce services offered in Indonesia.[16]. However, the use of AI Chatbot does not all go according to what has been explained above. keep in mind that AI's ability to answer questions is limited by the data contained in its knowledge base. (The Effect of Chatbot-Based Service Quality on Customer Satisfaction in Online Transactions with the Object of the Shopee Application) Dhifa Rifky Ramadhani dkk., t.t.). As a result, there are many customers who complain about shopee's chatbot. Although Shopee has implemented a chatbot that uses AI to support services in multiple languages, some users report that the chatbot is often unable to understand the context or nuances of the language being used. While AI can provide precise answers, the quality of the answers provided may not always match the customer's needs, and there are still some situations where human interaction is required This is especially the case with the use of regional languages or slangs that are common among users in certain regions. (Nur Fadilla & Munadiyah Ramadhani, 2023).

Based on previous research conducted by [19] Using brand image as a mediating variable on Tokopedia app users, it was found that AI has a positive, but insignificant impact on customer loyalty. However, AI has a positive and significant impact on brand image, and brand image has a positive and significant impact on customer loyalty. This proves that AI can improve brand image, which has become an obstacle for many businesses today. Previous research by [20] about the Effect of Artificial Intelligence on Customer Experience for Gojek Users in Bandung, West Java. The results of the study state that AI has a positive effect on customer experience. AI is used to increase customer convenience and comfort in using applications, such as providing a personalized experience and displaying products of interest to users. In connection with previous research, researchers are interested in conducting research on the impact of AI on e-commerce development. This study aims to analyze the impact of using Customer Service AI on the Shopee application in improving service to customers. This study will evaluate AI in responding to customer needs, customer satisfaction with the services provided, and the potential and limitations of implementing this technology. Through this analysis, it is expected to gain a deeper understanding of the role of AI in customer service and recommendations for further development in the future.

Artificial Intelligence is a scientific discipline in computer science (informatics engineering). According to H.A Simon cited (Sulistyowati dkk., 2021) Artificial Intelligence is the science or study of giving computers the ability to do things better than humans can. [21]. AI with various functional processes can quickly and accurately analyze data on a large scale and identify patterns invisible to humans, helping companies understand consumer behavior patterns, preferences, and their needs. [22]. AI uses predictive analytics features to analyze historical data and anticipate future customer trends and actions. [23]. According to [24] The use of AI technology in customer service can reduce response time and improve the accuracy of answers, which ultimately has a positive impact on customer satisfaction. In addition, [25]emphasized that AI chatbots are capable of operating 24/7, providing consistent service without stopping, which is crucial in the e-commerce industry that operates without time limits. Shopee's implementation of an AI chatbot is a step forward in delivering faster, more precise, and responsive services, as well as reducing the workload of the human customer service team. (Nur Fadilla & Munadiyah Ramadhani, 2023). A chatbot is a computer-based conversational system that interacts with users through a natural language interface. [27]. A chatbot can understand and respond to user questions or statements in text or voice form. An AI system intended to mimic human conversation, it is often used for customer service applications to answer frequently asked questions, help resolve issues, and provide context-based support automatically. (Alghaniy, 2024). Chatbots can improve operational efficiency, provide faster and more consistent customer service, and reduce costs. The chatbot in Shopee is called Choki.
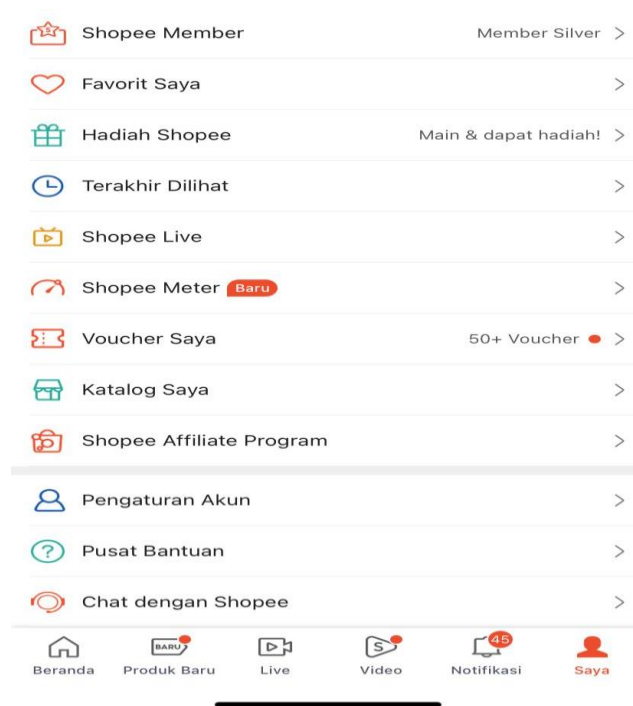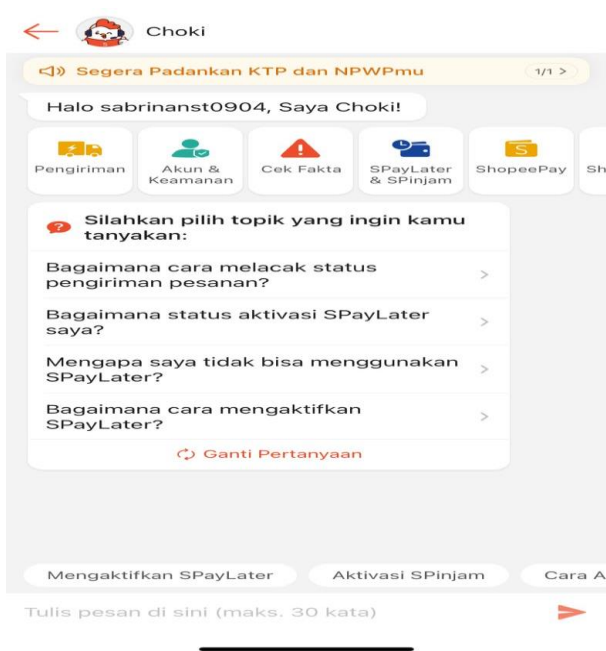
Figure 2. Shopee Chatbot
Source: Shopee App

Customer service is any form of activity aimed at meeting customer needs and expectations by providing quality service. (Pemasaran dan Kepuasan Pelanggan , t.t.). This is in line with the opinion of Lupiyoadi & Hamdani [28] which states that customer service includes all activities designed to increase customer satisfaction through the delivery of timely, friendly, and efficient services. Philip Kotler [28] highlights how important it is for customer service to have components such as physical evidence, reliability, assurance, empathy and responsiveness. The term Reliability describes the capacity to deliver services on time and accurately. Being Responsive means having the ability and motivation to help customers and provide fast and effective service. Assurance is the capacity and expertise of employees to provide a sense of security to customers. Direct and unique attention to each client is known as Empathy, while Physical Evidence consists of tangible elements that can be observed by customers, such as the appearance of employees and facilities. In addition to increasing customer satisfaction, the provision of high-quality services helps strengthen customer loyalty, which in turn can be beneficial to a company's ability to survive. In this regard, it is important for businesses in Indonesia to continuously strive to improve the quality of their customer service by adhering to the standards and best practices suggested by authorities in the industry.

II. RESEARCH METHOD

The study method conducted by the researcher is a quantitative study method. This study uses a purposive sampling approach [29]. This research uses Simple

Regression Analysis. Primary data for distributing questionnaires was carried out for 3 days from June 9, 2024 to June 11, 2024 through social media platforms. The social media used by researchers to find respondents are Instagram which researchers spread to followers of the researcher's account @sbrnnst and X (Twitter) where researchers send mentions through the Thesis World Community to get respondents. In this study, the population consists of all customers or consumers who have shopped or who use AI Customer Service (Chatbot) services in the shopee application. The number of population members is 235.9 million respondents. In this study, users of the Medan City Shopee application were given a questionnaire which is primary data for researchers to use. Data collection includes providing surveys to participants who meet the study requirements, through the use of Google Form media. The population is relatively large so the sampling strategy uses the Chocran formula.

$$n = \frac{z^2 \, pq}{e^2}$$
$$n = \frac{(1{,}96)^2 (0{,}5)(0{,}5)}{(0{,}10)^2}$$
$$n = 96{,}04 = 96 \; orang$$

From the data result, 96.04 is a fraction, according to [29] fractional calculations should be rounded up so that the number of samples in this study were 100 respondents.

The following factors were included in this study to encourage conversations in journal writing:
Independent Variable (X Variable)
The Independent Variable in this study is Customer Service Artificial Intelligence. Variable X with Indicators:
1. Responsiveness: How quickly the AI system responds to customer requests or inquiries.
2. Accuracy: The accuracy of answers or solutions provided by AI systems is an important indicator for evaluating service quality.
3. Customer Satisfaction: Measured through surveys or direct feedback from customers after interacting with the AI system.
4. Turnaround time: The time it takes for the AI system to resolve the customer's issue or question.
   1. Dependent Variable (Y Variable)
Variabel The dependent variable in this study is Service (Y).
Service Variables with Indicators (Kotler, t.t.) :
1. Reliability: The capacity to offer the predicted service accurately and consistently.
2. Assurance: The expertise, attitude and capacity of employees to generate confidence and trust.
3. Empathy: Customer service representatives show care and provide individual attention..
4. Responsiveness: Readiness to provide assistance to customers and provide services quickly.

III. RESULT AND DISCUSSION

Quality of Accounting Information System
From the results of the respondent's recapitulation, it shows that in the Responsiveness indicator, as many as 331

Likert scales stated that Shopee's customer service was able to respond to questions correctly. respond to questions correctly. In addition, 316 Likert scales stated that their requests were responded to correctly, indicating a high level of accuracy in handling various customer requests. correctly, indicating a high level of accuracy in handling various customer requests. For the Accuracy indicator, 311 Likert scales felt that Shopee's customer service was able to provide the right solution, while 319 Likert scales expressed satisfaction with the product suggestions provided. This indicates that the AI service used by Shopee is effective in providing recommendations that suit customer needs, and is able to solve problems properly. In the Customer Satisfaction indicator, 328 Likert scales felt that the online services provided by Shopee were convenient, and 319 Likert scales were satisfied with the solutions provided. In terms of the Turnaround Time indicator, as many as 315 Likert scales stated that their questions were responded to quickly, and as many as 301 Likert scales felt that their requests were handled quickly. However, the Time to Resolution indicator is the lowest value because not all problems can be resolved quickly, especially those that are more complex. Translated with DeepL.com (free version) Chatbots can be helpful in responding and handling simple requests quickly, but more complex issues still take longer to resolve. Overall, the Customer Satisfaction and Responsiveness indicators showed the most number of results, reflecting that the AI technology in Shopee's customer service successfully met users' expectations. The value is said to be valid if the rcount> rtable value. The rtable value is 0.195. The Customer Service Artificial Intelligence variable and the Service Variable have undergone validity testing, and the test results show rcount 0.594 to 0.817 which means greater than the rtable value. The results showed that the x variable and y variable data can be said to be valid and suitable for use in research.

Reliability Test

Tabel 4. Uji Reliabilitas

Variabel	Cronbach's Alpha	Ket
X- Customer Service AI	0,892	Reliabel
Y-Pelayanan	0,846	Reliabel

Source: Data processed (2024)

The reliability test aims to see the internal consistency of the questionnaire. If the Cronbach's Alpha test value is> 0.60, the questionnaire is considered acceptable and reliable. Based on the results of the reliability test, the Cronbach's Alpha value is 0.892 (Customer Service AI Variable) and 0.846 (Service Variable). This means that the items in the questionnaire consistently measure the same construct and have a strong correlation with each other. Thus, this instrument is reliable for use in this study.

Linearity Test

Tabel 5. Uji Linearitas

			Sum of Squares	df	Mean Square	F	Sig.
Pelayan an * Custom er Service AI	Between Groups	(Combine d)	807,754	14	57,697	9,061	**<,001**
		Linearity	708,145	1	708,145	111,211	**<,001**
		Deviation from Linearity	99,609	13	7,662	1,203	**,291**
	Within Groups		541,246	85	6,368		
	Total		1.349,000	99			

Sumber : Data diolah (2024)

Finding the relationship between the independent variable and the dependent variable is the purpose of the linearity test. The independent and dependent variables have a linear relationship if the sig value of deviation from linearity > 0.05. The independent and dependent variables are not related if the sig value of deviation from linearity < 0.05. It is known that 0.291> 0.05 based on the linearity test findings. The AI Customer Service Variable and the Service Variable have a linear relationship. This is supported by the significance value for "Deviation from Linearity" which is greater than 0.05, meaning that there is no significant deviation from linearity.

Uji Normalitas Data

Table 6 .Uji Normalitas Kolmogorov Smirnov

			Unstandardized Residual
N			100
Normal Parameters[a,b]	Mean		,0000000
	Std. Deviation		2,54426400
Most Extreme Differences	Absolute		,085
	Positive		,081
	Negative		-,085
Test Statistic			,085
Asymp. Sig. (2-tailed)[c]			,072
Monte Carlo Sig. (2-tailed)[d]	Sig.		,073
	99% Confidence Interval	Lower Bound	,067
		Upper Bound	,080

Source: Data processed (2024)

The significance value determined through the normality test is 0.080. Stating the significant value (0.080> 0.05) is greater than 0.05. This proves that the null hypothesis (H0) which states that the data is normally distributed cannot be rejected if there is sufficient evidence. Therefore, the data on the Service and Customer Service AI variables are believed to be normal. Therefore, at the 95% confidence level (alpha = 5%), it can be declared Normal.

Homoscedasticity Test

Table 7. Homoscedasticity Test

Coefficients^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1,201	1,115		1,078	,284
	Customer Service AI	,027	,043	,062	,619	,538
a. Dependent Variable: Pelayanan						

Source: Data processed (2024)

The homoscedasticity test aims to determine whether the residual value is homogeneous or not. If the sig value> 0.05 then the variance of the residual value is homogeneous. If the sig value <0.05 then the variance of the residuals is heterogeneous. Based on the results of the homoscedasticity test, it is known that the sig value is 0.538> 0.05, so the variance of the residual value is homogeneous. With the fulfillment of the homoscedasticity assumption, the parameter estimation results in the regression model are consistent and efficient.

Simple Linear Regression Analysis Test

Table 8. Simple Linear Regression Analysis Test

ANOVA^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	708,145	1	708,145	108,290	<,001^b
	Residual	640,855	98	6,539		
	Total	1349,000	99			
a. Dependent Variable: Pelayanan						
b. Predictors: (Constant), Customer Service AI						

Source: Data processed (2024)

Simple Linear Regression Analysis Variable X has an effect on variable Y if the significance value is smaller than 0.05. Variable X has no effect on Y if the sig value is greater than 0.05. The Simple Regression Analysis Test results show that the regression model can be used to predict that the Customer Service AI variable (X) has a positive effect on the Service Variable (Y), with a calculated F value of 108.290 and a significance level of 0.01 <0.05.

Test Coefficient of Determination (R)

Table 9. Test the Coefficient of Determination

Model Summary^b				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,725^a	,525	,520	2,557
a. Predictors: (Constant), Customer Service AI				
b. Dependent Variable: Pelayanan				

Source: Data processed (2024)

Finding the strength of the correlation or relationship between the independent and dependent variables is the purpose of the coefficient of determination test. Based on the results of the coefficient of determination test, it is known that the R value is 0.725. Based on the research conducted, the Customer Service AI variable has an effect of 52.5% on the Service Variable, with a coefficient of determination (R Square) of 0.525.

T-test

Table 10.

Coefficients^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	8,521	1,671		5,100	<,001
	Customer Service AI	,676	,065	,725	10,406	<,001
a. Dependent Variable: Pelayanan						

Source: Data processed (2024)

Measuring the contribution of each independent variable to the explanation of the dependent variable is the purpose of the t statistical test. The t test will be used to compare the calculated t value and the t table value. If the calculated t value is greater than the t table or sig <0.05, then Ha is accepted and Ho is rejected. If the sig value is> 0.05 or the t value < t table, then Ho is accepted and Ha is rejected. The value for Customer Service AI is 10.224 > 1.98 or 0.01 < 0.05, based on the test results, and therefore it is established that Customer Service AI improves Shopee's customer service.

DISCUSSION

Based on the findings of the researchers, analyzing the impact of using Customer Service AI has a positive impact on service at shopee in Medan City. This is in line with research [19] and [20] which found that service is positively and significantly influenced by Customer Service AI.

The results showed that in Customer Serive Artificial Intelligence towards Shopee Services in Medan City, which includes indicators of Responsiveness, Accuracy, Customer Satisfaction, and also Completion Time. In these four indicators, it shows that customer satisfaction and responsiveness are very significant and have a positive effect on service to shopee users. Customer satisfaction states that the online services provided by shopee are comfortable and satisfied with the solutions provided by Customer Service AI at shopee. Responsiveness states that shopee users' requests and questions are responded to correctly, which shows a high level of accuracy in handling various customer requests and questions.

This speed of response increases customer perception of service quality, which in turn increases loyalty and trust towards Shopee. Customers feel more satisfied with the service provided because the solutions offered by Customer Service AI are more accurate and timely. This increased satisfaction not only impacts a better shopping experience, but also contributes to increased customer retention and positive word-of-mouth recommendations. Overall, this study confirms that the implementation of Customer Service AI in

Shopee has successfully improved service quality, particularly in terms of responsiveness and customer satisfaction.

IV. CONCLUSIONS

Based on the research findings and discussion involving 100 respondents, with a total of 14.7% male and 85.3% female. With the majority of shopee users aged 19-30 years from students and private employees in Medan City. It can be concluded that Customer Service Artificial Intelligence (X) designed by Shopee has a positive and significant impact on Service (Y) in serving shopee customers. By using 16 Point statements based on relevant indicators, the results of the data normality test show a satisfactory level of satisfaction at the 95% significance level. To increase the satisfaction level by a further 5%, a more in-depth approach to various aspects of the service performed by AI Customer Service at Shopee is needed, as well as the integration of AI technology with Shopee's existing IT infrastructure.

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