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From e-Commerce Quality to e-Loyalty: A Purchase-centred Model

Fakri Fandy Nur Azizi[1] Ismiarta Aknuranda[2] Herman Tolle[3]

[123]Faculty of Computer Science, Brawijaya University
{[1]fakrifandy@gmail.com,[2]i.aknuranda@ub.ac.id,[3]emang@ub.ac.id}

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Abstract. The e-commerce market becomes one of the markets with the most promising growth. Some studies on e-commerce have been investigated, but only a little attention is paid to the factors that may create e-commerce customer loyalty, even though customer loyalty is one of the primary keys to improve the performance of e-commerce businesses. This research offers a conceptual model focused on purchases to investigate the factors that affect customer loyalty and when it is formed. Specifically, this paper intends to examine the relationship between the overall e-commerce quality on the perceived usefulness, perceived value, satisfaction, and trust. This paper also verifies the relationship between perceived usefulness, perceived value, satisfaction, and trust in the e-loyalty. The method of online survey is used for the data collection. From 1457 of the distributed questionnaires, 960 were completed and returned, resulted from a 65.8 percent response rate. The data is then analyzed using the Structural Equation Modeling (SEM) method. The conclusion of this study is the overall e-commerce quality can affect the creation of the electronic loyalty (e-loyalty) indirectly, which through the perceived usefulness and trust felt by the customers. The research findings contribute to filling the knowledge gap regarding the defining factors of customer loyalty which may help the e-commerce provider in developing e-loyalty to increase e-commerce profitability.

Keyword: Quality, Shopping, Perceived, E-Commerce

1 Introduction

Along with the rapid growth of Internet users, in Indonesia, the e-commerce market share also shows significant growth. It can be proven with the data obtained by the Asia Pacific Google that there were 5.9 million people shop online in 2014. and there was a 26% growth in 2015 in which there were up to 100 million Internet users in Indonesia at that time, and there were 7.4 million people shop online [44]. This is also emphasized by the data obtained by the Ministry of Communication and Information which states that 93.10% of the content types accessed by Internet Users in Indonesia are the commercial contents [45]. Both previous data are confirmed by the data of B2C e-commerce selling statistics that reached 92.5 trillion in 2017 and it will continue to rise to 192 trillion in 2021 [46].

The number of online shoppers in Indonesia still up to 25% [46] of Indonesia's population in 2017 that reaches 262 million [47]. The competition of strategy and

innovation between e-commerce in Indonesia began to increase since 2015 as an attempt to acquire new users. [48]. But on the other side for acquiring new customers in the Internet market, there will be a 20%-40% greater cost required compared to the traditional market [1]. So, to increase competitiveness, e-commerce needs to build loyalty and customer satisfaction [2]. The user acquisition activities that carried out by e-commerce has the purpose of adding the new user base. And by the growth of the new user base, the e-commerce hopes to get the increased profits. That goal should have been answered by building a loyal user base because loyal customers can help the company's marketing activities by providing recommendations to the potential new customers [5], which will have an impact on the company's long-term profitability [3].

Consumer loyalty is a high commitment to using the products or the services continuously and consistently in the future [4], and it will cause repeated purchasing of the same product or brand, although there are influences from other brands, which can cause the displacement behavior [6]. In the context of e-commerce, user loyalty is called e-loyalty (*electronic loyalty*) [7]. Based on the literature studies conducted by researchers, the concept of e-loyalty is closely similar to the following actions; commitment [8] continuance intention [9][10] re-purchase intention [11][12][13] re-patronize intention [14] and stickiness [15][16]. Those actions are the consequences arising from the development of consumer loyalty [17].

Only a few companies have succeeded in building e-loyalty, and most companies fail to develop user loyalty because they do not know much about the factors that influence obtaining loyal customers on the Internet [3]. So it is essential to investigate the determinant factor of e-loyalty in the e-commerce company. The previous studies have adopted many conceptual models to find the determinant factors for the e-loyalty presence. The result of the existing studies states that the elements are: the perceived usefulness factors [18] trust [18][20] and satisfaction [19][20][21]. But when e-loyalty began to be created is still unknown. In the effort to fill this gap, this study offers a more comprehensive conceptual framework as a result of synthesizing existing literature.

This study proposed an e-loyalty investigation model that is divided into two categories; (1) the factors during the purchase and (2) the elements after the purchase. The factors during the purchased cover three components, which are: (1) e-commerce overall quality that includes the system quality dimension, information quality and service quality, (2) perceived usefulness (3) perceived value. And the factor after the purchase covers two factors; satisfaction and trust. The purpose of this study is to find out when e-loyalty is created and what factors determine the creation of e-loyalty on e-commerce customers. With this comprehensive model, it is hoped that it can help the e-commerce service provider executives for the improvement of the creation of e-loyalty.

2 Literature Review

2.1 E-commerce Overall Quality

DeLone and McLean [28] argued that the system quality, information quality, and service quality are the factors in the formation of overall quality in the e-commerce system. The system quality in the Internet environment is a component to measure the desired characteristics of e-commerce systems. Accessibility, usability, reliability, adaptability, and security are examples of quality that are valued by the users of an e-commerce system [28][29][24]. Information quality is a component to measure the characteristics of e-commerce content issues. The web content must be up-to-date,

accurate, complete, and relevant if the buyers or suppliers are to initiate the transactions via the internet and return to the site on a regular basis [25][28][29][24]. Service quality, the overall support delivered by the service provider, whether the support is provided by the information systems department, new organizational units or transferred to other service providers. In an e-commerce environment, the service quality was measured in terms of efficiency, system availability, privacy, fulfillment, responsiveness, compensation, billing, and contacts [39][28][21][24][30].

Table 1. Example Research on The E-loyalty Topic

Study	Variable Measured	Findings
Lin dan Wang [19]	Perceived value, trust, satisfaction, habit, customer loyalty	Customer satisfaction becomes the main factor determining the emergence of repurchase intentions and consumer loyalty. The limitation of this study was on the researcher's proposed model, which does not provide an explanation of what antecedents affect the perceived value and customer trust in mobile commerce.
Liao, Palvia dan Lin [18]	Website quality, perceived usefulness, trust, habit, continuance intention	Website quality affects the creation of perceived usefulness and trust, but the influence of website quality on perceived usefulness is slightly more significant than it's effect on trust. Perceived usefulness and trust are the main determinants of continuance intention on the B2C e-commerce website.
Yen dan Lu [21]	E-service quality, expectancy disconfirmation theory (EDT), perceived net benefit, satisfaction, loyalty intention	Service efficiency, which is one of the quality e-service dimensions and perceived net benefits, is the antecedent that has the most impacts on user satisfaction. And user satisfaction is known to be very influential on loyalty intention.
López-Miguens dan Vázquez [20]	Website quality, e-satisfaction, e-trust, switching barriers, e-loyalty	E-trust has a very positive impact on e-satisfaction. While e-satisfaction and e-trust have a positive effect on the development of e-loyalty.

(continued on next page)

Study	Variable Measured	Findings
Lee dan Wong [34]	Service quality, satisfaction, trust, commitment, loyalty	Service efficiency has the most significant impact on user satisfaction compared to other service quality attributes. Meanwhile, the commitment antecedents have the greatest impact on e-loyalty, compared to antecedents of user satisfaction and trust.

2.2 Perceived Usefulness

Perceived usefulness is defined as the degree to which an individual believes that using a particular system will enhance his or her job performance. The perceived usefulness is measured in terms of ease of use, increased effectiveness, and increased user productivity [32][33][31][35].

2.3 Perceived Value

Perception value as the consumer's overall assessment of the utility of a product based on perceptions of what is received and what is given. The value is low price, and the value is whatever the person wants in a product, the value is the quality that an individual received for the price paid, and the value is received for what is paid [19][29].

2.4 Satisfaction

Consumer satisfaction is the response to the needs compliance received by consumers. This response is the assessment form of the fulfillment level of the consumer needs by a product or service based on the comfort level received by consumers. Satisfaction in the consumer's perspective is a pleasant experience gained by consumers after using products or services [6].

Meanwhile, according to [17], customer satisfaction is a psychological reaction related to the experience gained by comparing the expected performance to the perceived performance. Based on these definitions, it can be concluded that customer satisfaction with e-commerce is related to the experience received when purchasing an e-commerce company. According to Oliver [5], consumer satisfaction has a positive impact on the emergence of a commitment to become a loyal consumer.

2.5 Trust

Trust can be interpreted as the willingness of a party to be vulnerable to the actions of other parties based on the expectation that the other party will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party. Trust is related to competence, integrity, and benevolence [15][18].

2.6 E-loyalty

E-loyalty or electronic loyalty can be defined as a firm commitment to reuse or repurchase the products or electronic commerce services consistently in the future

regardless of the situational influence and marketing efforts of other brands that can lead to the emergence of displacement behavior to other e-commerce. Valvi and Fragkos [17] explained that the concept of e-loyalty closely related to commitment, continuance intention, re-purchase intention, re-patronize intention, and stickiness.

3 Conceptual Framework and Hypothesis Development

3.1 Conceptual Framework

Before the customer loyalty is created, every consumer must go through the purchasing process stages. Because the purchasing is not a one-time-completed event [22], but it involves a gradual process and also based on gradual decision making. Therefore, we consider that the factors that influence the creation of e-loyalty can be categorized into two categories that are centered on the buying process which includes elements during the purchase and factors after the purchase.

Purchase actions taken by consumers are in the form of stages of action that include (1) look for alternative products that you need; (2) evaluate and choose the product you need; (3) buy the product you want; (4) evaluate how successfully your needs are fulfilled; (5) provide the feedback about evaluating your purchase; (6) end the buying process [23].

The conceptual framework of this study can be seen in Fig. 1. which can be read from left to right. The factors during the purchase are generally related to the overall e-commerce quality and consumer perceptions that arise during the purchase process, while the factors after the purchase are related to attitudes that result from the process of evaluating the buying actions by consumers.

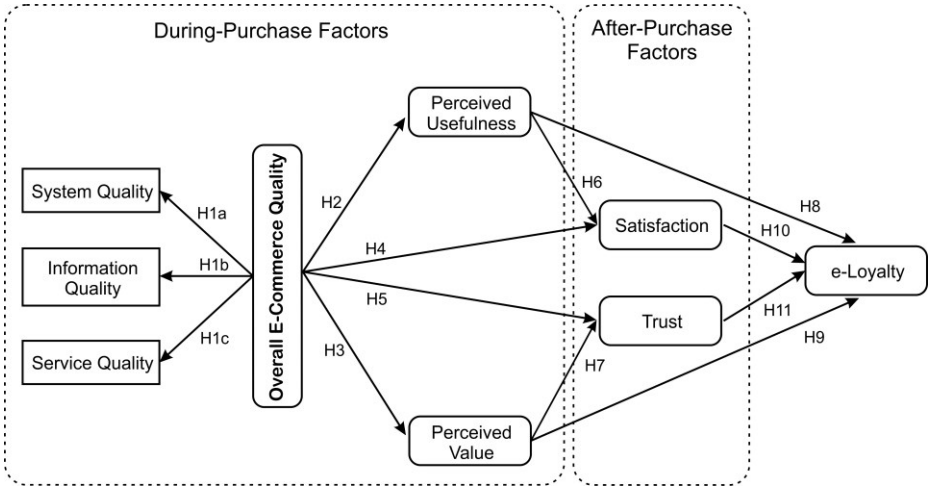


Fig 1. Research Model

Several variables that will be used in this conceptual model are: (1) The Overall e-commerce variable that includes the system quality, information quality, and service quality dimensions that influence the perceived usefulness, the perceived value, the trust, and the satisfaction variable; (2) The perceived usefulness variable affects the trust and the perceived value variable affects the satisfaction; (3) The perceived

usefulness and the perceived value variable influence the creation of e-loyalty; (4) The trust and the satisfaction variable takes effect to the creation of e-loyalty.

3.2 Hypothesis Development

3.2.1 E-commerce Overall Quality

DeLone and McLean [28] argued that the system quality, the information quality, and the service quality are the form system availability, privacy, fulfillment, responsiveness, compensation, billing, and contacts [39][28][21][29][30].

H1a. The system quality is part of the overall e-commerce quality.

H1b. The information quality is part of the overall e-commerce quality

H1c. The service quality is a part of the overall e-commerce quality.

The research conducted by Liao, Palvia, and Lin [18] discovered that system quality, information quality and service quality have an impact on perceived usefulness. Meanwhile, according to DeLone and McLean [28], the information items that relate directly to consumers can affect the perceived usefulness of the user on the site.

H2. The overall e-commerce quality affects the perceived usefulness.

The research conducted by Pearson, Tadisina and Griffin, [40] found that service quality and information quality had an impact on perceived value; information quality increases the effect of the relationships of service quality to the perceived obtained by users. A good quality system may enable the consumers to easily find the product they are looking for without the large labor and costs so that consumers can feel the real value [41].

H3. The overall e-commerce quality affects the perceived value.

A bad system can reduce the user experience because it increases the difficulty of using the system. Bad system quality cannot create user satisfaction because they always hope to use a quality system. Bad quality information can also reduce user satisfaction because they expect to obtain quality information when using the system [29]. The service quality has a significant role in creating user experience, if the service of a system is slow and unresponsive, Quality of service has a crucial role in creating user experience, if the service of a system is slow and unresponsive, it will undoubtedly reduce the user satisfaction for the system services offered [21]. DeLone and Mclean [28] stated that to determine user satisfaction, a comprehensive measurement of the system quality, information quality, and service quality must be taken.

H4. E-commerce overall quality influences satisfaction.

The system quality is related to the access speed, ease of navigation and ease of use. If the system is difficult to use and has a poor interface design, users will feel that the service provider lacks integrity, and it will reduce the level of customer trust [29]. Similar to the information quality provided to users, if the information is inaccurate and incomplete, user confidence will decrease [18]. The service quality is an indication that

the service provider is responsible; if the service is not reliable, users will not be able to give trust to the service provider [29].

H5. The overall e-commerce quality affects trust

3.2.2 Perceived Usefulness

Perceived usefulness and perceived ease of use are critical factors to measure customer quality [32][33]. Perception usefulness is measured in terms of ease of use, increased effectiveness, and increased user productivity [32][33][31][35]. An individual might feel more satisfied when using an easy-to-use-site [9].

H6. Perceived usefulness influences satisfaction.

Perceived usefulness can influence continuing intentions [36] while [17] states that continuing intentions are part of e-loyalty.

H8. Perception usefulness influences the creation of e-loyalty.

3.2.3 Perceived Value

Perceived Value can be a determinant in maintaining long-term relationships with customers, and this factor also has a vital role in building trust [37].

H7. Perceived Value affects the trust

Characteristically, when customers feel that they don't get the value from the money they spent, they will start looking for alternative products or services, which can be an indication that their loyalty is decreasing dramatically [17].

H9. The perceived value affects the creation of e-loyalty.

3.2.4 Satisfaction

Satisfaction is the consumers' post-purchase evaluation and affective responses to the experience overall of using a product or service, this is considered to be a strong predictor for measuring the behavior of subscription intentions and the creation of customer loyalty [19].

H10. Satisfaction affects the creation of e-loyalty.

3.2.5 Trust

Gefen, Karahanna, and Straub [38] said that trust is a willingness to make ourselves vulnerable to actions taken by a trusted party based on self-confidence or certainty, which has been promised. Ribbink et al. [3] stated that trust is one of the strongest determinants of creating loyalty, other than the satisfaction felt by the users.

H11. Trust influences the creation of e-loyalty.

4 Research Methodology

4.1 Instrument Development

The conceptual model in this study has nine variables that are going to be

measured. Each variable has several items. All items were adapted from previous existing research to increase the validity of the content. When the questionnaire instrument was developed, ten mobile commerce users in Indonesia who had online shopping experience was tested, they had different age and different occupational backgrounds.

Then based on their comments, we revised several items to improve clarity and understanding. Our goal is to make the questionnaire easily understood by prospective respondents of different ages and occupations. The final items and their sources are listed in Appendix A.

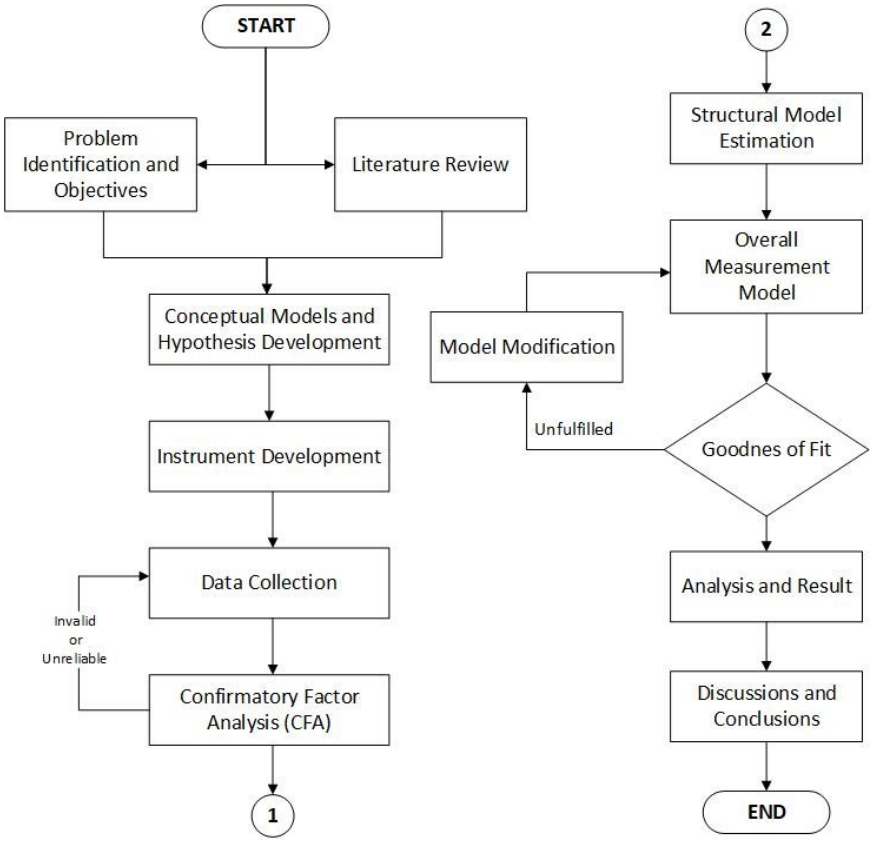


Fig 2. Research Methodology

The questionnaire in this study used the interval measurement scale with the Likert scale to assess the research instruments. The questionnaire in this study used the interval measurement scale with the Likert scale to evaluate the research instruments. The Likert scale used to evaluate the answer of each statement was using a 1-5 values range, the higher the value, the more positive the answer, and vice versa. The Likert scale is used to represent the respondents' agreement or disagreement with the statements submitted by the researchers, by giving the respondents more choices, it can increase the points differentiation in the questionnaire.

4.2 Subject

The data collection was collected from the e-commerce users in Indonesia, 80% of the respondents lived in the cities of Jakarta, Surabaya, Bandung, Medan, and Makassar, and 20% of the respondents came from other cities. According to Priceza [49] since 2015-2018. 80% of the most active online shopping consumers in e-commerce are from the cities of Jakarta, Surabaya, Bandung, Medan, and Makassar.

The distributing process of the questionnaire in the form of digital documents to the respondents for data collecting was held in the cities of Jakarta, Bandung, Surabaya, Malang, Mojokerto and Banyuwangi, it was distributed through email, communication application Whatsapp and Telegram, and the social media Facebook. And the printed version questionnaire was distributed directly to respondents. The questionnaire for the respondent in Medan and Makassar was only distributed in the form of a digital document with the help of a third party through an open survey application JAKPAT (https://jajakpendapat.net). Other than Medan and Makassar, some questionnaire distributed to the respondents in DKI Jakarta and Bandung was also done through JAKPAT.

The result of the 1457 distributed questionnaire, 960 were completed and returned, resulted in the response rate of 65.8%. The respondents who completed the questionnaire consist of 40% male respondents and 59.6% female respondents. The majority of respondents (45.6%) were between twenty years old to twenty-nine years old. More than half of the respondents (53.5%) were college students.

Table 2. Respondent Demographic Information

Variable	Frequency	Percentage
Age		
Uder 20	108	11.3
20-29	438	45.6
30-39	377	39.3
40-49	37	3.8
Gender		
Male	388	40.4
Female	572	59.6
Job		
College student	514	53.5
Employee	443	44.1
Enterpreneur	23	2.4
Residence		
Medan	276	28.8
DKI Jakarta	245	25.5
Bandung	114	11.9
Surabaya	73	7.6
Makassar	57	5.9
Other cities	195	20.3
e-Commerce Industry		
Lazada (B2C)	87	9
Blibli (B2C)	15	1.6
Bhineka (B2C)	5	0.5

Variable	Frequency	Percentage
Tokopedia (C2C)	453	47.2
Bukalapak (C2C)	161	16.8
Shopee (C2C)	223	23.2
Others *e-Commerce*	16	1.7
Degree of online shopping experience in e-commerce in the past one month		
< 5 times	865	90.1
5-10 times	84	8.7
> 10 times	11	1.2

5 Analysis and Result

The method of Structural equation modeling (SEM) is chosen to validate the proposed conceptual model. According to Sugiyono [26], SEM consists of 2 elements, which are the measurement model and the structural model. And in SEM, there are three analysis activities at once; 1) Confirmatory Factor Analysis (CFA), 2) Path Analysis, 3) Goodness of fit (model accuracy test). The SEM analysis process is carried out using AMOS 22 statistical software tools.

4.3 Measurement Model

Confirmatory Factor Analysis (CFA) is one of the measurement model methods in SEM. The purpose of the measurement model is to find out how well the indicators in this study can be used as measurement instruments for latent variables. The result of the convergent validation using can be seen in Table 3 and Table 4.

Table 3. The First-order Factor Measurement Model

Variable	Loading Factor	Construct Reliability	Average Varian Extracted
Suggested value	> 0.50	> 0.70	> 0.50
System Quality			
Accessibility	0.621		
Ease of Use	0.571		
Reliability	0.632	0.759	0.550
Adaptability	0.637		
Response Time	0.646		
Information Quality			
Currency	0.555		
Accuracy	0.747	0.776	0.620
Relevancy	0.694		
Completeness	0.720		
Service Quality			
Efficiency	0.613		
System Availability	0.584		
Compensation	0.595	0.820	0.626
Billing	0.626		
Privacy	0.531		

Variable	Loading Factor	Construct Reliability	Average Varian Extracted
Suggested value	> 0.50	> 0.70	> 0.50
Contact	0.586		
Fulfillment	0.642		
Responsiveness	0.669		
Perceived Usefulness			
Effectiveness	0.682		
Productivity	0.645	0.728	0.558
Usefulness	0.731		
Perceived Value			
Quality Product	0.940		
Worth the Price	0.653	0.787	0.683
Value for Money	0.612		
Satisfaction			
Satisfied	0.748		
Pleased	0.740	0.799	0.694
Contented	0.777		
Trust			
Competency	0.729		
Integrity	0.735	0.774	0.645
Benevolence	0.725		
Electronic Loyalty (e-loyalty)			
Continuance intention	0.925		
Recommendation	0.836	0.884	0.846
Stickiness	0.775		

Table 4. The Second-order Factor Measurement Model

Variable	Loading Factor
Suggested value	> 0.50
E-commerce Overall Quality	
System Quality	0.917
Information Quality	0.815
Service Quality	0.902

A variable is considered to have good validity for a latent variable if the factor load value –t is higher than the critical value (≥ 1.96) and/or the standard value load is ≥ 0.50. While the reliability evaluation of the CFA measurement model can use the Cronbach alpha reliability measure (≥ 0.70) [27], according to Hair et al. [43] the model is considered to have excellent reliability if it meets the criteria (1) Construct Reliability (CR) ≥ 0.70; and (2) Average Variance Extracted (AVE) ≥ 0.50.

4.4 Structural Model

The structural model estimation stage is associated with the evaluation of the coefficients that have a causal relationship between one latent variable to other latent

variables. A causal relationship between the latent variables is declared insignificant if the value of the critical ratio (C.R.) is in the range -1.96 to 1.96. With the level of significance, 0.05 [27].

Table 5. Model Estimation Result

Varibles constrained	Path coefficient	Critical Ratio (C.R.)	Remarks
OEQ + PU	0.925	19.555	Significant
OEQ + PV	-0.083	-1.157	Not significant
OEQ + SAT	1.01	5.725	Significant
OEQ + TRU	0.829	12.608	Significant
PU + SAT	0.066	1.040	Not significant
PV + TRU	-0.121	-0.677	Not significant
PU + ELY	0.216	3.013	Significant
PV + ELY	-0.341	-4.358	Not significant
SAT + ELY	-0.007	-0.076	Not significant
TRU + ELY	0.881	7.576	Significant

OEQ = overall e-commerce quality, PU = perceived usefulness, PV = perceived value, SAT = satisfaction, TRU = trust, ELY = e-loyalty

Table 6. Fit Indices for Structural Model

Fit indices	Recommended Value	Value	Predicate
Chi-Square (CMIN)	< ChiTable : Good fit > ChiTable : Poor fit	1660.73	Poor Fit
P-value CMIN	> 0.050 : Good fit < 0.050 : Poor fit	0.000	Poor Fit
CMIN/degrees freedom	< 2.000 : Good fit < 3.000 : Marginal fit > 3.000 : Poor fit	4.002	Poor Fit
Root Mean Square Error of Approximation (RMSEA)	< 0.080 : Good fit < 0.100 : Marginal fit > 0.100 : Poor fit	0.056	Good fit
Goodness-of-fit Index (GFI)	> 0.900 : Good fit > 0.800 : Marginal fit < 0.800 : Poor fit	0.903	Good Fit
Adjusted Goodness-of-fit Index (AGFI)		0.876	Marginal fit
Tucker-Lewis Index (TLI)		0.889	Marginal fit
Comparative Fit Index (CFI)		0.907	Good fit

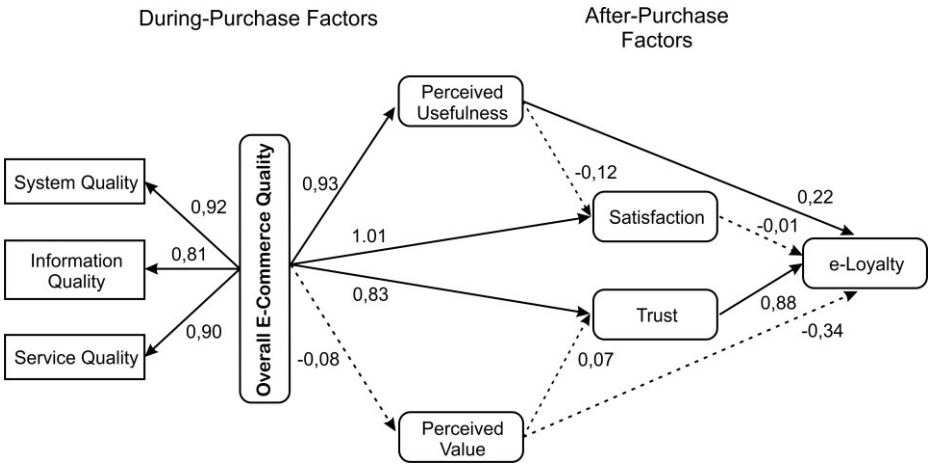
Based on Table 6. the calculated Chi-Square value is 1660.73. The calculated Chi-Square value is higher than the Chi-Square value in the table (1660.73> 505.730); by these criteria, the resulting value is declared as a poor fit. The CMIN/DF value of 4.002 based on the accuracy criteria described in the previous chapter, the CIMD/DF value was stated greater than 2.000, so it can be said that the model is declared poor fit. The RMSEA value of 0.056, that value is smaller than 0.080 based on the criteria, so the research model is said as an excellent fit. While the GFI value is 0.903 which is higher than 0.900 so the model can be stated as a good fit, the AGFI is 0.876 which is >0.800 and it tends to approach 0.900, so the model can be declared as marginal fit. The TLI value is 0.889, that value is > 0.800 and it tends to approach 0.900, so the model is

stated as marginal fit, and the CFI value is 0.907 which is greater than 0.900; it shows that the model used is a good fit.

Based on the results of the structural model testing above, it is known that the RMSEA, GFI, and CFI values are sufficient for a good fit. According to Bollen [42], even though there is the conformity index that is not fulfilled, it does not mean that the overall model is unacceptable; if there is one conformity index is fulfilled, it can represent other conformity index indicator. So, the whole model can be declared as a good fit even though there are only 3 GOFI (Goodness of Fit Indices) indicators that are sufficient for a good fit.

4.5 Result

Based on the review of the overall structural model analysis in the study, it is discovered what factors are significant and are not vital to the emergence of e-loyalty. And for the hypothesis testing result can be seen in Table 7.



- - - Dotted line means not significant/not supported

Fig 3. Structural Model Path Analysis

Based on the testing and the analysis results of the structural model shown in Fig. 3, and the result of hypothesis testing shown in Table 7. It is known that the trust and the perceived usefulness variables became the main variables that significantly affect the creation of e-loyalty. And the overall e-commerce quality substantially influences the appearance of the users' perceived usefulness and trust towards the e-commerce platform.

So, the overall quality of e-commerce has a significant impact on the creation of e-loyalty indirectly.

Table 7. Hypothesis-testing Results

	Hypothesis	Remarks
H1a.	The system quality is a part of the overall e-commerce quality	Supported
H1b.	The information quality is a part of the overall e-commerce quality	Supported
H1c.	The service quality is a part of overall e-commerce quality	Supported
H2.	The overall e-commerce quality influences the perceived usefulness	Supported

	Hypothesis	Remarks
H3.	The overall e-commerce quality influences the perceived value	Not Supported
H4.	The overall e-commerce quality influences the satisfaction	Supported
H5.	The overall e-commerce quality influences the trust	Supported
H6.	The perceived usefulness influences the satisfaction	Not Supported
H7.	The perceived value influences the trust	Not Supported
H8.	The perceived usefulness influences the creation of e-loyalty	Supported
H9.	The perceived value influences the creation of e-loyalty	Not Supported
H10.	The satisfaction influences the creation of e-loyalty	Not supported
H11.	The trust influences the creation of e-loyalty	Supported

6 Conclusions

The conclusion of this study is system quality, information quality, and service quality are a part of the overall e-commerce quality, and the e-commerce overall quality can affect the creation of electronic loyalty (e-loyalty) indirectly, which through the perceived usefulness and trust felt by the customers. From this research, it can also be seen that electronic loyalty (e-loyalty) can be created when customers are shopping online, and it can also be created after customers shop online.

Therefore, to create consumers who are loyal to mobile commerce, the overall quality of e-commerce must be improved because it will have a positive impact on trust and consumer acceptance of the services provided by e-commerce. Indicators of e-commerce quality that must be enhanced to build e-loyalty are (1) system quality; (2) information quality; (3) service quality.

System quality indicators that need to be improved involve: (1) Accessibility, which is related to how far the system can be accessed by relatively low effort; (2) Usability, which is relevant to what extent the system is well organized and is easy to use; (3) Reliability, related to what extent the system can be relied from time to time; (4) Adaptability, which is related to what extent the system can adapt to various user requirements and the conditions changes; (5) Response time, which is related to what extent the system's response speed related to the task of information or action request.

The information quality indicators that need to be improved include (1) Currency, which is related to what extent the information recency that is available in mobile commerce; (2) Accuracy, which relates to what extent the information accuracy that is available in mobile commerce; (3) Relevancy, which is related to what extent of the information relevance and correctness in mobile commerce; (4) Completeness, which relates to what extent of the information completeness that is available in mobile commerce.

Furthermore, the service quality indicators that need to be improved are (1) Efficiency, which is related to how fast mobile commerce in responding the transactions; (2) System availability, which is connected to whether the required technical functions are always ready and available for use; (3) Compensation, which relates to what extent the mobile commerce compensates the consumers for each problem they encounter; (4) Billing, which refers to what extent the mobile commerce provides the convenience of the billing process and order payment; (5) Privacy, which is related to what extent the security perception perceived by consumers towards the mobile commerce and to what extent the mobile commerce protects the consumers' personal information; (6) Contact, which deals with what extent the mobile commerce provides the consumer complaint services; (7) Fulfillment, which is related to what extent the accuracy of mobile commerce in fulfilling the promise of the product availability and the delivery accuracy of the consumer orders; (8) Responsiveness,

which is related to the responsivity of the mobile commerce in handling system problems, orders and responding to the return of goods.

Besides the overall e-commerce quality indicators, other indicators need to be improved to increase consumers' trust in mobile commerce. Those indicators need to be improved because the trust factor is the strongest determinant of e-loyalty. Some indicators that can increase the consumer trust are (1) Integrity, which relates to what extent the mobile commerce service providers can keep their promises and commitments; (2) Competency, which is related to what extent the mobile commerce has the capability and capacity that is needed to do work and provide the services; (3) Benevolence, which is related to what extent the mobile commerce pays attention to the customers' interests, not just their interests. By improving those indicators above, e-loyalty will be easier to achieve and will indirectly also have an impact on the long-term profitability of mobile commerce.

This research still has several limitations. First, the sample from this study was taken randomly based on mobile commerce users in Indonesia, who have purchased at least once a month, without paying attention to the percentage of the mobile commerce users distribution, which are the B2C e-commerce type of business and the C2C e-commerce type of business. Second, the structural model is not tested based on the type of e-commerce users' age in Indonesia, represented by the generation X (born in 1965-1976), generation Y (born in 1977-1995), and generation Z (born in 1996-mid 2000). Each generation may have different behavioral tendencies, so it can also trigger different opinions about the determinants of being loyal consumers.

Appendix A. Measurement Items

System quality (X1) (adapted from [28][29][25])

- X11: This online shopping site is easy to access for online shopping with a relatively low effort
- X12: This online shopping site is well-organized and easy to use for online shopping
- X13: This online shopping site has reliable technical capabilities from time to time
- X14: This online shopping site is easy to adapt to the change of users' needs
- X15: This online shopping site is able to take the technical actions that users need rapidly

Information Quality (X2) (adapted from [25][28][29][24])

- X21: This online shopping site is able to provide the latest information, according to what I need
- X22: This online shopping site is able to provide accurate information according to what I need
- X23: This online shopping site is able to provide the relevant information as I need
- X24: This online shopping site is able to provide complete information, according to what I need

Service Quality (X3) (adapted from [39][28][21][29][30])

- X31: This online shopping site gives the easiness to find what I want.

X32: This online shopping site is always available and runs well for the transaction
X33: This online shopping site gives me compensation if a problem occurs because of its mistake
X34: This online shopping site provides a convenient payment procedure.
X35: This online shopping site does not share personal information with other parties.
X36: This online shopping site has customer service that is always online and ready to help to solve the problem experienced by the customers.
X37: This online shopping site delivers the product according to what I ordered
X38: This online shopping site provides the return-of goods option and handles the returns properly.

Perceived Usefulness (Y1) (adapted from [32][33][31][35])

Y11: I feel that this online shopping site helps to increase the effectiveness in finding product information and making the purchases
Y12: I feel that this online shopping site helps to increase productivity in finding product information and making purchases.
Y13: I feel that this online shopping site provides the easiness in finding product information and making purchases.

Perceived Value (Y2) (adapted from [19])

Y21: I feel buying products on this online shopping site is a profitable purchase (in terms of product quality)
Y22: I feel buying products on this online shopping site is worth the money I pay
Y23: I feel buying products on this online shopping site is more affordable than other online shopping sites.

Satisfaction (Y3) (adapted from [3][10][31])

Y31: Overall I am satisfied with this online shopping site
Y32: I am pleased to make a purchase from this online shopping site.
Y33: I am very comfortable using this online shopping site

Trust (Y4) (adapted from [15][18])

Y41: This online shopping site has the ability and the capacity needed to do the work
Y42: This online shopping site can keep its promises and commitments
Y43: This online shopping site pays attention to the customers' interests, and not just to its interest

Electronic Loyalty (Y4) (adapted from [19][35][17])

Y51: I intend to continue buying the products from this online shopping site in the future
Y52: I will recommend this online shopping site to my close friends

Y53: Even if a close friend of mine recommends another online shopping site, I will not change my preference for this online shopping site.

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