Service Quality Analysis Of Tokopedia And Shopee Mobile Commerce Applications Using Mobile Service Quality (M-S-QUAL) And Importance Performance Analysis (IPA) Methods

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Abstract

The increasingly rapid development of technology has led to the emergence of mobile commerce (m-commerce) as a new business phenomenon. Tokopedia and Shopee are m-commerce that are widely used by Indonesian people compared to other m-commerce. However, the Tokopedia and Shopee applications still have problems such as crashes, errors, buffering, bugs, an unfriendly and messy UI display, search features that are not suitable or working properly, unhelpful customer service, and other user complaints felt by users towards service quality. The existence of these complaints can create a gap between the services provided by the application and the services expected by users. Therefore, this research was conducted to determine the quality of service on the Tokopedia and Shopee applications by measuring service quality using the M-S-QUAL method and identifying priority service attributes that require improvement using the Importance-Performance Analysis (IPA) method. Research data was obtained from the results of questionnaires to 100 respondents who used Tokopedia and Shopee. Based on the calculation results, the Tokopedia and Shopee applications have a negative average gap value in all dimensions, meaning that the service quality of the Tokopedia and Shopee applications has not met the expectations of their users. Then, the results of the analysis using Importance Performance Analysis (IPA) obtained 8 attributes on Tokopedia (EF2, EF3, EF5, EF7, EF8, SA3, SA4, and CON3) and 8 attributes on Shopee (EF5, EF7, EF8, SA3, SA4, COM3, CON2, and CON3) which are the main priorities for improvement. Thus, these attributes will be given recommendations for improvement to increase or improve the quality of the service.

Keywords: Importance Performance Analysis, M-S-QUAL, Service Quality

1. Introduction

As time progresses, technological evolution moves quickly to make it easier for humans to fulfill their needs and desires in an easy and fast way [1]. From data obtained from [2] shows that there has been a fairly high increase in active internet users in Indonesia from year to year until at the beginning of 2023 active internet users have increased to 212.9 million users. At the same time, the popularity of mobile devices is also increasing and is widely used by people to access the internet [3].

The increasing popularity of mobile devices and the development of mobile technology have led to the emergence of mobile commerce (m-commerce) as a new business phenomenon [4]. M-commerce is a business activity carried out via mobile and internet-based devices [5]. Compared with e-commerce, m-commerce has several different characteristics such as ubiquity, convenience, localization, and personalization [6].
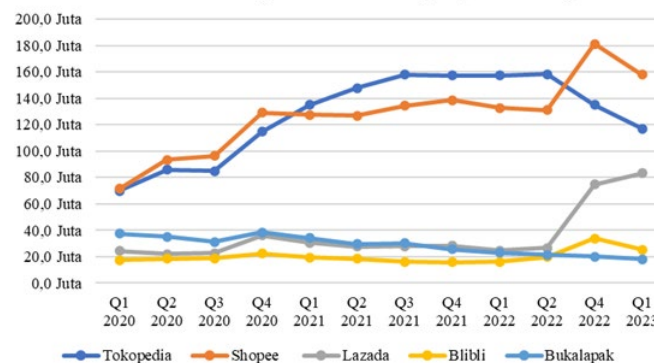

Figure 1. Graph of Number of e-Commerce Visits in Q1 2020 – Q1 2023

Tokopedia and Shopee are m-commerce which are popular among some Indonesian people. This can be seen in Figure 1. which shows that Tokopedia and Shopee have a greater number of visits compared to other m-commerce such as Lazada, Blibli, and Bukalapak. Apart from that, Tokopedia and Shopee have quite good application ratings and are ranked in the top five mobile shopping categories on the Play Store. However, both applications still have quite a rating of one from users and have problems such as crashes, errors, buffering, bugs, an unfriendly and messy UI display, search features that do not work or work properly, customer service that is less helpful , and other user complaints regarding the service quality of the two applications.

Based on complaints given by users in the Play Store review of the Tokopedia and Shopee applications, it shows that the quality of application services is not yet optimal and there are still problems with the quality of application services. This can also be seen by the percentage of ratings in Figure 2. which shows that there is still a percentage of rating 1 of 8% on the Tokopedia application and 13% on the Shopee application of the total users who gave ratings to each application. Therefore, it is necessary to measure the quality of application services provided by the Company to determine factors in the quality of application services that are considered not according to customer wishes by using the application service quality measurement method [7]
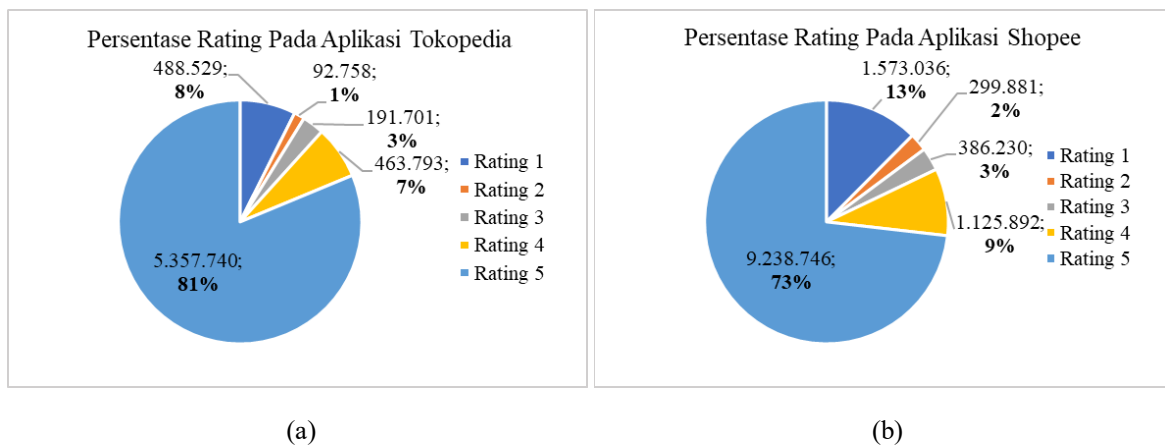

(a)   (b)

Figure 2. (a) Percentage of Tokopedia Application Ratings on the Play Store, (b) Percentage of Shopee Application Ratings on the Google Play Store

In measuring m-commerce service quality, the method that can be used to assess service quality in m-commerce applications is Mobile Service Quality (M-S-QUAL). M-S-QUAL is a method that can be used to evaluate the quality of information system services or mobile application performance specifically for its users [8]. This method has dimensions for measuring service quality that have been adapted to the characteristics of m-commerce, so this method is suitable for measuring m-commerce services or mobile apps. Then, to determine the priority of customer attributes that need improvement, they can be analyzed using the Importance-Performance Analysis (IPA) method. Importance-Performance Analysis is a method that can be used to measure management strategies and levels of customer satisfaction. This method can help companies determine priority customer attributes that require improvement in improving service quality and customer satisfaction [9].

Several studies have been carried out to measure service quality in an application. [8] aims to determine the service quality of m-commerce applications by using 9 dimensions of service quality from the M-S-QUAL method developed by [9] namely, efficiency, system availability, content, privacy, fulfillment, responsiveness, compensation, contact, and billing. [6] uses the M-S-QUAL method to measure service quality performance using five M-S-QUAL dimensions, namely efficiency, fulfillment, privacy, contact, and responsiveness. Then, using the Importance Performance Analysis

(IPA) method to determine the priority of attributes that must be improved first to achieve customer satisfaction, so that not all attributes must be improved simultaneously. Then, [10] conducted a service quality analysis on the Halodoc application using the M-S-QUAL and IPA methods which produced a negative gap value from measurements carried out using the M-S-QUAL method, which indicates that the service in the Halodoc application has not met user expectations and based on the results of IPA, 11 attributes are the main priority for improvement.

Based on the background, this research will use the M-S-QUAL method to measure the quality of application services on Tokopedia and Shopee. Then, proceed with IPA analysis to measure and determine priority attributes of M-S-QUAL based on the results of customer questionnaires and calculation results using the M-S-QUAL method. As well as, providing recommendations for improvement on attributes that have priority improvements.

2. Methods

This research began by formulating the problem, where the researcher identified problems in the Tokopedia and Shopee applications with the help of literature studies as a basis and support for the research. Then, formulate the problem and determine the research objectives to be achieved in the final results of a research.

2.1. Data collection stage

At this stage, a research instrument is needed, namely a questionnaire that will be filled out by respondents. This questionnaire was prepared by referring to the dimensions and attributes of the M-S-QUAL approach method.

a. *Preparation of Questionnaires*

In this research, the questionnaire was prepared based on the dimensions and attributes of M-S-QUAL which refers to research by [9] which consists of 9 dimensions and 45 attribute statements, and uses a 4 point Likert scale. So, here are the M-S-QUAL dimensions that will be used:

- Efficiency, the application can respond quickly and is easy to use.
- System Availability, the technical functions contained in the application are available and run accurately.
- Content, the information in the application is appropriate and correct.
- Privacy, the extent to which customers consider the application to be safe, private, safeguard and protect their personal data and information.
- Fulfillment, the extent to which promises from the application are fulfilled regarding order delivery and goods availability.
- Responsiveness, the effectiveness of an application in handling application problems and return policies.
- Compensation, the extent to which the application provides compensation to consumers for each problem.
- Contact, application availability to provide customer service and call centers for users.
- Billing, perceived value for ease/comfort of billing and payment processes.

b. *Questionnaire data collection*

In this research, the data that will be used is primary data, namely data obtained from the results of distributing questionnaires to Tokopedia and Shopee users. Research data collection will be carried out online via social media by distributing questionnaires in the form of Google forms in June-July 2023 to target respondents who match the research criteria. In sampling, this research will use a non-probability sampling technique - purposive sampling, namely a sampling technique where not all members of the population are given the opportunity to be sampled and using samples that have been adjusted to certain criteria or considerations [11]. So the criteria for respondents in this research are users of the Tokopedia and Shopee applications who have made transactions on both applications in the last 3 months and are at least 17 years old.

The sample size calculation in this study used the Lemeshow formula, with the following formula [12]:

$$n = \frac{Z_{1-\frac{a}{2}}^2 P(1-P)}{d^2} \qquad (1)$$

Where, n is the number of samples, Z is the Z value (confidence level = 95% = 1,96), P is the population proportion (0,5), and d is the absolute precision (0,1). So, from the results of calculating the number of samples, it was found that the number of samples needed was 100 respondents.

2.2. Data processing stage

This stage consists of several stages of data processing which will be developed as further improvement steps.

a. *Validity test and reliability test*

Validity tests are carried out to determine the accuracy of the measuring instruments used in a study. Valid means that the instrument can be used to measure what should be measured [13]. The research instrument can be said to be valid if r count > r table.

Reliability tests are carried out to determine the consistency of the measuring instruments used in a study. A reliable instrument is an instrument that can produce the same data even if it is used several times to measure the same object [13]. The instrument can be said to be reliable if the Cronbach alpha's value is > 0.7.

b. *M-S-QUAL*

Calculations in processing this data begin by calculating the total score for the performance level and expectation level for each attribute. After the total score is obtained, you can then calculate the average value of the performance level attributes and expectation level attributes of each variable. Then, to determine the service quality level of the Tokopedia and Shopee applications, this is done by calculating the gap value, namely the average performance value minus the average value of expectations of users of the Tokopedia and Shopee applications. Service quality can be said to be in accordance with user expectations, if the value obtained is positive (≥ 0) [7].

c. *Importance Performance Analysis (IPA)*

At this stage, the data needed to obtain the results of the Importance Performance Analysis (IPA) diagram matrix is the average of each performance attribute and the average of each expectation attribute. Later, the data will be processed with the help of SPSS software which produces a science diagram matrix which is divided into 4 quadrants. The IPA analysis diagram is as follows [8].
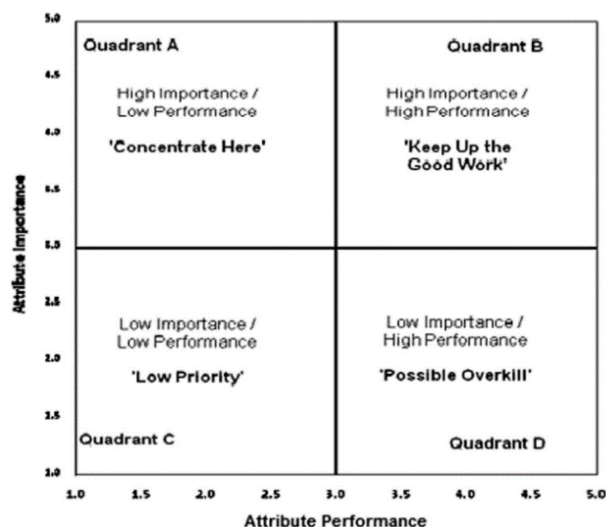

Figure 3. Importance-Performance Analysis Diagram

3. Results and discussion

This section contains the results and discussion of the data collection and processing stages that have been processed based on research methods.

3.1. Data collection from questionnaire results

From the results of distributing questionnaires based on M-S-QUAL attributes, totaling 45 statements, data was obtained for 100 respondents. From this data, data was obtained in the form of respondents' identities which were divided into three characteristics, namely based on gender, age and occupation.

Characteristics of respondents based on gender, dominated by women at 56% and men at 44%. Then, the characteristics of respondents based on age were dominated by 72% of respondents aged 17-25 years, 23% aged 25-35 years, 3% aged 46-55 years, and 2% aged 36-45 years. Then, the characteristics of respondents based on work were dominated by student respondents at 38%, private employees at 22%, other occupations at 13%, civil servants at 13%, entrepreneurs at 5%, and housewives at 3%.

3.2. Validity test and realibility test

Based on the results of the validity and reliability test calculations that have been carried out on the Tokopedia and Shopee applications using the SPSS software, the validity test shows that all data on 45 service attributes have a calculated r value that is greater than the r table value, namely the r table value of 0.197. Therefore, it can be said that the research instruments in the Tokopedia and Shopee applications are valid.

Then, in calculating the reliability test, it was found that the performance and expectations section of the questionnaire on the Tokopedia and Shopee applications had a Cronbach's alpha value of more than 0.7. So, this means that this questionnaire can be said to be reliable or consistent.

3.3. M-S-QUAL method

Measuring service quality using M-S-QUAL is carried out to find out how well an application service on the Tokopedia and Shopee applications can meet the needs of service users. In this calculation, there is a measurement of the performance value and expectation value perceived by application users based on the M-S-QUAL service quality attributes. Then, from these calculations, the gap value for each service quality attribute will be obtained, by calculating the difference between the performance value and the user's expectation value.

Tabel 1. Gap Results Tokopedia and Shopee

Attributes	Statement Attributes	GAP		Conclusion
		Tokopedia	Shopee	
Efficiency				
EF1	This application makes it easier for me to find what I need.	-0,09	0,01	
EF2	The application makes it easy for users to use all its features and functions.	-0,32	-0,24	
EF3	The application allows users to complete transactions quickly.	-0,22	-0,30	
EF4	The information on the application is well organized.	-0,13	-0,43	
EF5	Fast application page loading.	-0,43	-1,62	Service quality has not met user expectations
EF6	The application can be used easily.	-0,15	-0,30	
EF7	The application allows users to access quickly.	-0,31	-0,67	
EF8	The main and important functions and features in this application are well arranged.	-0,33	-0,76	
	Rata -Rata	-0,25	-0,54	
System Availability				
SA1	The application can be used for business.	0,26	0,27	
SA2	The application can work and process well.	-0,10	-0,23	

Attributes	Statement Attributes	GAP		Conclusion
		Tokopedia	Shopee	
SA3	The application does not crash or freeze.	-0,52	-1,27	Service quality has
SA4	The application displays search data quickly and precisely.	-0,22	-0,46	not met user
	Rata -Rata	-0,15	-0,42	expectations
	Content			
C1	The information contained in the application is concise, concise and complete.	-0,15	-0,19	
C2	The information contained in the application is accurate, important and appropriate.	-0,07	-0,30	Service quality has
C3	The application displays the most up-to date information.	-0,19	-0,17	not met user
C4	The application provides information that is updated regularly.	0,01	-0,27	expectations
C5	I can easily understand all the information in the application.	-0,15	-0,11	
	Rata -Rata	-0,11	-0,21	
	Privacy			
P1	This application protects and keeps users' personal information (email, telephone number, name and address) safe.	-0,39	-0,39	
P2	The application protects transaction processes and data safely.	-0,22	-0,39	Service quality has not met user
P3	The application protects financial data safely (shopeepay, gopay, e-wallet, credit cards, etc.).	-0,19	-0,28	expectations
	Rata -Rata	-0,27	-0,35	
	Fulfillment			
F1	The application sends goods/products that match the buyer's order.	-0,22	-0,28	
F2	The stock information provided is always updated (up to date).	-0,19	-0,25	
F3	The application responds quickly to delivery when there is an order.	-0,06	-0,20	
F4	Information on availability of goods/products is accurate.	-0,15	-0,20	Service quality has
F5	Information related to orders that have been completed and sent/notified on time.	-0,06	-0,13	not met user expectations
F6	Offers from the application are honest and appropriate (offers such as discounts, free shipping, flashsales and cashback).	-0,08	-0,02	
	Rata -Rata	-0,13	-0,18	
	Responsiveness			
R1	The application provides easy return options (products or funds).	-0,15	-0,26	
R2	This application handles product or fund returns well.	-0,25	-0,18	
R3	The application provides useful warranties (guarantees such as product returns or funds if the product is defective and store warranties for electronic products).	-0,13	-0,14	Service quality has
R4	The application informs you what to do when an order is not processed.	-0,05	-0,09	not met user
R5	The application provides a call center number to contact the company and provides the option to speak directly with a customer service operator.	0,10	-0,10	expectations
R6	The application has online customer service with live chat.	0,10	0,10	
	Rata -Rata	-0,06	-0,11	
	Compensation			
COM1	The application provides compensation for every customer problem.	-0,23	-0,24	
COM2	The application compensates customers if orders do not arrive on time.	-0,31	-0,20	
COM3	The application provides a pick-up option for items to be exchanged or returned.	0,07	-1,11	Service quality has not met user
COM4	The compensation application process can be done easily.	-0,22	-0,33	expectations
	Rata -Rata	-0,17	-0,47	
	Contact			

Attributes	Statement Attributes	GAP		Conclusion
		Tokopedia	Shopee	
CON1	Customer service or call center accepts complaints in a friendly, polite and friendly manner.	-0,04	-0,28	Service quality has not met user expectations
CON2	Customer service or call center handles customer complaints quickly and accurately.	-0,18	-0,47	
CON3	Customer service or call center provides suggestions and explanations that are accurate and easy to understand.	-0,34	-0,38	
CON4	Customer service or call center employees have the ability to help and solve customer problems.	0,13	0,01	
	Rata -Rata	-0,11	-0,28	
	Billing			
B1	This application provides easy, convenient and varied payment methods.	-0,18	-0,14	Service quality has not met user expectations
B2	Bill payment calculations are carried out correctly when there are no offers or there are offers (discounts, cashback and free shipping).	0,09	-0,08	
B3	Users can easily understand and resolve problems related to the billing and payment process.	-0,08	-0,03	
B4	The transaction process can be done easily.	0,09	-0,10	
B5	Applications can help complete the payment process easily and quickly.	-0,02	0,05	
	Rata -Rata	-0,02	-0,06	

Based on the results of the calculation of the gap value, it shows that in the Tokopedia application there are 8 attributes that have positive values and 37 that have negative values. Then in the Shopee application there are 5 attributes that have positive gap values and 40 negative attributes. Then, from these two applications the average value of each dimension has a negative gap value. So, this shows that the service quality of the Tokopedia and Shopee applications has not met the expectations of its users and that there needs to be improvements and improvements to the quality of services on the Tokopedia and Shopee applications to meet user expectations.

a. Importance Performance Analysis (IPA) method

Analysis using the IPA method can be used to quantify the relationship between user perceptions and expectations, as well as determine priority customer attributes that need to be improved in improving service quality and customer satisfaction. In the IPA diagram, it is known that there are 4 quadrants. Quadrant I is the quadrant in which the attributes in it are the main priority for improvement or increased performance. Quadrant II is the quadrant in which the performance of the attributes must be maintained. Quadrant III is a quadrant whose attributes have a low improvement priority, where customer expectations of users regarding the application and application performance perceived by users are both low. Quadrant IV is a quadrant whose attributes provide good quality but are considered less important by users. The following are the results of the IPA salt analysis on the Tokopedia and Shopee applications.

Based on the IPA results on the Shopee application, there are 8 service attributes that fall into quadrant I, namely EF5 (fast application page loading), EF7 (application allows users to access quickly), EF8 (main and important functions and features in this application are well organized),

Figure 4. Importance Performance Analysis diagram of the Tokopedia Application

Figure 5. Importance Performance Analysis diagram of the Shopee Application

SA3 (the application does not experience crashes and freezes), SA4 (the application displays search data quickly and precisely), COM3 (the application provides a pick-up option for items to be exchanged or returned), CON2 (customer service or call center handles customer complaints quickly and precisely), and CON3 (customer service or call center provides advice and explanations accurately and easily understood).

b.   Recomendation

Based on the results of the IPA quadrant analysis on the Tokopedia and Shopee applications, 8 attributes in each application are included in the first quadrant. After comparing the priority attributes between the Tokopedia and Shopee applications, 6 service quality attributes are the main problems in both applications or attributes that are both in the first quadrant. The service quality attributes are, EF5 (fast application page loading), EF7 (the application allows users to access it quickly), EF8 (the main and important functions and features in this application are well organized), SA3 (the application does not experience crashes and freezes) , SA4 (the application displays search data quickly and precisely), and CON3 (customer service or call center provides advice and explanations accurately and easily understood). Apart from that, the Tokopedia and Shopee applications each have two priority attributes that need to be increased and/or improved the quality of their services. The attributes on Tokopedia are, EF2 (The application makes it easy for users to use all its features and functions) and EF3 (The application allows users to complete transactions quickly). Then, the attributes on Shopee are, COM3 (The application provides a pick-up

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option for items to be exchanged or returned) and CON2 (Customer service or call center handles customer complaints quickly and accurately). Therefore, these service quality attributes are the top priority for recommendations for improvement.

Tabel 1. Recomendations

Attribute Code	Attribute Statement	Recommendations
EF5 EF7 SA3	Fast application page loading. The application allows users to access quickly. The application does not crash or freeze.	a. Improve quality assurance and quality control on application updates carried out by the development team. b. Increase the rigor of automated and manual testing to ensure applications work properly c. Make it easier for customers to report bugs d. It displays lighter content than before, but still provides an attractive appearance so that users remain interested in the application.
EF8	The main and important functions and features in this application are well arranged.	Added a customized feature that users can use to select what menus will be displayed on the main page.
SA4	The application displays search data quickly and precisely.	a. Adding categories to the filter feature is more complete, for example by adding a brand category which contains brand choices that users often search for in the filter. b. Added a pop-up that will appear when the user has entered the product keyword. The pop-up consists of a choice whether the user will use the product filter or not.
CON3 CON2	Customer service or call center provides advice and explanations that are precise and easy to understand. Customer service or call center handles customer complaints quickly and accurately. (Shopee)	a. Evaluating the quality of customer service. b. Measuring user satisfaction surveys with Customer Satisfaction Score (CSAT), namely by adding a rating button so that customers can provide feedback in the form of an assessment after communicating with CS so that m-commerce can monitor and find out the performance of each customer service. c. Improve the existing bot system. d. Conduct training for customer service.
COM3	The application provides a pick-up option for items to be exchanged or returned. (Shopee)	Added a pick-up feature in the return item exchange section that users can use as an option when they want to send the returned product to the seller.
EF2	The application makes it easy for users to use all its features and functions. (Tokopedia)	Creating new innovations for important features that can make it easier for users to use these features and functions. For example, adding a pop-up feature containing a complaints feature that can appear when the user shakes the mobile phone, this aims to make it easier for users to report problems when an error or bug occurs in the application.
EF3	The application allows users to complete transactions quickly. (Tokopedia)	Increase the rigor of automated and manual testing to ensure applications work properly, make it easier for customers to report bugs and add payment method options.

4. Conclusion

Based on the results of research on measuring service quality in the Tokopedia and Shopee applications and determining priority attributes for improvement, it can be concluded that based on the M-S-QUAL method the results obtained are that the gap value in the Tokopedia and Shopee applications still produces a negative value, meaning that the service quality the Tokopedia and Shopee applications have not met user expectations. So, there is a need to increase and improve the quality of service on the Shopee application to meet user expectations.

Then, the results of the analysis using Importance Performance Analysis (IPA) obtained 8 attributes on Tokopedia (EF2, EF3, EF5, EF7, EF8, SA3, SA4, and CON3) and 8 attributes on Shopee (EF5, EF7, EF8, SA3, SA4, COM3, CON2,

and CON3) which are the main priorities for improvement. Thus, these attributes will be given recommendations for improvement to increase or improve the quality of the service as listed in the previous chapter.

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