The Effect of Electronic Service Quality on Customers Satisfaction and Loyalty in Online Shopping

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Abstract. The purpose of this study is to measure the influence of electronic service quality on customers satisfaction and loyalty in online shopping setting. This study used quantitative method. The questionnaires were distributed online. Of the 305 returned questionnaires, 282 were valid for further data analysis. SEM PLS was used to test the hypothetical analysis. The results reveal that electronic service quality has a positive and significant influence on satisfaction. Also, consumer satisfaction influences positively and significantly on loyalty. The indirect effect of electronic service quality on loyalty is higher compared to its direct effect. This means that satisfaction is an important variable in shaping customers loyalty. In addition, the dimensionality of electronic service quality needs to be further tested. Theoretically, this study provides a better understanding of the relationship between electronic service quality, satisfaction, and loyalty in an online shopping context. Practically this study contributes to the online shop businesses by providing evidence on the importance of electronic services quality dimensions and the need to satisfy customers to get their loyalty. It can be concluded that Online shop businesses need to determine and focus on relevant electronic service quality dimensions to build their online shop competitiveness and to set their online shop apart from the crowd.

1. Introduction
The development of online stores in Indonesia is quite rapid. This happens because the community has wide access to the internet [1]. Data from the Indonesian Internet Service Providers Association year 2016 shows that 51.5% or 132.7 million Indonesian people already have access to the internet. The internet access is used the most for social networks (87.4%), information search (68.7%), and the smallest is for online forums (4.3%). While for the purpose of buying online was only 11.0%.

Although the activity of buying and selling online is still low in term of the internet users, the Indonesia’s Communication and Information Ministry predicts that the number of transactions using internet media will increase significantly [2]. The number of transactions using electronic media in Indonesia will reach the US $ 4.89 billion and 8.7 million people shop at the online shop. Compared to 2015 data, the numbers in 2016 have increased by 85%. Such a large increase opens opportunities for businesses to offer their products online. In addition to the wide-open opportunity to market products online, several online shop platforms already operate in Indonesia, for example; Bukalapak, Lazada, Tokopedia
Shop, OLX, and others. However, until now there is no certainty about consumer perceptions of the online e-service quality platform and how quality of e-service affects consumer satisfaction and loyalty.

Previous study shows that customer satisfaction and loyalty was influenced positively by service quality. Services quality will provide satisfaction to consumers [3]. Satisfied consumers have the potential to repurchase and disseminate positive information about the products they consume [4]. Thus service quality will provide benefits for shop owners which will ultimately guarantee the retail survival [5].

The potential for online business development is quite high. However, there is little known the quality of online services of the existing online stores and especially how e-service quality provides satisfaction to consumers and contributes to loyalty. This research aims to uncover this issue.

2. Method
This research measures consumer perceptions of the online shopping experience; data collection techniques used a cross-sectional approach. Data were collected from consumers who had shopped online. This study uses a quantitative approach. This approach allows researchers to answer the research objectives and hypotheses that have been made.

The instrument of the current study adapted the e-service quality scale developed by reference [6]. Satisfaction variable was measured using attribute-based and overall satisfaction as suggested by reference [7]. A Likert-type scale was used to measure all statements, ranging from 1 (strongly disagree) to 5 (strongly agree).

This research is an evaluation of consumers' perceptions of the online shopping experience, for which data collection was conducted after consumers have finished shopping online at certain online stores. Online questionnaires were distributed to collect data. Through this approach, respondents are expected to respond well to the questionnaire. Of the 305 returned questionnaires 282 were eligible for further process. To measure the interrelationships among variables, a structural equation modeling (SEM) by means of partial least square (PLS) was utilized. Figure 1 illustrates the research model and is followed by the hypotheses.

![Figure 1](image_url)

**Figure 1.** The research model
H1: Structurally the e-service quality dimension consists of five elements, namely web design, personalization, responsiveness, reliability, and trust.
H2: E-service quality will affect on consumer satisfaction.
H3: E-service quality will affect consumer loyalty.
H4: Consumer satisfaction will influence on loyalty

3. Results
It can be read in Table 1 that the highest age is 18-21 years (63.1%), the second rank is 22-25 years (25.5%), third place is 26-30 years (9.9%) and the smallest is 31-40 years (1.4%). The distribution of respondents like this happened is thought to have several causes, namely; the target of the online questionnaire respondents is mostly young people aged 18-25 years who have a quick response to return. Second, the age range of 18-25 years includes Millennial Generation and Generation Y who have clever characteristics in using online media. So they have a good response in filling out questionnaires online. While generation X is between 31-40 years slower in using online media.

From the aspect of gender, female respondents (64.2%) were more than men (35.8%). It can be assumed that women prefer to shop online than men. Previous research also found that women shop more often than men [8]. The highest number of respondents was students (67%), the second most were private employees (22%), the third was civil servants (10.3%), and the least were housewives (0.7%). This employment data is in accordance with the age distribution of the respondent and also the income of the respondents. The biggest percentage of income is smaller than Rp. 1,500,000 (68.8%), second place is respondents with an income between Rp. 1,500,000 - 3,000,000, - (18.1%), third place is respondents with income of more than Rp. 4,500,000 (6.7%), and the smallest is income between Rp. 1,500,000 - 3,000,000, - (6.4%). With this income, the most used online stores for transactions are Lazada (40.8%), Tokopedia (24.1%), Bukalapak (13.5%), Shopee (11.3%), Bhinneka (6%), and the smallest is OLX (4.3%). The average respondents shop more than twice (71.3%), one time (16.7%) and twice (12.1%). They spend less than one month (50.7%), between 1-3 months (22.7%), more than five months (17.4%), and between 3-5 months (9.2%).

Table 1. The respondent profile

| Respondents profile | N  | Frequency | %   |
|---------------------|----|-----------|-----|
| Age                 | 282|           |     |
| 18-21 year          | 178| 63.1      |     |
| 22-25 year          | 72 | 25.5      |     |
| 26-30 year          | 28 | 9.9       |     |
| 31- 40 year         | 4  | 1.4       |     |
| Gender              | 282|           |     |
| Male                | 101| 35.8      |     |
| Female              | 181| 64.2      |     |
| Occupation          | 282|           |     |
| Student             | 189| 67.0      |     |
| Government officer  | 29 | 10.3      |     |
| Businessmen         | 62 | 22.0      |     |
| Housewives          | 2  | 0.7       |     |
| Income              | 282|           |     |
| <Rp. 1.5 million    | 194| 68.8      |     |
| Rp. 1.5 – 3 million | 18 | 6.4       |     |
| Rp. 3 - 4.5 million | 51 | 18.1      |     |
| > Rp. 4.5 million   | 19 | 6.7       |     |

| Respondents profile | N  | Frequency | %   |
|---------------------|----|-----------|-----|
| Online shop for shopping | 282 |          |     |
| Lazada              | 115| 40.8      |     |
| Bukalapak           | 38 | 13.5      |     |
| Tokopedia           | 68 | 24.1      |     |
| OLX                 | 12 | 4.3       |     |
| Shopee              | 32 | 11.3      |     |
| Bhinneka            | 17 | 6.0       |     |
| Frequency of shopping | 282 |         |     |
| 1 time              | 47 | 16.7      |     |
| 2 times             | 34 | 12.1      |     |
| More than 2 times   | 201| 71.3      |     |
| Last shopping ( month) | 282 |         |     |
| Less than 1         | 143| 50.7      |     |
| Between 1-3         | 64 | 22.7      |     |
| Between 3-5         | 26 | 9.2       |     |
| More than 5         | 49 | 17.4      |     |
This study implements SEM-PLS to measure the hypothetical relationships. The assessment of PLS-SEM model appropriateness was carried out using two stages. The first stage is the measurement model, while the second stage is the structural model evaluation [9]. The first stage was conducted to test the construct validity and reliability. This to ascertain the reliability and standardized indicator loadings. The loadings factor cut-off value is 0.7, however loadings greater than 0.4 can be accepted. To determine the reliability the internal consistency, the composite reliability value (CR) was set above 0.7. Additionally, convergent and discriminant validity were carried out to assess the validity of the construct. The average of variance extracted (AVE) was used to measure the convergent validity with the cut-off value 0.5. The heterotrait-monotrait (HTMT) was used to assess discriminant validity with a value below 0.9. This study satisfies all measurement requirements. Table 2 and Table 3 provide the result of the convergent and determinant validity and HTMT respectively.

| Table 2. Loading, Cronbach Alpha (CA), Composite Reliability (CR), and AVE |
|---------------------------------------------------------------|
| Variable and indicators | Loading | Mean | Std. Dev. | CA   | CR   | AVE  |
|-------------------------|---------|------|-----------|------|------|------|
| E-Servqual              | 3.251   | 0.654| 0.879     | 0.904| 0.540|
| Rel2                    | 0.681   |      |           |      |      |      |
| Rel3                    | 0.669   |      |           |      |      |      |
| Rel4                    | 0.782   |      |           |      |      |      |
| Res1                    | 0.739   |      |           |      |      |      |
| Res2                    | 0.734   |      |           |      |      |      |
| Res3                    | 0.706   |      |           |      |      |      |
| Trust1                  | 0.785   |      |           |      |      |      |
| Trust2                  | 0.773   |      |           |      |      |      |
| Satisfaction            | 3.611   | 0.728| 0.814     | 0.914| 0.842|
| Sat1                    | 0.903   |      |           |      |      |      |
| Sat2                    | 0.932   |      |           |      |      |      |
| Loyalty                 | 3.486   | 0.842| 0.837     | 0.925| 0.860|
| Loyal1                  | 0.925   |      |           |      |      |      |
| Loyal2                  | 0.929   |      |           |      |      |      |

*All significant at p<0.01*

| Table 3. Heterotrain-Monotrait Ratio of Correlations (HTMT) |
|-------------------------------------------------------------|
| Variables | 1 | 2 | 3 |
| E-Servqual | 0.788 |
| Kepuasan   | 0.632 | 0.784 |
| Loyalitas  | 0.632 | 0.784 |

Following the suggestion of reference evaluation of goodness of fit (GoF) model was conducted to ensure the appropriateness of the structural model. The GoF result indicates the value of 0.583. This GoF value indicates a large category means the projected model is appropriate with the data. Additionally, testing the fit model is also recommended to define the approximate appropriateness of the model. The estimated model fits in SEM-PLS is measured through standardized root mean square residual (SRMR) with the value was set above 0.08. The normed fit index (NFI) value was set above 0.9 and is considered as acceptable. In
this study, the SRMR value is less than 0.08 and the NFI value is greater than 0.9. The use of NFI is still rare. Table 4 shows the GoF result.

| Variables   | AVE  | $R^2$ | $Q^2$ |
|-------------|------|-------|-------|
| E-Servqual  | 0.540|       |       |
| Satisfaction | 0.842| 0.465 | 0.371 |
| Loyalty     | 0.860| 0.450 | 0.367 |
| Average score | 0.747| 0.457 |       |
| AVE × $R^2$ |      | 0.341 |       |
| GoF = $\sqrt{(AVE \times R^2)}$ |      | 0.583 |       |

Completing the outer model evaluation with good quality results next step is evaluating the structural model. The inner model assessment was conducted by evaluating: determination coefficient ($R^2$), cross-validated redundancy ($Q^2$), path coefficients, and the effect size ($f^2$) [9]. Reference [9] noted that $R^2$ is a measure of model predictive accuracy, $Q^2$ is a facility for assessing the inner predictive relevance of a model, path coefficients are values representing hypothesized relationships to link construct, and $f^2$ is a measure of effect for each path model. The percentage variation of exogenous variables confirmed by predictors is shown by the determination coefficient ($R^2$). The inner test model is provided in Table 4. The table indicates that the independent variable predictive accuracy on customer loyalty is moderate. E-service quality can predict 46.5% ($R^2$: 0.465) customer satisfaction and 45.0% ($R^2$: 0.450) customer loyalty. Then, to assess the relevance of predictions [10] stated that $Q^2$ values higher than zero provide evidence that the detected value is well reconstructed and the model has good predictive relevance. All $Q^2$ values of customer satisfaction and customer loyalty are positive as illustrated in Table 4. Thus, the predictions generated from the proposed model are adequate.

Next is the assessment of path coefficient significance and test the hypotheses. A bootstrapping method was carried out to test path coefficients, this study using 500 bootstrap samples. Critical t-values for the two-tailed test: 1.65 (significance level = 0.1), 1.96 (significance level = 0.05), and 2.58 (significance level = 0.01). Figure 2 displays the estimated parameters of the model, and Table 5 displays the hypotheses testing results. E-service quality has coefficient values of 0.682 and 0.210 respectively with t-value of more than 1.96 on customer satisfaction and loyalty. Thus, H2 and H3 are accepted. Additionally, customer satisfaction has a coefficient value of 0.510 with t-value of more than 1.96 on customer loyalty. Thus, H3 is accepted. However, H1 is rejected as the result of the factor loading of the indicators of two dimensions (personalization and web design) are below cut-off value of 0.60 (Figure 2) and has been removed from the model.

| Path | Coefficient | t-value | Test result |
|------|-------------|---------|-------------|
| H1 E-servqual consist of five dimensions | - | - | Rejected |
| H2 E-servqual => Satisfaction | 0.682 | 21.213 $^a$ | Accepted |
| H3 E-servqual => Loyalty | 0.210 | 3.277 $^a$ | Accepted |
| H4 Satisfaction => Loyalty | 0.510 | 8.250 $^a$ | Accepted |

$^a$ Significant at $p<0.01$
The effect size of the interrelationships in the structural path model was measured using $f^2$. E-service quality has the highest direct influence on satisfaction for 0.682 and 0.210 on loyalty, while the indirect influence of e-service quality on loyalty is 0.347. Also, the direct effect of satisfaction on loyalty is considered high for 0.510. Table 6 shows the results of the effect size of the path model of all relationships between variables.

| Path                | Effect $^a$ | Direct | Indirect | Total |
|---------------------|-------------|--------|----------|-------|
| E-servqual $\Rightarrow$ Satisfaction | 0.682       | -       | 0.682    | 0.682 |
| E-servqual $\Rightarrow$ Loyalty     | 0.210       | 0.347  | 0.557    | 0.510 |
| Satisfaction $\Rightarrow$ Loyalty  | 0.510       | -       | 0.510    | 0.510 |

$^a$ Signifikann at $p<0.01$

4. Discussion

This research tested the structural model of the relationship between e-service quality, customer satisfaction, and customer loyalty. The study was carried out to determine the impact of e-service quality variables on satisfaction and loyalty in the context of online shopping. The findings of the current study are projected to add to the development of both online businesses and academic. The result of this study is discussed in the following paragraphs.

The first finding is relating to the dimensionality of e-service quality. Based on the factor loading analysis this study reveals that e-service quality consisting of three dimensions (reliability, responsiveness, and trust). The other two dimensions (web design and personalization) have a loading factor below the cutoff value. This result is not supportive of the previous study conducted by reference who proposed five
dimensions of e-service quality constructs. There is no single agreement among scholars regarding the dimensionality of e-service quality in term of the number and the name of dimensions. Dimensions of e-service quality consisting of web store functionality, product attribute, ownership conditions, delivery, customer service, and security, as in [10]. While reference identifies information quality, security, ease of use, availability, customization, community, responsiveness, and delivery fulfilment are important indicators. Additionally, another study uses ease of use, transaction speed, update speed, traffic levels, integration, and security. This diversity invites scholars to do further study on the dimensionality of e-service quality to reach a common agreement like SERVQUAL scale developed by reference [11]. In the context of this study, consumers may not consider web design and personalization as important factors. Consumers more concern about trust, reliability, and responsiveness as important factors. This due to online shoppers want to deal with online shops which can be trusted, have quick response on their requests and orders, and reliable in providing long-term services. Thus, online shop businesses should determine and focus only on e-service quality dimensions that important to customers in building their online shop competitiveness rather than building and implement all dimensions equally. By focusing on the important e-service quality dimensions online shop businesses will enable to set apart the business from the crowd.

The second finding is concerning with the interrelationships between e-service quality variable on consumer satisfaction and loyalty. The result indicates that the direct effect of e-service quality on consumer satisfaction is high. This means that online shoppers consider e-service quality variable as an important variable in creating their satisfaction. The result of this study confirms the previous study, as in [12, 13] and a study by reference [14] in the context of destination quality. The direct influence of e-service quality on customers’ loyalty is lower compared with the indirect effect of e-service quality on loyalty. This means that satisfaction variable mediates positively on the relationship between e-service quality and loyalty. An interesting finding is that consumers need to be satisfied first before they express their loyalty. In other words, consumers tend to be loyal if they are satisfied with the quality of service provided by the online shop provider. This is related to the consumers’ cognitive and affective state that their expectation is fulfilled [15, 16]. As a result, loyalty is achieved by satisfying customers.

The third finding of this study is that satisfaction variable is very important in determining consumers’ loyalty. The influence of satisfaction variable on loyalty is moderately high. The result of this study is consistent with the research conducted by reference [17] in different contexts. Online shops need to consider the influential factors that can shape tourist satisfaction; in this study are trust, reliability, and responsiveness factors in e-service quality variable. Fulfilment of customers’ expectations by satisfying them will influence greatly consumer’s future behaviour: repeat purchase at the same shop and recommendation to potential buyers.

5. Conclusion
The result of this study shows that e-service quality variable has the highest direct influence on satisfaction compared to the direct impact of e-service quality on loyalty and satisfaction to loyalty. The direct influence of satisfaction is the second largest. While the indirect influence of e-service quality on loyalty is higher than its direct influence. These results propose that consumers’ satisfaction is greatly influenced by components of e-service quality: trust, reliability, and responsiveness. Moreover, satisfaction is an important factor in the eyes of consumers as customers will not be loyal to the online shop unless they are satisfied first. These findings suggest to the online shop businesses the need to provide quality of e-services that satisfy the expectations of customers. Online shop businesses also need to take attention to the dimensions of e-service quality which are important from customers’ point of view as not all dimensions are important. Online shop businesses should determine and focus on this important factor in building their competitiveness. This finding is added to the improved understanding of e-service quality and certainly contributed to the practical aspects of online businesses.
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References
[1] Mali YCG 2016 Integrating Technology in Indonesian EFL Classrooms: Why Not? Beyond Words. 4 (1):17-26
[2] Rahayu R, Day J 2017 E-commerce adoption by SMEs in developing countries: evidence from Indonesia Eurasian Business Review 7 (1):25-41
[3] Amorim M and Bashashi Saghezchi F 2014 An investigation of service quality assessments across retail formats Int. J. of Quality and Service Sciences 6 221-36
[4] Roy Dholakia R and Zhao M 2010 Effects of online store attributes on customer satisfaction and repurchase intentions Int. J. of Retail & Distribution Management 38 482-96
[5] Clegg B, Kersten W and Koch J 2010 The effect of quality management on the service quality and business success of logistics service providers Int. J. of Quality & Reliability Management 27 185-200
[6] Lee G-G and Lin H-F 2005 Customer perceptions of e-service quality in online shopping Int. J. of Retail & Distribution Management 33 161-76
[7] Kuo Y-F, Wu C-M and Deng W-J 2009 The relationships among service quality, perceived value, customer satisfaction, and post-purchase intention in mobile value-added services Computers in human behavior 25 887-96
[8] Henseler J, Hubona G and Ray P A 2016 Using PLS path modeling in new technology research: updated guidelines Industrial Management & Data Systems 116 2-20
[9] Hair J F, Sarstedt M, Hopkins L and Kuppelwieser V G 2014 Partial least squares structural equation modeling (PLS-SEM) An emerging tool in business research European Business Review 26 106-21
[10] Cho N and Park S 2001 Development of electronic commerce user-consumer satisfaction index (ECUSI) for Internet shopping Industrial Management & Data Systems 101 400-6
[11] Parasuraman A, Zeithaml V A and Berry L L 1988 Servqual J. of Retailing 64 12-37
[12] Suhartanto D, Helmi Ali M, Tan K H, Sjahroeddin F and Kusdibyo L 2019 Loyalty toward online food delivery service: the role of e-service quality and food quality J. of Foodservice Business Research 22 81-97
[13] Chiu S-I, Cheng C-C, Yen T-M and Hu H-Y 2011 Preliminary research on customer satisfaction models in Taiwan: A case study from the automobile industry Expert Systems with Applications 38 9780-7
[14] Cong L C 2016 A formative model of the relationship between destination quality, tourist satisfaction and intentional loyalty: An empirical test in Vietnam J. of Hospitality and Tourism Management 26 50-62
[15] Dean D, Suhartanto D, Kusdibyo L 2019 Predicting Destination Image in Creative Tourism: A Comparative between Tourists and Residents. Int. J. of Applied Business Research 1 (01)
[16] Kusdibyo L, editor 2016 Unlocking tourist shopping preferences on souvenirs attributes. The 3rd International Hospitality and Tourism Conference (IHTC2016) & 2nd International Seminar on Tourism (ISOT 2016) Bandung, Indonesia: CRC Press
[17] Suhartanto D and Leo G 2018 Small business entrepreneur resistance of ICT adoption: a lesson from Indonesia Int. J. of Business and Globalisation 21 5-18