

Satisfaction Level Analysis of Bukalapak's Website & Application Users Using SERVQUAL and IPA

Melissa^{1*}, and Fransisca Dini Ariyanti¹

¹Industrial Engineering Department, Faculty of Engineering, 11480 Bina Nusantara University, Indonesia

Abstract. Customer or user satisfaction is a very important thing to maintain especially for company that engaged in the service industry. Therefore, it is necessary to conduct research to determine the level of user satisfaction and identify problems that must be addressed immediately. A thorough analysis on the service importance level satisfaction level for certain services at Bukalapak can be done by using Service Quality (SERVQUAL) Method. The result shows that according to Customer Satisfaction Index (CSI) calculation, the user satisfaction level with Bukalapak is 85% which can be considered very good. Aside from that, companies also need to know the perceptions and expectations of users on the quality of services offered and make improvements in critical areas by making an Importance Performance Analysis (IPA) graph. The graph shows 4 main problems in Quadrant I that need to be solved immediately which are the appearance of Bukalapak's website or application (T1), data protection for customer or user (E1), customer service (E2), and the coherency of stock quantities and product descriptions (R2). The resolution of these four problems was made by using questionnaires to ask for opinions and solutions from 5 experts.

1 Introduction

The number of households in Indonesia that use internet continues to grow from year to year. There were 57.33% of households that used the internet in 2017, 66.22% in 2018, 73.75% in 2019, and 78.18% in 2020 [1]. Along with the increasing number of internet users, the trend of shopping through e-commerce is also increasing. The number of e-commerce users in Indonesia in 2017 reached 139 million users, then increased by 10.8% to 154.1 million users in 2020 [2].

The most visited e-commerce sites according to 2020 data are Shopee with 71.53 clicks/month, Tokopedia with 69.8 clicks/month, Bukalapak with 37.63 clicks/month, Lazada with 24.4 clicks/month, Blibli with 17.6 clicks/month, et al [3]. Bukalapak and JD.ID had the highest number of complaints in 2019, which were 17.6% each. There were also complaints against Shopee at 14.7%, Tokopedia at 8.8%, OVO and Tiket.com at 5.8%, and Lazada at 2.9% [4]. Bukalapak receives various kinds of complaints, but when viewed from the rating received on Play Store, the overall number of complaints is still less than the number of satisfied users.

More than 75% of the ratings given by users to Bukalapak application are still positive (ratings 4 and 5), but it cannot be denied that at the same time there are also many complaints from the user side and a decrease in the number of visits. Therefore, it is necessary to conduct research to determine the level of user satisfaction and identify problems that must be addressed immediately. A thorough analysis of the level of importance of a service for users and the level of

satisfaction for certain services at Bukalapak can be done by using Service Quality (SERVQUAL) Method. Companies also need to know the perceptions and expectations of users on the quality of services offered and make improvements in critical areas by making an Importance Performance Analysis (IPA) graph.

2 Literature review

2.1 Service quality (SERVQUAL)

Service quality is the fulfilment of the needs and desires of customers and the accuracy of product or service delivery to balance customer expectations [5]. Service quality has 5 dimensions, such as [6]:

- 1) Tangibles
Tangibles are things that the user can see and feel directly. Tangibles are often associated with physical things such as tools or machines to produce products and as a representation of a service such as credit and debit cards, or the speed and effectiveness of transactions.
- 2) Reliability
Reliability means the organization or company provides good and reliable service. This also shows that the organization or company always tries to fulfil what has been promised and pays attention to the results.
- 3) Assurance
Assurance is the ability of an organization or company to provide a sense of security and trust to customers. Organizations or companies must

* Corresponding author: melissa001@binus.ac.id, fransisca.ariyanti@binus.ac.id

provide friendly, confidential, courteous, and competent service.

- 4) Empathy
Customers must feel prioritized by the company that provides these services. Empathy means caring, giving personal attention, and providing good service to customers. The essence of empathy is conveying the feeling that a customer is unique and special. This is usually measured in terms of security, credibility, and access.
- 5) Responsiveness
Responsiveness means the ease with which customers can contact the organization or company. An example is customer service access.

Customer satisfaction is defined as an evaluation after a customer uses a product or service, as well as whether the product or service can meet customer expectations and desires. Customer satisfaction can be calculated using the Customer Satisfaction Index (CSI) formula. The CSI calculation is done by calculating the value given by the customer on the SERVQUAL questionnaire [7].

2.2 Importance performance analysis (IPA)

Importance Performance Analysis (IPA) is a method that maps customer perceptions of the importance level and the service aspects with customer perceptions of performance level [8]. This is done to identify services that need to be improved. The strategies that can be carried out depend on the position of each variable in the four quadrants and can be explained as follows [9]:

- 1) Quadrant 1 (Concentrate These)
Quadrant 1 is an area that contains factors that are considered important by users, but in reality the level of satisfaction obtained is still low. The variables included in this quadrant are a priority for improvement.
- 2) Quadrant 2 (Keep Up the Good Work)
Quadrant 2 is an area that contains factors that are considered important by users and are in accordance with what they feel so that the level of satisfaction is relatively higher. The variables that fall into this quadrant must be maintained because all these variables make the product or service superior in the eyes of the user.
- 3) Quadrant 3 (Low Priority)
Quadrant 3 is an area that contains factors that are considered less important by customers and their performance is also not too good. The increase here can be reconsidered because its effect on the customers is very small.
- 4) Quadrant 4 (Possible Overkill)
Quadrant 4 is an area that contains factors that are considered less important by users, but have a high level of satisfaction. Variables included in this quadrant service can be reduced so that the company can save costs.

3 Research methodology

Problem solving steps according to flowchart from the beginning of research to the end of it.

- 1) Observation
The observation process is done by observing the service quality of Bukalapak's website and application when used and by doing short interviews with some people. The next step is to look for supporting data on the internet regarding the number of internet users, the number of e-commerce users of Bukalapak, general complaints submitted, etc.
- 2) Literature Study
Literature study aims to obtain references or supporting literature in order to solve existing problems. Literature related to the appropriate theories and methods to be used in determining the level of customer satisfaction need to be collected. This includes scientific papers and related research journals.
- 3) Problem Identification
Many problems have arisen related to Bukalapak which can cause dissatisfaction for Bukalapak users. User satisfaction is an important factor that affects Bukalapak website and application. Dissatisfied customers are more likely to switch to another e-commerce site. Research on customer satisfaction needs to be done in order to remain competitive.
- 4) Objective
Setting the objective is the first step that must be taken to ensure the research goes according to plan. This study aims to determine the level of satisfaction of Bukalapak users with the services available on the website and its applications. The research is expected to be useful for improving company performance.
- 5) Determine the Population and Sample
The population is all Bukalapak users. The total number of Bukalapak users is very large and can't be determined precisely and therefore needs to be calculated by using an unknown population formula.
- 6) Make Questionnaire
The questionnaire is a list of questions used by researchers to obtain data from the source directly. The questionnaire is the closed type where the researchers have provided all possible answers and respondents only need to choose between them. The questionnaire was made using the SERVQUAL method and was divided into 2 parts, namely the level of importance and the level of service satisfaction. Each section has 5 main variables, namely tangible, reliability, assurance, responsiveness, and empathy. There are 4 questions that must be answered based on 5 choices according to Likert scale in each section.
- 7) Data Collection
Data collection was carried out to obtain primary and secondary data. Primary data is the data obtained from users in the form of answers to the distributed

questionnaires. The amount of data collected must meet the specified criteria. Secondary data is data obtained from literature related to the research and company documents. The data contains instructions for conducting the research and all useful information for the preparation of the report.

- 8) Questionnaire Validity and Reliability Test
 Tests were carried out to ensure that the data collected from the questionnaire is valid and reliable. Data that does not meet the criteria can lead to wrong conclusions that may bring negative impact to the company. Data testing is done by using Minitab software.
- 9) Data Processing
 Data processing is carried out by calculating the Customer Satisfaction Index (CSI) value to determine the satisfaction level of Bukalapak users with the services provided. The Importance Performance Analysis (IPA) method is also used to determine the level of importance or priority of the service that must be improved.
- 10) Problem Mitigation
 Items in quadrant 1 in the IPA graph show the main problems that have the most influence on the poor service perceived by customers or users when using Bukalapak's application or website. Mitigation must be done to fix the most critical problem in quadrant 1 by asking for opinions from 5 experts using a questionnaire.
- 11) Problem Analysis
 The analysis is carried out based on the results of data processing that has been done and aims to answer the questions from the research objective. After analyzing the data obtained, a solution can be found or made.
- 12) Conclusion
 Conclusions are drawn from the results of data collection, processing, analysis, and problem mitigation. The conclusion is the short and compact version of the overall research's result and must answer all the objectives specified at the beginning.

4 Result and analysis

Bukalapak received quite a number of complaints from customers, but on the other hand, the app rating on Play Store is still very good (4 and 5 stars). Therefore, it is necessary to conduct research to determine the level of interest and actual user satisfaction with Bukalapak's services. There are several methods that can be used to measure service quality, for example SERVQUAL method, SERVPERF, SERVPEX, Kano Model, Quality Function Deployment (QFD), usability testing, etc.

The SERVQUAL method was chosen because it is easier for respondents to fill it. The SERVQUAL method is also very suitable for obtaining opinions from many sources at once who are in different locations. The results of filling out the SERVQUAL questionnaire are

then tabulated and made into a graphic form to determine the most critical problems that must be prioritized to be solved first. This problem is a variable that has a high level of importance, but with a low level of satisfaction according to the Importance Performance Analysis (IPA) graph. Determining the number of respondents required to fill the SERVQUAL questionnaire can be calculated by using the following formula [10].

$$n = \frac{z^2}{4(moe)^2} \tag{1}$$

Notes:

- n = Number of samples
- z = Confidence level value
- moe = Error tolerance

The minimum number of respondents required is 97 people. After the questionnaire was distributed, the author managed to get 107 responses that matched the criteria.

4.1 Data collection

Survey was conducted by using questionnaires customer satisfaction with Bukalapak's application and website. The assessment method used is the Likert scale from 1-5. Questionnaires were distributed randomly through Google Form link and successfully obtained 107 respondents. The questions can be seen in Table 1. Questionnaire Attributes.

Table 1. Questionnaire attributes.

No	Dimension	Attribute	Code
1.	Tangible	The <i>website</i> / application appearance is easy to understand (<i>user friendly</i>).	T1
2.		Products are grouped into categories accordingly.	T2
3.		There is an available search facility to make it easier for customers to find the desired product.	T3
4.		<i>Website</i> / application has an attractive & beautiful design.	T4
1.	Reliability	Provide a wide range of products that consumers need.	R1
2.		The amount of stock and description of the goods are written in accordance with reality.	R2
3.		<i>Website</i> / application is up to date in providing the latest information.	R3
4.		Often give discounts or promotions.	R4
1.	Assurance	Information regarding orders and payments is conveyed clearly.	AS1
2.		On time good's delivery.	AS2
3.		Items received match the description provided by the seller.	AS3
4.		Provide a refund service if the item received is damaged or the order does not arrive.	AS4
1.	Responsiveness	The transaction steps using <i>the website</i> / application are easy to do.	RE1
2.		There is a notification for consumers regarding the stages of the goods process.	RE2
3.		The choice of many different payment methods.	RE3
4.		A large selection of shipping methods that allow the customers to choose according to their needs.	RE4
1.	Empathy	Great data protection facility.	E1
2.		Capable customer service.	E2
3.		Provide 24 hours Call Center service to serve customers.	E3
4.		The company takes responsibility for problems that are not the consumer fault.	E4

The importance level of each attribute data obtained from 107 respondents can be seen in Table 2. Importance Score.

Table 2. Importance score.

Variable	Score					Total
	1	2	3	4	5	
T1	0	1	7	32	67	107
T2	0	1	6	30	70	107
T3	0	0	6	27	74	107
T4	0	4	13	41	49	107
R1	0	0	4	34	69	107
R2	0	0	8	29	70	107
R3	0	0	12	38	57	107
R4	0	1	11	43	52	107
AS1	0	0	5	26	76	107
AS2	0	0	8	34	65	107
AS3	0	0	7	22	78	107
AS4	0	0	8	24	75	107
RE1	0	2	9	36	60	107
RE2	0	1	12	36	58	107
RE3	0	1	4	38	64	107
RE4	0	2	6	34	65	107
E1	0	0	7	30	70	107
E2	0	0	3	33	71	107
E3	0	1	14	39	53	107
E4	0	1	2	34	70	107

The data that has been obtained is then processed by using Minitab software to know the overall Cronbach's alpha value for the importance level score which can be seen in Table 3. Cronbach's Alpha Importance Score.

Table 3. Cronbach's alpha importance score.

Cronbach's Alpha
0.9382

The reliability test of each attribute for the importance level score based on the data that has been collected can be seen in Table 4. Omitted Item Statistic Importance Score.

Table 4. Omitted item statistic importance score.

Omitted Variable	Adj. Total Mean	Adj. Total StDev	Item-Adj. Total Corr	Squared Multiple Corr	Cronbach's Alpha	Result
T1	86.037	8.372	0.6764	0.6094	0.9344	Reliable
T2	86	8.362	0.7138	0.6317	0.9337	Reliable
T3	85.944	8.461	0.6129	0.6415	0.9355	Reliable
T4	86.318	8.354	0.5561	0.4754	0.9373	Reliable
R1	85.972	8.478	0.6131	0.5495	0.9356	Reliable
R2	86	8.373	0.7135	0.6573	0.9338	Reliable
R3	86.159	8.439	0.5479	0.5481	0.9368	Reliable
R4	86.215	8.378	0.6217	0.5111	0.9354	Reliable
AS1	85.916	8.425	0.7069	0.6751	0.9341	Reliable
AS2	86.047	8.364	0.7245	0.6793	0.9336	Reliable
AS3	85.916	8.415	0.6825	0.7023	0.9344	Reliable
AS4	85.953	8.351	0.7609	0.673	0.933	Reliable
RE1	86.14	8.322	0.6801	0.5683	0.9343	Reliable
RE2	86.168	8.459	0.4846	0.4482	0.9381	Reliable
RE3	86.037	8.428	0.6348	0.5998	0.9352	Reliable
RE4	86.065	8.391	0.6166	0.6759	0.9355	Reliable
E1	85.991	8.4	0.6893	0.5708	0.9342	Reliable
E2	85.935	8.539	0.5283	0.4295	0.9369	Reliable
E3	86.234	8.419	0.5298	0.5333	0.9374	Reliable
E4	85.963	8.386	0.7633	0.7516	0.9332	Reliable
Total	1721.01	168.116	12.857	11.9311	18.7024	

The validity test of each attribute for the importance level score was also carried out. It is concluded from the result that all data is considered valid. The satisfaction level of each attribute data obtained from 107 respondents can be seen in Table 5. Satisfaction Score.

Table 5. Satisfaction score.

Variable	Score					Total
	1	2	3	4	5	
T1	0	4	11	62	30	107
T2	0	1	9	55	42	107
T3	0	1	10	43	53	107
T4	0	3	27	43	34	107
R1	0	2	13	50	42	107
R2	0	0	12	34	61	107
R3	0	1	8	61	37	107
R4	1	1	29	48	28	107
AS1	0	1	8	51	47	107
AS2	0	0	13	52	42	107
AS3	0	0	12	51	44	107
AS4	0	1	15	48	43	107
RE1	0	2	8	61	36	107
RE2	0	1	10	48	48	107
RE3	0	2	11	46	48	107
RE4	0	0	12	49	46	107
E1	1	1	11	54	40	107
E2	0	1	16	54	36	107
E3	1	1	20	54	31	107
E4	0	1	13	51	42	107

The data that has been obtained is then processed by using Minitab software to know the overall Cronbach's alpha value for the satisfaction level score which can be seen in Table 6. Cronbach's Alpha Satisfaction Score.

Table 6. Cronbach's alpha satisfaction score.

Cronbach's Alpha
0.9536

The reliability test of each attribute for the satisfaction level score based on the data that has been collected can be seen in Table 7. Omitted Item Statistic Satisfaction Score.

Table 7. Omitted item statistic satisfaction score.

Omitted Variable	Adj. Total Mean	Adj. Total StDev	Item-Adj. Total Corr	Squared Multiple Corr	Cronbach's Alpha	Result
T1	80.617	9.804	0.7398	0.6727	0.9506	Reliable
T2	80.43	9.868	0.7206	0.6302	0.9509	Reliable
T3	80.336	9.897	0.6361	0.5611	0.9521	Reliable
T4	80.71	9.778	0.6712	0.6019	0.9518	Reliable
R1	80.486	9.89	0.6077	0.5516	0.9525	Reliable
R2	80.262	10.05	0.4107	0.353	0.9531	Reliable
R3	80.467	9.847	0.7903	0.6825	0.9501	Reliable
R4	80.776	9.767	0.7025	0.6253	0.9512	Reliable
AS1	80.374	9.85	0.7473	0.6533	0.9506	Reliable
AS2	80.449	9.845	0.7472	0.6981	0.9506	Reliable
AS3	80.421	9.9	0.6675	0.5524	0.9516	Reliable
AS4	80.477	9.813	0.729	0.678	0.9507	Reliable
RE1	80.495	9.843	0.7561	0.6771	0.9504	Reliable
RE2	80.383	9.864	0.696	0.6726	0.9512	Reliable
RE3	80.411	9.825	0.7035	0.7436	0.9511	Reliable
RE4	80.402	9.875	0.7006	0.6852	0.9512	Reliable
E1	80.495	9.779	0.7565	0.7734	0.9503	Reliable
E2	80.551	9.823	0.7337	0.6753	0.9507	Reliable
E3	80.664	9.791	0.7062	0.6311	0.9511	Reliable
E4	80.467	9.835	0.7224	0.7902	0.9509	Reliable
Total	1609.673	196.944	13.9449	12.9086	19.0227	

The validity test of each attribute for the satisfaction level score was also carried out. It is concluded from the result that all data is considered valid.

4.2 Data processing

Calculation of the Customer Satisfaction Index (CSI) value can be done after all of the attributes are reliable and valid. The calculation results based on the data obtained can be seen in Table 8. Customer Satisfaction Index (CSI).

Table 8. Customer Satisfaction Index (CSI).

No.	Attributes	Satisfaction Level (X)	Importance Level (Y)	MIS (Y)	MSS (X)	WF	WS	CSI
1.	T1	439	486	4.54	4.10	5%	0.21	85%
2.	T2	459	490	4.58	4.29	5%	0.22	
3.	T3	469	496	4.64	4.38	5%	0.22	
4.	T4	429	456	4.26	4.01	5%	0.19	
5.	R1	453	493	4.61	4.23	5%	0.22	
6.	R2	477	490	4.58	4.46	5%	0.23	
7.	R3	455	473	4.42	4.25	5%	0.21	
8.	R4	422	467	4.36	3.94	5%	0.19	
9.	AS1	465	499	4.66	4.35	5%	0.22	
10.	AS2	457	485	4.53	4.27	5%	0.21	
11.	AS3	460	499	4.66	4.30	5%	0.22	
12.	AS4	454	495	4.63	4.24	5%	0.22	
13.	RE1	452	475	4.44	4.22	5%	0.21	
14.	RE2	464	472	4.41	4.34	5%	0.21	
15.	RE3	461	486	4.54	4.31	5%	0.22	
16.	RE4	462	483	4.51	4.32	5%	0.22	
17.	E1	452	491	4.59	4.22	5%	0.21	
18.	E2	446	496	4.64	4.17	5%	0.21	
Total				90.57	84.72	100%	4.24	
Average				4.53	4.24			

The importance and satisfaction level value are then processed into a scatter plot graph to determine the results of the performance analysis of the company's service satisfaction. The scatter plot is made by using Minitab software and can be seen in Figure 1.

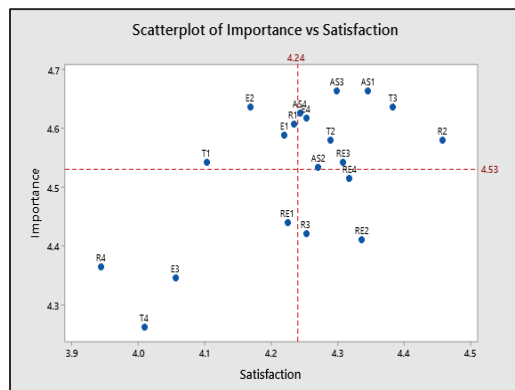


Fig. 1. Importance performance analysis (IPA).

Problems written in quadrant 1 of the IPA graph are critical and must be resolved immediately. This is because the problem has a high level of importance, but the level of customer or user satisfaction is low. There are 4 problems in quadrant 1, where the resolution was made by using questionnaires to ask for opinions and solutions from 5 experts. The collection of answers obtained can be seen in Table 9. Expert's Answer.

Table 9. Expert's answer.

No	Questions	Answers
1.	How to make a more user-friendly appearance for Bukalapak's website and application?	a. Have an <u>easy to use</u> navigation system.
		b. Use <u>easy to read font</u> .
		c. <u>Fast loading</u> time.
		d. <u>Responsive design</u> .
		e. <u>Clear Call To Action (CTA)</u> .
		f. <u>Short website link</u> .
		g. <u>Mobile-friendly</u> .
2.	How to increase security to protect customer's data?	a. <u>Ensure all of the anti-virus etc stay up to date</u> .
		b. <u>Check & review the database safety periodically</u> .
		c. <u>Perform regular data backup</u> .
		d. <u>Educate workers on the importance of data safety</u> .
		e. <u>Add extra security for important data</u> .
		f. <u>Restrict access and authorization</u> .
		g. <u>Perform audit and monitor administrator activity</u> .
3.	How to solve the lack of different products sold at Bukalapak?	a. <u>Conduct market research</u> for popular products.
		b. <u>Increase product's supply by pitching big brand</u> .
		c. <u>Set a small amount of fee</u> .
		d. <u>Increase Bukalapak branding</u> .
		e. <u>Give incentive for buyers</u> .
4.	How to increase customer satisfaction with the customer service?	a. <u>Increase the number of customer service at various different hours</u> .
		c. <u>Provide training for customer service</u> .
		d. <u>Group the customer service according to specialization</u> .
		g. <u>Provide compensation for users</u> .
		h. <u>Make a clear recapitulation regarding the customer complaints</u> .
		i. <u>Do evaluation</u> .

Tabulation on answers frequency from 5 experts can be seen in Table 10. Expert's Answer Frequency.

Table 10. Expert's answer frequency.

Code	1A	1B	1C	1D	1E	1F	1G
Frequency	5	5	5	4	1	1	2
Code	2A	2B	2C	2D	2E	2F	2G
Frequency	5	5	5	4	1	2	2
Code	3A	3B	3C	3D	3E	3F	3G
Frequency	2	4	3	4	1	1	2
Code	3H	3I	4A	4B	4C	4D	4E
Frequency	2	2	5	5	3	4	2

4.3 Analysis

The service performance measurement of Bukalapak is carried out using the service quality method which consists of 5 parts, namely tangibles, reliability, assurance, responsiveness, and empathy. The SERVQUAL method is used to measure the level of importance and satisfaction of customers or users listed in Table 1. Questionnaire Attributes and filled out by 107 respondents. Questions to measure each level of importance and satisfaction level on the questionnaire totalled 20 questions, where each dimension consisted of 4 questions.

The first step is to process the data from the questionnaire related to the service importance level in Table 2. Importance Score. Bukalapak uses Minitab software to test the reliability and validity of each attribute. The results of the data processing produce an overall Cronbach's alpha value of 0.9382 that can be seen in Table 3. Cronbach's alpha Importance Score.

This value is then compared with each of the Cronbach's alpha attributes value to determine its reliability. Attributes are categorized as reliable data if

the value of Cronbach's alpha attribute is smaller than the overall value of Cronbach's alpha and vice versa. Based on the tests carried out, all of Cronbach's alpha attribute data in Table 4. Omitted Item Statistics Importance Score has a smaller value than the overall Cronbach's alpha so all of the data can be categorized as reliable and accurate.

Testing the validity of the attributes is done by comparing the calculated R value with the R table value. Degrees of freedom or df is used to determine the R table, namely by subtracting the number of respondents with a value of 2. The df value of Bukalapak based on the number of respondents is 105. An attribute can be categorized as valid data if the calculated R value is greater than the R table, and vice versa.

The test is carried out using the significance level for the two-way test. Attributes can be categorized as valid data if the validity level is above 95% or has an alpha of 0.05. Attributes can be categorized as very valid data if the validity level is above 99% or has an alpha of 0.01. The R table value with a df of 105 is 0.1946 for 0.05 significance level with a 1-star symbol (*) and 0.254 for a 0.01 significance level with a 2-star symbol (**). All attributes for the service importance level at Bukalapak are categorized as very valid data (**) because there is no calculated R value that is smaller than both of the two R table values. Therefore, the questionnaire can be used to measure the service performance of the company.

Reliability and validity tests were also carried out for the level of customer satisfaction with Bukalapak's services which can be seen in Table 5. Satisfaction Score. The data obtained was then processed using Minitab software and resulted in an overall Cronbach's alpha value of 0.9536 in Table 6. Cronbach's alpha Satisfaction Score which was then compared with each of Cronbach's alpha attribute values to determine its reliability. Based on the tests carried out, all of Cronbach's alpha attribute data in Table 7. Omitted Item Statistics Satisfaction Score has a smaller value than the overall Cronbach's alpha value so that the results of the questionnaire can be categorized as reliable and accurate.

Testing the validity of the attributes was also carried out by comparing the calculated R value with the R table value. All attributes on the satisfaction level of Bukalapak's services can be categorized as very valid data (**) because there is no calculated R value that is smaller than both of the two R tables. Therefore, the questionnaire can be used to measure the service performance of the company.

The second step that must be taken is to determine the value of the Customer Satisfaction Index (CSI), which is a measure of customer satisfaction with the services provided by the Bukalapak. The calculation of the CSI value is carried out in several steps. First, identify the level of performance and the level of satisfaction of each attribute. The level of performance is obtained from the total value of satisfaction obtained by each attribute from the respondent, while the level of importance is obtained from the total value of importance obtained by each attribute from the respondent.

Second, determine the Mean Importance Score (MIS) and Mean Satisfaction Score (MSS). MIS is obtained from the average value of the importance of each attribute while MSS is obtained from the average value of satisfaction for each attribute. After identifying the MIS and MSS values, the Weight Factor (WF) value for each attribute is calculated. WF is a percentage so the total WF must be 100%. WF is obtained by dividing the MIS value per attribute by the total MIS.

Third, calculate the value of the Weight Score (WS) of each attribute obtained by multiplying the MSS value with the WF of each attribute. Then, add up all of the WS of each attribute so that the total value of WS is obtained. Fourth, after identifying the total value of WS, CSI can be calculated by dividing the total WS by the largest value of the Likert scale used in the questionnaire. The total WS score obtained is 4.24 and the largest Likert scale on the questionnaire is 5, so after dividing it the resulting CSI value is 85%. This shows that the customer satisfaction index based on the services provided by the company can be categorized as very good.

The third step that must be done is to create an Importance Performance Analysis (IPA) graph by using the scatter plot feature. Scatter plot is a graph used to see the pattern of relationship between 2 variables. The scatter plot was created using Minitab software and can be seen in Figure 1. Importance Performance Analysis (IPA).

The value of reference lines on the x-axis and y-axis of the scatter plot is obtained from the average value of the Mean Importance Score (MIS) and Mean Satisfaction Score (MSS). The horizontal line represents the importance value of 4.52 while the vertical line represents the satisfaction value of 4.22. The scatter plot is divided into 4 quadrants, namely quadrant I, quadrant II, quadrant III, and quadrant IV.

Quadrant I or quadrant concentrate here contains factors that are considered important by consumers but have a low level of satisfaction with the company or service. Quadrant I consist of 4 points, which are related to the appearance of Bukalapak's website or application (T1), data protection for customer or user (E1), customer service (E2), and the coherency of stock quantities and product descriptions (R2). The four points are included in quadrant I, therefore the company must immediately improve the performance of these services because these attributes have a high level of importance according to consumers.

The four critical problems were resolved by asking for opinions from 5 experts using a questionnaire. The thing that can be done to solve the first problem related to a user-friendly website display is to use a navigation system that is easy to operate, written fonts that are easy to read, have fast loading times, have a responsive design, have a Call To Action (CTA) that is easy to use. clear, has short website links, easy to identify, easy to memorize, has a consistent appearance on browser, and mobile-friendly.

The second problem related to user data security is solved by ensuring that the anti-virus, anti-spyware, anti-malware, and anti-ransomware on the website and

application are kept up to date. Database security systems should also be checked and reviewed regularly, perform regular data backups, educate employees about data security to increase awareness, add extra security for critical data, restrict access and authorization, perform audits, and do monitoring of administrator activities.

The resolution of the third problem related to Customer Service (CS) is carried out by increasing the number of CS at various different hours so they can serve more complaints, providing training to CS so they can handle customer or user complaints calmly and not getting carried away by emotions, provide training for CS to allow them to answer customer or user questions quickly and precisely according to the issues discussed, and group the CS for different specialties in handling complaints to ensure questions can be answered quickly and accurately.

The resolution of the fourth problem related to the completeness of products sold at Bukalapak is carried out by conducting observations and market research to find out which products are popular and important in the marketplace, increasing product supply by pitching to big brands to improve product completeness, set a small amount of fee for sellers in the Bukalapak, improve Bukalapak branding to attract more sellers, and provide attractive incentives for sellers in Bukalapak who succeed in achieving certain targets.

4.4 Result discussion

The SERVQUAL method is used to measure the level of interest and user satisfaction with Bukalapak according to the 5 attribute dimensions listed in Table 1 and filled in by 107 respondents. The data processing resulted in Cronbach's alpha value of an overall importance level of 0.9382 and a satisfaction level of 0.9536. This value is greater than Cronbach's alpha for each attribute in Table 3. and Table 6. Therefore, the data can be categorized as reliable. Testing the validity of the attribute importance level and user satisfaction is done by comparing the calculated R value with the R table value. The value of R table with a df of 105 for a significance level of 0.05 is 0.1946, while for a significance level of 0.01 it is 0.254. All attributes for the level of importance and user satisfaction are categorized as very valid data (**) because there is no calculated R value that is smaller than the R table value with a significance level of 0.01. The valid and reliable data were then used to do the Customer Satisfaction Index (CSI) calculation in Table 8. which resulted in a score of 85%. This value indicates that the user satisfaction index based on the services provided by the company can be categorized as very good. The average value of importance and satisfaction is then used to create an Importance Performance Analysis (IPA) graph in Figure 1. Attributes that are in Quadrant I are critical problems that must be resolved immediately because they have a high level of importance, but with a low level of user's satisfaction. There are 4 attributes in Quadrant I, namely the appearance of Bukalapak's website or application (T1), data protection for customer or user (E1), customer service (E2), and the coherency

of stock quantities and product descriptions (R2). Problem solving for the four attributes is done by distributing expert questionnaires. The answers to the questionnaire can be seen in Table 9.

5 Conclusion

The conclusions that can be drawn from the research's results on the satisfaction level of Bukalapak's application and website users using the Service Quality (SERVQUAL) and Importance Performance Analysis (IPA) methods can be seen below.

- 1) Customer Satisfaction Index (CSI) is a measure of customer or user satisfaction with the services provided by the company. The CSI value of Bukalapak is 85% which can be categorized as very good. A CSI value of 85% indicates a high level of user satisfaction with services or attributes that are considered important.
- 2) The Importance Performance Analysis (IPA) graph is divided into 4 quadrants. Quadrant I contains factors that have a high level of importance, but with low levels of user satisfaction. The problems in quadrant I must be resolved immediately because they are the most critical and have a major impact on the company. The problem lies in the website or application appearance (T1), data protection for customer or user (E1), customer service (E2), and the coherency of stock quantities and product descriptions (R2).
- 3) Ways to improve the service quality of Bukalapak can be obtained by using questionnaires that are given to experts to be answered. The mitigation methods obtained are divided into 4 parts for each problem. First, regarding the website appearance, this is solved by using a navigation system, clear fonts, fast loading, responsive design, clear Call To Action (CTA), short website link that are easy to recognize, and has a consistent and mobile-friendly appearance. The second problem solving related to user data security is carried out by ensuring various software such as anti-virus on websites and applications are kept up to date, database security systems get checked regularly, perform backups, educate employees about data security, add extra security to important data, restrict access and authorization, as well as perform audits and monitoring of administrator activity. The third problem solving related to Customer Service (CS) is done by increasing the number of CS, provide training for CS, group CS in different specializations, prepare compensation, make a complete and clear recapitulation, and carry out regular follow-up. The resolution of the fourth problem related to the completeness of products sold at Bukalapak is carried out by conducting market research to find out which products are popular in marketplace, increase product's supply by pitching big brands, set a small amount of fee for sellers, increase Bukalapak branding, and provide attractive incentives for sellers who successfully achieve certain targets.

References

1. Asosiasi Penyelenggara Jasa Internet Indonesia, Laporan survei internet APJII 2019-2020 (Q2) (Indonesia Survey Center, Jakarta, 2020)
2. Statista, *Tren pengguna e-commerce terus tumbuh* <https://databoks.katadata.co.id/datapublish/2019/10/10/tren-pengguna-e-commerce-2017-2023> (2021)
3. F. E. Christy, *Top 10 e-commerce di Indonesia kuartal I 2020* <https://data.tempo.co/data/907/top-10-e-commerce-di-indonesia-kuartal-i-2020> (2021)
4. R. A. Y. Widyastuti, *Banyak dikeluhkan lewat YLKI, perusahaan e-commerce angkat bicara* <https://bisnis.tempo.co/read/1295298/banyak-dikeluhkan-lewat-ylki-perusahaan-e-commerce-angkat-bicara/full&view=ok> (2021)
5. S. A. Raza, A. Umer, M. A. Qureshi, A. S. Dahri, *Internet banking service quality, e-customer satisfaction and loyalty: the modified e-SERVQUAL model*, *The TQM J.* **32**, 6, pp. 1445 (2020)
6. A. Shafiq, M. I. Mostafiz, M. Taniguchi, *Using SERVQUAL to determine generation Y's satisfaction towards hoteling industry in Malaysia*, *J. Tourism Future* **5**, 1, pp. 64 (2019)
7. R. D. Kartikasari, Irham, J. H. Mulyo, *Level of customer satisfaction towards marketing mix in Indonesia traditional market*, *Agro Ekonomi*, pp. 218-230 (2018)
8. M. Luck, B. Porter, *Experiences on swim with dolphin tours: an importance performance analysis of dolphin tour participants in Kaikoura, New Zealand*, *J. Ecotourism* **16**, 1, pp. 25-41 (2019)
9. G. Simpson, J. Parker, *Data for an importance performance analysis (IPA) of a public green infrastructure and urban nature space in Perth, Western Australia*, *Data* **3**, 4, pp. 1-7 (2018)
10. N. Y. Sufren, *Mahir menggunakan statistical package for the social sciences (SPSS) secara otodidak* (PT. Elex Media Komputindo, Jakarta, 2013)