International Review of Management and Marketing

ISSN: 2146-4405

available at http: www.econjournals.com

International Review of Management and Marketing, 2025, 15(1), 118-127.

Analysis of E-Commerce Logistic Service Quality on Customer Satisfaction, Loyalty, and Brand Image in Indonesia

Fandy Bestario Harlan[1]*, Yulinda Tarigan[2], Sugeng Riadi[1], Agnes Manuella Sitompul[1]

[1]Department of Business and Management, Politeknik Negeri Batam, Batam, Indonesia, [2]Faculty of Business and Economics, University of Antwerp, Antwerp, Belgium. *Email: fandybestario@polibatam.ac.id

Received: 21 August 2024 **Accepted:** 13 November 2024 **DOI:** https://doi.org/10.32479/irmm.17503

ABSTRACT

The life of modern Indonesian society today must be connected to technology, one of which is e-commerce. Businesses that cannot be separated from e-commerce are logistics services that act as intermediaries between sellers and end consumers. Shopee, one of Indonesia's biggest and most developed e-commerce sites, has expanded its business line by opening Shopee Xpress logistics services. This analysis aimed to see how the quality of Shopee Xpress logistics services can affect the satisfaction, loyalty, and brand image of consumers or Shopee users in Indonesia. This study uses a quantitative approach, and data was obtained through the distribution of questionnaires to 206 samples of Shopee and Shopee Xpress users throughout Indonesia. SEM method is used in data analysis, and LISREL 8.8 software is used. From the 7 hypothetical paths analyzed, it was found that 6 hypotheses of the quality of logistics services have a positive and significant impact on satisfaction, loyalty, and brand image. However, the hypothesis of customer satisfaction with the quality of logistics services has impacted customer loyalty when using Shopee Xpress logistics services.

Keywords: Logistic Services Quality, E-commerce, Customer Satisfaction, Customer Loyalty, Brand Image
JEL Classifications: L81, M31, L14

1. INTRODUCTION

E-commerce in Indonesia has become a people's lifestyle; in 2019, the Ministry of Communication and Information noted that e-commerce growth in Indonesia had reached 78% and became the highest e-commerce user in the world in April 2021. The rapid development of this e-commerce service year by year encouraged the Indonesian government to form policies regarding the electronic-based economy, with the issuance of a Presidential Regulation (Perpres) on the e-commerce guideline to embolden the expansion and improvement of people's economic activities in Indonesia efficiently and globally connected (Badan Pusat Statistik, 2020). One of the most developed e-commerce sites in Indonesia and the world is Shopee, based in Singapore. Quoted on the katadata.co.id, Shopee became the most downloaded application by the global community in 2021. From 2017 to 2021 Shopee managed to have 129.525,000 visitors (Jayani and Mutia, 2021).

Both e-commerce and the logistics service business as a third party between the seller and the end consumer have experienced significant development. The need for e-commerce to achieve effective and efficient services in delivering goods or products to consumers creates cooperation between e-commerce and logistics services outside the e-commerce brand. Seeing this, in 2018, e-commerce Shopee expanded its business to logistics services by opening a new brand, Shopee Xpress, in order to provide maximum service to consumers.

The effectiveness and efficiency of logistics services can affect the success of an e-commerce business. A study conducted by Nugroho and Magnadi (2018) on the effect of logistics service quality on customer satisfaction and Hati and Juliati's (2019) research found that logistics service quality had a positive and significant effect on customer satisfaction and loyalty. Rachmawati (2020) also found the same thing.

From these previous studies, this study was conducted to know and re-analyze how logistics service quality influences customer satisfaction and loyalty, where logistics services are the most crucial part of connecting consumers and sellers. Not only that, this study will also examine how the quality of logistics services in e-commerce can affect the brand image of the marketplace or e-commerce to consumers. The brand image was chosen as one of the variables in this study because the brand image is the most important thing that must be considered by companies, especially companies engaged in services, where company performance also regulates consumer perceptions of the services provided. This approach to service quality continues in the process of building a brand image (Kotler and Keller, 2016).

This research was conducted to study whether the quality of e-commerce logistics services affects customer satisfaction in e-commerce logistics services, customer loyalty in e-commerce logistics services, and e-commerce itself, and how the impact of logistics service quality on brand image. Logistics services and e-commerce brand image itself. This study also aims to analyze and identify the effect of e-commerce logistics service quality on satisfaction, consumer loyalty, and brand image.

2. THEORETICAL AND LITERATURE STUDIES

2.1. Logistic Service Quality

If we study service quality, quality is one of the many social science concepts that are difficult to define literally. According to Goetsch and Davis in Tjiptono (2008), service quality is an intense condition that refers to products, services, human resources, processes, and the environment that meet or exceed consumer expectations. If the company is able to control quality well, quality can have positive implications for customer satisfaction and loyalty.

Agatz et al. (2008) found that customers perceive logistics services as the most crucial factor in online shopping. Logistics services are essential in increasing customer satisfaction in e-commerce, whether in B2C or C2C e-commerce. Customers will only choose and order the desired product; after that, the logistics service takes over everything (Huang and Satchabut, 2019). The simple concept of logistics itself is supply chain activities that focus on procurement, distribution, maintenance, and inventory management activities (Hugos, 2018); logistics creates the utility of time, place, and form to increase product value, logistics regulates the flow of the production process to distribution, reduces inventory costs, and deliver goods on time (Zieger, 2018).

According to Mentzer et al. (1989), the quality of logistics services consists of three dimensions: Availability, timeliness, and quality. This concept is known as physical distribution service quality, and communication is added. The fourth dimension emphasizes the importance of order status information in improving the quality of logistics services (Emerson and Grimm, 1996). Personal contact quality, information quality, order quality, ordering procedures, order discrepancy handling, ordering release quantities, order conditions, order accuracy, and other factors contribute to logistics service quality (Mentzer et al., 2001). Bienstock and Royne (2010) then propose a variant of logistics service quality, namely logistics process quality (procedures, contact, information, and discrepancy) and logistics outcome quality (availability, accuracy, timeliness, and condition).

According to Parasuraman et al. (1988) in Lin et al. (2016), high-service quality delivery can strengthen a company's brand and excellence in service discovery. Several studies indicate that service quality acceptance also positively affects customer satisfaction or is an antecedent discovery in customer satisfaction (Link, 2016).

2.2. Customer Satisfaction

Customer satisfaction has become the primary fundamental business strategy and management concept. All types of businesses, both traditional and e-commerce, have the same goal: customer satisfaction, which is one of the keys to a company's success.

Oliver in Nisar and Prabhakar (2017) said that customer satisfaction is not only about the extent of customer satisfaction but can also be described as a process, consumer evaluation of services or products; positive and negative emotions and cognitive disconfirmation influence satisfaction. Customer satisfaction is also a psychological response to the difference in impressions between expectations before consumption and the direct experience obtained after using a product or service (Arora and Narula, 2018).

Barnes and Vidgen (2001) stated that the dimensions of customer satisfaction are ease of use and shopping instructions, information, security, interrelation, accuracy, exchange of reviews, tangibles including aesthetics, navigation, reliability, responsiveness, access, assurance, and empathy. Researchers also found four essential elements influencing customer satisfaction in e-commerce: web design, delivery service (logistics) and returns, product-related information, and product diversity.

Reasonable customer satisfaction can increase the profitability of the company. Naik et al. (2010), with the number of consumers who are satisfied with the service of a product or service, consumers will make the place the leading shopping destination, increasing the company's profit. Customer satisfaction itself should be managed and controlled by company management so that company management can understand how important this concept is to understand and apply in the company (McColl-Kennedy and Schneider, 2000)

2.3. Customer Loyalty

Service quality has also been proven as a supporting tool in customer loyalty Zeithaml (2000). Loyalty will arise if a brand has the services and attributes that customers want and can be trusted by customers, then customers will have a favorable attitude toward the brand, leading to consumer retention (Kassim and Abdullah, 2010). As a result of this behavior, customers will also desire to repurchase products or services from the brand, which

is one loyalty component. According to Ranaweera and Prabhu (2003), customer loyalty is expressed behaviorally with retention and emotionally through Word of Mouth.

According to Uncles et al. (2003), a firm "attitude commitmen" is needed to build loyalty. It is seen as a consistent positive belief in a brand. This behavior can be measured by asking how many people like the brand, whether they would recommend it, and have positive thoughts and feelings about it compared to its competitors. For the survival of the company, it is essential to retain existing customers (consumer retention) and make them loyal customers (Karunaratna and Kumara, 2018)

2.4. Brand Image

Aaker (1992) states that brand image is a collection of images formed and attached to consumers' minds. Kotler and Keller (2016) also say that brand image is a consumer perception and belief that is reflected or embedded in consumers' minds and memories; this perception can be formed from information or consumer experiences with a brand.

Brand image is a representation of the overall customer perception of a brand and is formed because of the experiences felt by customers while using the brand's product or service. Because brand image itself is formed from the rational and emotional thoughts of customers, brand image can create positive and negative brand perceptions on customers and also affect customer purchase intentions, Tarnanidis et al. (2015).

Based on research conducted by Wijaya (Wijaya, 2013) regarding the dimensions of brand image, it is said that there are five dimensions of brand image, namely:

a. Brand identity
b. Brand personality
c. Brand association
d. Brand behavior and attitude
e. Brand competence and benefit

2.5. Hypothesis

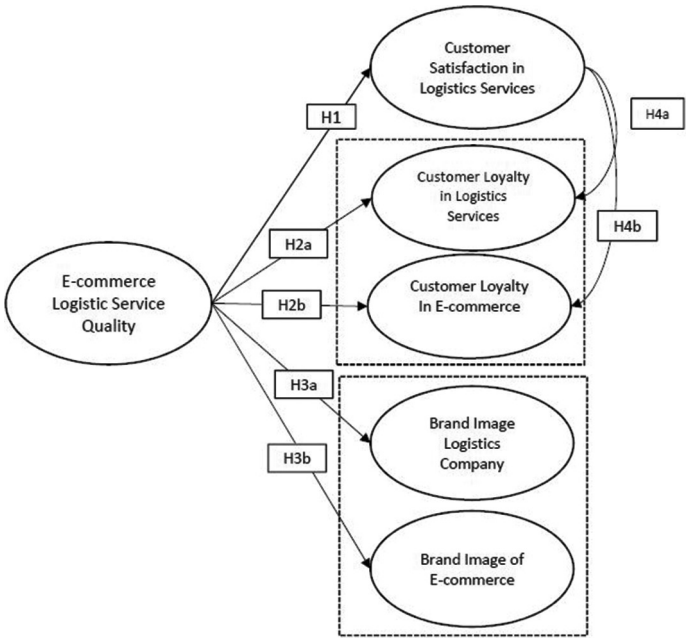
This study uses 6 variables with 40 indicators and 7 hypotheses, which are described in the framework of thought in Figure 1:

In Rachmawati's research (2020) It was discovered that the Quality of Logistics Services provided by e-commerce logistics has a direct and positive impact on customer satisfaction with e-commerce logistics services. There are several influencing factors such as the information provided by accurate logistics services, the goods arrived on time, the goods ordered arrived in good condition and were not damaged, the courier delivered the correct goods, logistics services were able to handle consumer complaints, and affordable shipping costs. So that the hypothesis is obtained:

H1: The Quality of E-commerce Logistics Services directly and positively impacts Customers in Logistics Services.

According to Juga et al. (2010), Service perception influences loyalty through overall satisfaction with service providers, which

Figure 1: Research framework



Source: Researcher

directly impacts loyalty. Moreover, service quality is a significant predictor of customer satisfaction and loyalty. So, the hypothesis was derived from this statement:

H2a: The quality of e-commerce logistics services directly and positively affects customer loyalty to logistics services

H2b: The quality of e-commerce logistics services directly and positively affects customer loyalty to e-commerce

In a study conducted by Wijaya (2013), it was discovered that a brand's service quality significantly impacts the brand image. The better the quality of services offered, the better the brand image will be in the eyes of consumers, according to research conducted by Muok and Mutuku (2019), where the dimensions of logistics service quality significantly impact the company's brand image. From this statement, the hypothesis is obtained:

H3a: The quality of e-commerce logistics services directly and positively affects the logistics services' brand image.

H3b: Quality of e-commerce logistics services directly and positively affects e-commerce brand image.

(Stank et al., 2003) Customer satisfaction with logistics services has been shown to significantly and positively impact customer loyalty and market share. Yuan et al. (2014) also discovered that customer satisfaction with logistics services in e-commerce directly influences merchant customer loyalty. Huang and Satchabut (2019) found that customer satisfaction significantly affects customer loyalty to a brand. From this statement, the following hypothesis is obtained:

H4a: Customer Satisfaction in E-commerce Logistics Services has a direct and positive effect on customer loyalty in E-commerce Logistics Services

H4b: Customer Satisfaction in E-commerce Logistics Services directly and positively affects Customer Loyalty in E-commerce.

3. RESEARCH METHODS

3.1. Data Sources

This research is a type of quantitative research. The researchers used primary and secondary data collection techniques. The primary data in this study were obtained through the distribution of questionnaires using Google Forms and distributed online through social media such as WhatsApp, Twitter, Facebook, etc. Meanwhile, secondary data from this research were obtained from supporting journals and other scientific data that support this research.

3.2. Sampling Determination and Withdrawal Techniques

The population in this study is the Indonesian people who have used Shopee and Shopee Xpress in the last 6 months. The sample was determined according to the theory of Malhotra (2010) by multiplying (5×) the number of indicators or question items. The number of questions in this study is 40, so the minimum number of respondents required in this research is 200.

The researcher uses a non-probability sampling technique, which means that all populations have the same opportunity to be sampled. The researcher chose purposive sampling for the sampling method. To select a sample, the criteria must first be determined, and any samples found according to the specified criteria must be considered.

3.3. Data Analysis Technique

The first step taken by the researcher in analyzing the data in this study was to analyze the questionnaire, where the sentence was examined on the questionnaire to be distributed. Next is the analysis of the frequency distribution to see the profile of the percentage of respondents. Furthermore, a descriptive analysis was carried out to see the tendency of respondents' answers to each question. The final analysis is Structural Equation Modeling Analysis, which is a statistical model used to determine and describe the relationship between observed variables in order to provide a quantitative test of a person's theoretical model hypothesized.

SEM has the term construct, namely the concept of the latent or unobservable; construct is divided into two types: Exogenous and endogenous. In regression analysis, the exogenous construct is called the independent variable, while the endogenous construct in regression analysis is called the dependent variable (Wijanto, 2008). The exogenous variable in this study is the quality of e-commerce logistics services. The endogenous variables are satisfaction, customer loyalty, and brand image. The four variables were calculated with 40 questions.

The next analysis is the measurement model analysis. According to Hair et al. (2010), the measurement model is used to validate the observed variables or indicators for each latent variable and assess validity, reliability, and suitability.

a) Validity test
   The validity test analyzes each indicator's value and standardizes the loading factor (SLF). Variables are declared valid if the SLF value is 0.50 Hair et al. (2010).

b) Reliability test
   The reliability Test on the SEM method was measured by Composite Reliability (C.R.), and the variance score was extracted.

$$C.R.: \frac{\sum std.loading^2}{\sum std.loading^2 + \sum ej}$$

Acceptable reliability if the C.R. value is 0.70 (Malhotra, 2010)

$$VE: \frac{\sum std.loading^2}{\sum std.loading^2 + \sum ej}$$

If the value of VE is 0.5, then an indicator can be reliable (Malhotra, 2010). The following analysis is the structural model, which is a conceptual description of the relationship between latent constructs or variables that shows how a construct or latent variable has a relationship with each other (Malhotra, 2010). There are two tests on structural model analysis, namely:

c) Test the fit of the entire model
   The suitability test for all models can be determined by using Goodness of fit, which consists of two tests, namely absolute fit measures and incremental fit measures.

The absolute fit measures indicators that can be used are RMSEA and GFI. A good GFI value to declare a match if the value is >0.90 and the RMSEA value in the model to be declared suitable is <0.80. Indicators of absolute fit measures that can be used are RMSEA and GFI. A good GFI value to declare a match if the value is >0.90 and the RMSEA value in the model to be declared suitable is <0.80.

Measurements on incremental fit measures that are usually used are NNFI, AGFI, NFI, RFI, CFI, and IFL. If the values in the measurement are more significant than 0.90, then it is a good match (Wijanto, 2008).

d) Causal test (hypothesis test)
   To test the causal relationship (hypothesis test) measured by the t value and R2 value. The t value is used to see the effect between latent variables. This study uses the one-tailed test to consider whether the t value is valid if −1.96 or t 1.96.

The value of the determination coefficient (R2) is used to determine the extent to which the dependent variable varies from the independent variable. In SEM, this value is seen using the reduced form value at the output of LISREL 8.8.

4. RESULTS AND DISCUSSION

4.1. Results of Respondent Characteristics

In this study, the researcher tested the validity and reliability twice. The first step is a pre-test of 30 respondents who have met the requirements. A pre-test of validity and reliability was carried out using SPSS edition 23 software.

In this pre-test, an indicator must have a KMO value and factor loading of 0.5 to be declared valid, and to be declared reliable, it must have a Cronbach's alpha value of 0.6.

n the results of the pre-test, it was found that all indicators and variables were declared valid with all indicators having a loading factor of 0.5 while the logistic service quality variable had Cronbach's alpha 0.863, KMO 0.711, the customer satisfaction variable had Cronbach's alpha 0.93 KMO 0.861, customer loyalty variable has Cronbach's alpha of 0.906, KMO of 0.725 and the last variable of brand image has Cronbach's alpha of 0.827 and KMO of 0.687. So that all variables are declared valid and reliable.

4.2. Respondent Profile

This study collected 206 respondents who were Shopee and Shopee Xpress users spread throughout Indonesia, with the most domiciles being in the Riau Islands and Jabodetabek. 77% of respondents are women, and the rest are men. The dominant age of respondents is 21-25 years, or as many as 64.6% and domination of work is 61.7% of students and 25.2% of private employees. As many as 48% of respondents have used Shopee for 3-4 years.

4.3. Measurement Model Analysis

The Main Test's validity and reliability will then be tested on all 206 samples. According to Igbaria et al. in Wijanto (2008), who used the guidelines from Hair (1995), the standard factor loading with a value of 0.50 is very significant. So, in this study, indicators with a factor loading value of ≤0.50 will be omitted from the following testing process.

Furthermore, a variety is reliable if it has a C.R. value of 0.70 and a VE of 0.50. However, according to Fornell and Larcker (1981), the variable can still be reliable if a VE value of 0.40 0.50 is caused by a loading error value but has a C.R. value of 0.60. So, in this study, a variable is reliable if it has a C.R. value of 0.70 and a VE value of 0.40 and 0.50.

The Logistics Service Quality indicator variables included in the next testing process are LSQ1, LSQ2, LSQ3, LSQ4, LSQ5, LSQ6, LSQ12, and LSQ13. The Table 1 shows that the results of the logistic service quality variable test show that all indicators of Logistics Service Quality are valid and reliable, so they can be used for further testing.

For the customer satisfaction variable, all indicators are included because all indicators have a factor loading value above 0.50 (Table 2). The results of testing the Customer Satisfaction variable indicate that all indicator variables are valid and reliable, so they can be used for further testing.

According to Latan and Ghozali (2016), a value of outer loading between 0.5 and 0.6 is sufficient to meet the convergent validity standard. Based on the Table 3, no variable indicator has a value of outer loading below 0.5, so all indicators are considered valid.

All indicators in the customer loyalty variable are included because all indicators have a factor loading value of 0.50. The results of testing the Customer Loyalty variable show that all indicator variables are valid and reliable, so they can be used for further testing.

The following testing process includes brand Image indicators BI2, BI3, BI4, BI5, BI7, BI8, and BI9 because they have a loading factor value of 0.50 (Table 4). Testing the Brand Image variable shows that all indicator variables are valid and reliable so that they can be used for further testing.

Table 1: Validity and reliability test of logistics service quality variables

Indicator	SLF value	t-value	Conclusion	C.R. value	VE value	Conclusion
LSQ1	0.58	8.76	Valid	0.83	0.41	Reliable
LSQ2	0.62	9.47	Valid			
LSQ3	0.66	10.18	Valid			
LSQ4	0.67	10.38	Valid			
LSQ5	0.66	10.3	Valid			
LSQ6	0.58	8.75	Valid			
LSQ12	0.65	10.01	Valid			
LSQ13	0.65	10.04	Valid			

Source: Researcher

Table 2: Validity and reliability test of customer satisfaction variables

Indicator	SLF Value	T-Value	Conclusion	C.R. value	VE value	Conclusion
CS1	0.77	12.64	Valid	0,88	0,45	Reliable
CS2	0.72	11.6	Valid			
CS3	0.57	8.56	Valid			
CS4	0.5	7.38	Valid			
CS5	0.71	11.42	Valid			
CS6	0.64	9.84	Valid			
CS7	0.78	12.88	Valid			
CS8	0.56	8.45	Valid			
CS9	0.7	11.16	Valid			

Source: Researcher

4.4. Goodness of Fit Analysis

The Goodness of the fit measurement model is the next analysis. According to the reference from Wijanto (2008), the Goodness of fit measurement model was analyzed using absolute and incremental fit indices in this study.

In the first measurement model, before the invalid indicator is removed, the measurement model of the measurement model produced on absolute fit indices is the value of:

- *Chi-Square (χ^2) Statistic* (df = 725) is 1296.08 and P = 0.00. The chi-square value is significant, and the P = 0.00 < 0.05. That conclusion is a poor fit.
- NCP = 571,08, which is a pretty big value. The model fit could be better.
- *The Goodness of Fit Index* (GFI) value is 0.80. Marginal fit.
- *The root Mean Square Residual* (RMR) is 0.028, a score ≤ 0.05. Poor fit.
- *Root Mean Square Error of Approximation* (RMSEA) 0.062 is ≤ 0.08. Good fit.
- Expected Cross Validation Index (ECVI): The ECVI *saturated model* score is 7.25, which is close to the ECVI model score of 8.00. This is a good fit.
- *Non-Normed Fit Index* (NNFI) is 0.96 ≥ 0.90. Good Fit.
- *The normed Fit Index* (NFI) is 0.92 ≥ 0.90. Good Fit.
- *Adjusted Goodness of Fit Index* (AGFI) is 0.73 < 0.90. Good Fit.
- *Relative Fit Index* (RFI) is 0.92 ≥ 0.90. Good Fit.
- *Incremental Fit Index* (IFI) is 0.96 ≥ 0.90. Good Fit.
- *Comparative Fit Index* (CFI) is 0.96 ≥ 0,90. Good Fit.

The following analysis is the analysis of the structural model, which is carried out again after the invalid and reliable indicators are removed. There are two analyses in this section. The first is the model fit analysis, and the next is the casual relationship analysis

An analysis of fit was performed to determine the suitability of the research model with the compatibility model indicators, specifically using absolute fit (Table 5) and incremental fit measures (Table 6). The following are the results of the structural model fit test.

Based on the data analysis, the researcher discovered that the model's fit ranges from poor to good, with 3 poor fit models, 1 marginal fit model, and 8 good fit models (Table 8). As a result, the researchers conclude that the measurement model used in this study is adequate.

The next analysis is casual relationship analysis, which aims to confirm the relationship between latent variables in this study. In this study, the researcher used a significant level of 5% and a t-value of ± 1.965 (one-tailed).

Table 3: Validity and reliability test of customer loyalty variables

Indicator	SLF value	t-value	Conclusion	C.R. value	VE value	Conclusion
CL1	0.75	12.08	Valid	0.88	0.5	Reliable
CL2	0.79	13.11	Valid			
CL3	0.71	11.25	Valid			
CL4	0.78	12.83	Valid			
CL5	0.68	10.41	Valid			
CL6	0.6	8.91	Valid			
CL7	0.73	11.49	Valid			
CL8	0.57	8.35	Valid			
CL9	0.67	10.1	Valid			

Source: Researcher

Table 4: Validity and reliability test of brand image variables

Indicator	SLF value	t-value	Conclusion	C.R. value	VE value	Conclusion
BI2	0.64	9.83	Valid	0.83	0.41	Reliable
BI3	0.54	9.75	Valid			
BI4	0.65	9.89	Valid			
BI5	0.67	10.29	Valid			
BI7	0.62	9.1	Valid			
BI8	0.6	8.82	Valid			
BI9	0.7	10.56	Valid			

Source: Researcher

Table 5: Absolute fit measure

GOF's index	Result	Conclusion
Chi Square (χ^2) Statistic	df=488 χ^2=981,70 P=0.00	Poor fit
Non-centrality parameter (NCP)	493.70 90% confidence interval NCP = (408.20; 586.97)	Poor fit
Goodness of fit index (GFI)	0.80	Marginal Fit
Root mean square residual (RMR)	0,029	Good fit
Root mean square error of approximation (RMSEA)	0.07	Good fit
Expected Cross Validation Index (ECVI)	0.04 90% confidence interval for ECVI (5.08; 5.96)	Good fit

Source: Researcher

From the results of the t-test in Table 7, it can be seen that from the seven paths studied by the researchers, there are six significant paths, namely, (1) The relationship between logistics service quality and customer satisfaction, (2) the relationship between logistics service quality and customer loyalty in logistics services, (3) the relationship between logistics service quality and customer loyalty. Between logistics service quality and customer loyalty in e-commerce, (4) the relationship between logistics service quality and logistics service brand image, (5) the relationship between the quality of logistics services and the brand image of e-commerce, and lastly, (6) customer satisfaction in logistics services to customer loyalty in e-commerce. All of these hypotheses have a t > 1.96.

Table 6: Incremental fit measure

GOF's index	Result	Conclusion
Tucker-Lewis index auto non-normed fit index (NNFI)	0.96	Good fit
Normed fit index (NFI)	0.93	Good fit
Adjusted goodness of fit index (AGFI)	0.74	Poor fit
Relative fit index (RFI)	0.92	Good fit
Incremental fit index (IFI)	0.96	Good fit
Comparative fit index (CFI)	0.96	Good fit

Source: Researcher

Table 7: t-value

Hypothesis	Path	t-value	SLF	Conclusion
H1	LSQ→CS	4.09	0.65	Significant
H2a	LSQ→CLL	10.54	0.87	Significant
H2b	LSQ→CLE	8.36	0.74	Significant
H3a	LSQ→BIL	9.17	0.92	Significant
H3b	LSQ→BIE	6.50	0.74	Significant
H4a	CS→CLL	0.51	0.067	Not Significant
H4b	CS→CLE	2.69	0.24	Significant

Source: Researcher

Table 8: Summary of hypothesis test

Hypothesis	Hypothesis Statement	Research results
H1	The Quality of E-commerce logistics services directly and positively impacts customers in logistics services.	Hypothesis accepted
H2a	The quality of e-commerce logistics services directly and positively affects customer loyalty to logistics services.	Hypothesis accepted
H2b	The quality of e-commerce logistics services directly and positively affects customer loyalty to e-commerce.	Hypothesis accepted
H3a	The quality of e-commerce logistics services directly and positively affects the logistics services' brand image.	Hypothesis accepted
H3b	Quality of e-commerce logistics services directly and positively affects e-commerce brand image.	Hypothesis accepted
H4a	Customer Satisfaction in e-commerce logistics services has a direct and positive effect on customer loyalty in e-commerce logistics services.	Hypothesis rejected
H4b	Customer satisfaction in E-commerce logistics services -direct and positive effect on customer loyalty in E-commerce	Hypothesis accepted

Source: Researcher

However, one path is insignificant because its t < 1.96. This path is the relationship between customer satisfaction and customer loyalty in logistics services, which has a t = 0.51.

Through the results of the t-value test in Figure 2, the researcher can test the hypothesis with a summary as follows in Table 8.

4.5. Discussion

The t-value value obtained from the first hypothesis (H1) is 4.09, which means that the quality of logistics services directly and positively impacts customer satisfaction with Shopee Xpress logistics services. Researchers suspect that several factors that influence customer satisfaction include the ability of couriers to handle customer complaints, couriers' ability to handle products well, the information provided by logistics services such as e-maps, proper delivery progress, and good communication between couriers and customers, and finally the time of delivery of goods to the right and fast hands of customers, will make customers feel satisfied with logistics services. This hypothesis statement is by research conducted by Rachmawati and Agus (2020), Lin et al. (2016), Huang and Satchabut (2019), Yuan et al. (2014), Aisyah (2019) and Wardhani et al. (2020).

The second hypothesis (H2a) yields a t-value of 10.54, indicating that the quality of logistics services directly and positively impacts customer loyalty to logistics services. In this case, the researcher believes that Shopee users will continue to use Shopee Xpress logistics services because of the free shipping offers and some Shopee shops that only offer Shopee Xpress logistics services. This assertion is supported by Rachmawati and Agus's research (2020).

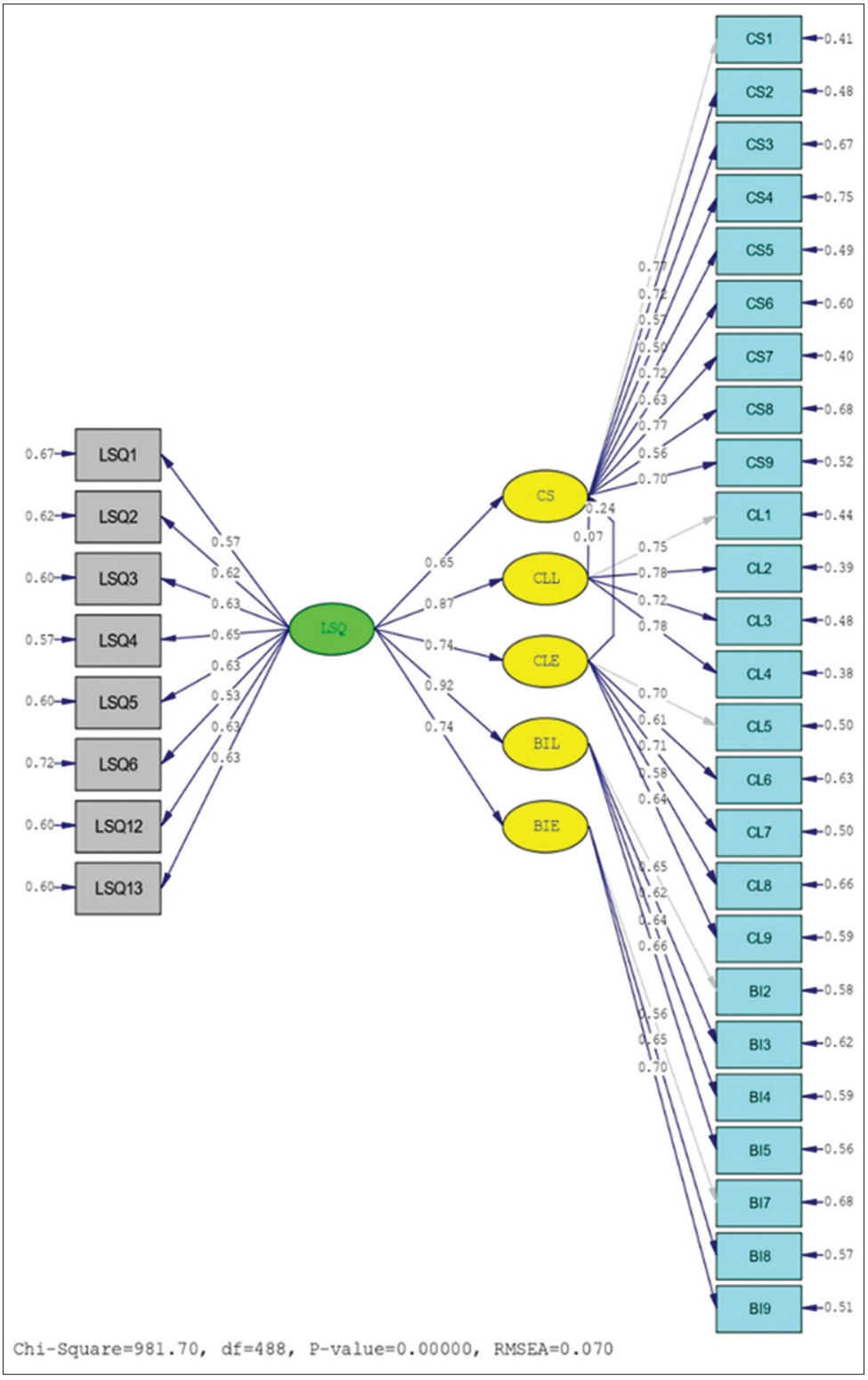
The following hypothesis (H2b) obtained a t-value of 8.36, where the hypothesis can be accepted; this means that the quality of logistics services directly and positively impacts customer loyalty to e-commerce. In this case, the researcher suspects buyers will continue to make purchase repetitions because there is already a sense of buyer trust in using the logistics services that e-commerce provides, so consumer loyalty to e-commerce will be built. This statement also follows the statement (Skurpel, 2020).

The fourth hypothesis (H3a) obtained a t-value of 9.17, which indicates that the hypothesis is accepted. This means that the quality of logistics services directly and positively impacts the logistics service's brand image. When logistics services provide good services to customers, they create a positive brand image in their customers' eyes. This statement also follows research conducted by Muok and Mutuku (2019).

The fifth hypothesis (H3b) has a t-value of 6.50, which, according to the indicator, means that this hypothesis is accepted. This means that the quality of e-commerce logistics services has a direct and positive effect on e-commerce brand image. Like the accepted hypothesis H3a, a good brand image provided by logistics services will also build a positive brand image in e-commerce.

The t-value obtained for the hypothesis (H4a) is 0.51. According to the indicator, this hypothesis is rejected, which means that customer satisfaction in Logistics services has no direct and

Figure 2: Bootstrapping results



Source: LISREL 8.8 processing results

positive influence on customer loyalty when using Shopee Xpress logistics services. This statement is based on research conducted by Lin et al. (2016).

That is, customer satisfaction in logistics directly and positively impacts customer loyalty in e-commerce. Researchers believe that even if customers are dissatisfied with the logistics services provided, they will continue to use Shopee's e-commerce for shopping due to the availability of other logistics services, and customers who are satisfied with the services provided by Shopee and have subscribed to shops in Shopee's e-commerce. So that customers continue to use Shopee as their first shopping

destination. This statement is by research conducted by Lin et al. (2016)

5. CONCLUSION

The researcher's goal in conducting this research is to determine the impact of e-commerce logistics service quality, customer satisfaction, customer loyalty, and brand image on the fastest-growing e-commerce in Indonesia, namely Shopee and Shopee Xpress. Researchers discovered the following results:

1. In the case of Shopee and Shopee Xpress, it has been demonstrated that the quality of logistics services has a direct and positive impact on customer satisfaction with Shopee Xpress logistics services.
2. The researcher also found that the quality of logistics services directly and positively affects customer loyalty to logistics services and e-commerce shopee.
3. Customer satisfaction in logistics services is proven to directly and positively affect customer loyalty to an e-commerce shop. Researchers suspect that experience using logistics services can create customer confidence in the quality provided by e-commerce so that customers will continue to use an e-commerce shop as their first choice in online shopping. This statement is also in accordance with research by Skurpel (2020).
4. On the other hand, customer satisfaction with Shopee Xpress logistics services was found to have no direct and positive effect on customer loyalty in Shopee Xpress logistics services. This statement is consistent with Lin et al.'s (2016) research, which found that customer satisfaction with logistics services does not influence customers to use the same logistics service in delivery services because e-commerce collaborates with other logistics services, allowing customers to choose logistics services based on their needs. So, the researcher concludes that customers will continue using Shopee e-commerce as the e-commerce of choice because of other services that e-commerce has provided customers outside of the research. However, in terms of logistics services, Shopee itself has seven other logistics services besides Shopee Xpress, which can have more attractive offers and a choice of logistics services available at different stalls, allowing customers to choose other e-commerce logistics services.
5. The results of this study also show that the quality of logistics services has a direct and positive impact on the brand image of Shopee Xpress and Shopee e-commerce logistics services. The quality of service can influence the company's brand image in the eyes of customers.

This research can be used for e-commerce parties and logistics services, especially Shopee and Shopee Xpress. For Shopee e-commerce, which is also developing its business line in logistics services, namely Shopee Xpress, Shopee must consider not only the quality of its e-services but also the quality of services provided by logistics services, such as timely delivery of goods and delivery to the correct address, and always displays information in real-time where the goods have arrived. Of course, this will have an impact on customer satisfaction and loyalty, as well as the company's brand image. In trusting other third parties' use in logistics services, the shopee needs to sort out further services with good service quality because the quality of logistics services can affect customer satisfaction and loyalty. Thus, both e-commerce and logistics service providers must improve the quality of their services.

REFERENCES

Aaker, D.A. (1992), The value of brand equity. Journal of Business Strategy, 13(4), 27-32.

Agatz, N.A., Fleischmann, M., Nunen, J.A. (2008), E-fulfillment and multi-channel distribution - a review. European Journal of Operational Research, 187(2), 339-356.

Arora, P., Narula, S. (2018), Linkages between service quality, customer satisfaction, and customer loyalty: A literature review. IUP Journal of Marketing Management, 17(4), 30-53.

Badan Pusat Statistik. (2020), In: Kusumatrisna, A.L., Rozama, N.A., Syakilah, A., Wulandari, V.C., Untari, R., Sutarsih, T., editors. Statistik E-commerce 2020. Jakarta: Badan Pusat Statistik. p1-11.

Barnes, S.J., Vidgen, R. (2001), An evaluation of cyber-bookshops: The WebQual Method. International Journal of Electronic Commerce, 6(1), 11-30.

Bienstock, C.C., Royne, M.B. (2010), Technology acceptance and satisfaction with logistics services. The International Journal of Logistics Management, 21(2), 271-292.

Emerson, C.J., Grimm, C.M. (1996), Logistics and marketing components of customer service: An empirical test of the Mentzer, Gomes, and Krapfel model. International Journal of Physical Distribution and Logistics Management, 26(8), 29-42.

Fornell, C., Larcker, D.F. (1981), Evaluating structural equation models with unobservable variables and measurement error. Journal of Marketing Research, 18(1), 39-50.

Hair, J.F., Anderson, R.E., Tatham, R.L., & Black, W. C. (1995) Multivariate data analysis. Englewood Cliffs, New Jersey: Prentice-Hall.

Hair, J.F., Black, W.C., Babin, B.J., Anderson, R.E. (2010), Multivariate Data Analysis. 7th ed. New Jersey: Prentice Hall.

Hati, S.W., Juliati, A. (2019), Analisis pengaruh logistics service quality terhadap kepuasan dan loyalitas pelanggan pada perusahan logistik Jalur Nugraha Ekakurir (JNE). Jurnal Akuntansi, Ekonomi dan Manajemen Bisnis, 7, 240-249.

Huang, G., Satchabut, T. (2019), The relationship between customer satisfaction with logistics service quality and customer loyalty of China E-commerce market: A case of S.F. Express (Group) Co., Ltd. Journal of Rangsit Graduate Studies in Business and Social Sciences, 5(1), 120-137.

Hugos, M. (2018), Essentials of Supply Chain Management. Canada: John Wiley and Sons, Inc.

Jayani, D.H., Mutia, A. (2021), Kunjungan ke Web Shopee Meningkat 5,8% pada Kuartal III 2021. Available from: https://databoks.katadata.co.id/datapublish/2021/11/18/kunjungan-ke-web-shopee-meningkat-58-pada-kuartal-iii-2021

Juga, J., Juntunen, J., Grant, D.B. (2010), Service quality and its relation to satisfaction and loyalty in logistics outsourcing relationships. Managing Service Quality: An International Journal, 20(6), 496-510.

Karunaratna, A.C., Kumara, P.S. (2018), Determinants of customer loyalty: A literature review. Journal of Customer Behaviour, 17(1-2), 49-73.

Kassim, N., Abdullah, N.A. (2010), The effect of perceived service quality dimensions on customer satisfaction, trust, and loyalty in E-commerce settings: A cross-cultural analysis. Asia Pacific Journal of Marketing and Logistics, 22(3), 351-371.

Kotler, P., Keller, K.L. (2016), A Framework For Marketing Management.

Edinburgh Gate: Pearson Education Limited.
Latan, H. and Ghozali, I. (2016) Partial Least Square Concepts, Methods and Applications Using WarpPLS 5.0, Semarang: Diponegoro University Publishing Agency.
Lin, Y., Luo, J., Rong, K. (2016), Exploring the service quality in the E-commerce context: A triadic view. Industrial Management and Data System, 116, 388-415.
Link, H. (2019), The impact of including service quality into efficiency analysis: The case of franchising regional rail passenger serves in Germany. Transportation Research Part A: Policy and Practice, 119, -300.
Malhotra, N.K. (2010), Marketing Research: An Applied Orientation. 6th ed. New Jersey: Pearson.
McColl-Kennedy, J., Schneider, U. (2000), Measuring customer satisfaction: Why, What and How. Total Quality Management, 11(7), 883-896.
Mentzer, J.T., Flint, D.J., Hult, G.T. (2001), Logistics service quality as a segment-customized process. Journal of Marketing, 65(4), 82-104.
Mentzer, J. T., Gomes, R. and Krapfel, R. E. (1989), Physical distribution service: A fundermental marketing concept? Journal of the Academy of Marketing Science, 17(1), 53-62.
Muok, T.O., Mutuku, B. (2019), Effect of service quality on brand image of logistic firms in Mombasa country. The Strategic Journal of Business and Change Management, 6, 502-521.
Naik, C.K., Gantasala, S.B., Prabhakar, G.V. (2010), Service quality (Servqual) and its effect on customer satisfaction in retailing. European Journal of Social Sciences, 16(2), 231-243.
Nisar, T.M., Prabhakar, G. (2017), What factors determine E-satisfaction and consumer spending? Journal of Retailing and Consumer Services, 39, 135-144.
Nugroho, A., Magnadi, R.H. (2018), Pengaruh Kualitas Layanan Terhadap Kepuasan Pelanggan Jasa Pengiriman Lazada Express Saat Harbolnas di E-commerce. Journal of Management, 7, 33-43.
Parasuraman, A., Zeithaml, V.A., Berry, L.L. (1988), Servqual: A multiple-item scale for measuring consumer perceptions of service quality. Journal of Retailing, 64(1), 12-40.
Rachmawati, D.Z., Agus, A.A. (2020), E-Service and Logistics Service Quality in E-Commerce, Study Case: Shopee Indonesia. In: 2020 3rd International Conference on Computer and Informatics Engineering (IC2IE). Institute of Electrical and Electronics Engineers Inc. p218-223.
Ranaweera, C., Prabhu, J. (2003), The influence of satisfaction, trust and switching barriers on customer retention in a continuous purchasing setting. International Journal of Service Industry Management, 14(4), 374-395.
Skurpel, D. (2020), Logistic Service As a Determinant of Customer Loyalty in E-Commerce. Scientific Papers of Apers of Silesian University of Technology Organization and Management Series No. 147. p259-275.
Stank, T.P., Goldsby, T.J., Vickery, S.K. (2003), Logistics service performance: Estimating its influence on market share. Journal of Business Logistics, 24(1), 27-55.
Tarnanidis, T., Owusu-Frimpong, N., Nwankwo, S., Omar, M. (2015), Why do we buy? Modeling consumer selection of referents. Journal of Retailing and Consumer Services, 22, 24-36.
Tjiptono, F. (2008), Service Management Mewujudkan Layanan Prima. Yogyakarta: CV. Andi Offset.
Uncles, M.D., Dowling, G.R., Hammond, K. (2003), Customer loyalty and customer loyalty programs. Journal of Consumer Marketing, 20(4), 294-316.
Wardhani, C.A., Sugianto, A., Hermana, B. (2020), Pengaruh kualitas layanan logistik, kepuasan pelanggan, dan citra merek terhadap loyalitas pelanggan jasa logistik menggunakan structural equation model. Jurnal Ilmiah Teknik Industri, 8, 56-68.
Wijanto, S.H. (2008), Structural Equation Modeling Dengan Lisrel 8.8. Jakarta: Graha Ilmu.
Wijaya, B.S. (2013), Dimensions of brand image: A conceptual review from the perspective of brand communication. European Journal of Business and Management, 5(31), 55-65.
Yuan, X., Shi, L., Li, H. (2014), Research on the Relationship between the Logistics Service Quality and Customer Loyalty in C2C E-commerce. Association for Information Systems. pp104-113. Available from: https://aisel.aisnet.org/whiceb2014/89
Zeithaml, V.A. (2000), Service quality, profitability, and the economic worth of customers: What we know and what we need to learn. Journal of the Academy of Marketing Science, 28, 67-85.
Zieger, S. (2018), Logistics. Victorian Literature and Culture, 46(3-4), 749-752.