The Role of Service Quality in E-Commerce Customer Satisfaction and Loyalty

Putri Izatin Nabila[1], Siti Rahayu[2], Fitri Novika Widjaja[3]

[1,2,3]*Universitas Surabaya, Indonesia*
Email: Putriizatinnabila@gmail.com

Abstract

This study examines the influence of service quality on customer satisfaction and customer loyalty among Millennial and Gen Z users of e-commerce platforms in Indonesia. Using a quantitative explanatory approach, data were collected from 200 respondents who actively shopped online through major platforms such as Shopee, Tokopedia, Lazada, Blibli, and TikTok Shop. Service quality was measured using four e-servqual dimensions: efficiency, fulfillment, system availability, and privacy. Data were analyzed using PLS-SEM through SmartPLS to evaluate the measurement and structural models. The findings reveal that efficiency and fulfillment significantly increase customer satisfaction, while fulfillment and privacy significantly influence customer loyalty. Meanwhile, system availability shows no significant effect on either satisfaction or loyalty, indicating that users perceive it as a basic feature rather than a determinant of experience. The results also demonstrate that customer satisfaction strongly predicts customer loyalty, emphasizing its mediating role in the relationship between service quality and loyalty. Overall, the study highlights the importance of efficient service, accurate fulfillment, and strong privacy protection in retaining e-commerce users from younger generations.

INTRODUCTION

The development of digital technology has brought significant changes to various aspects of Indonesian society, including social interaction patterns, the economy, and lifestyle (Fransisca & Ningsih, 2023). Digital technology not only facilitates access to information but also opens up opportunities for innovation in various fields, ranging from education, entertainment, communication, to economic services (Saladin & Faoziyah, 2024). Digital transformation enables people to carry out activities more efficiently and flexibly, including in trade and business transactions (Nazara et al., 2024). This digitization has also led to the emergence of new platforms that integrate various services into a single ecosystem, such as e-commerce, fintech, and online entertainment services.

Along with advances in digital technology, internet usage in Indonesia has experienced rapid growth. The latest data shows that the number of internet users in Indonesia has reached 224.2 million people, or around 79.5% of the total population (Databoks, 2024). The internet is used for various activities, including communication, entertainment, education, financial services, information searches, and online shopping. A Databoks survey noted that around 92.7% of internet users in Indonesia use the internet to search for product information and shop digitally. This shows that the internet is not only a means of communication, but also a major foundation for the development of the e-commerce sector in Indonesia.

E-commerce is a major sub-sector of Indonesia's digital economy, contributing significantly to the national digital economy. According to a report by Google, Temasek, and Bain & Company in 2024, Indonesia's digital economy is worth USD 82 billion, with e-commerce contributing USD 48 billion or 59% of the total digital economy. Some popular e-commerce platforms widely used by Indonesians include Shopee, Tokopedia, Lazada, Blibli, and TikTok Shop. These platforms offer easy access, attractive promotions, increasingly effective logistics systems, and various digital payment methods that make it easier for consumers to make transactions. Improving service and product quality is key for these platforms to retain and attract consumers amid increasingly competitive competition. The growth of e-commerce is greatly influenced by the behavior of Millennial and Gen Z consumers, who are the most adaptable generations to digital technology. We Are Social in 2024 shows that around 77% of active e-commerce users in Indonesia come from these two generations. Millennials and Gen Z are characterized by their willingness to try new things, prioritize service efficiency, and easily switch platforms if their shopping experience does not meet their expectations. Other data shows that the Shopee and Tokopedia platforms are more widely used by Millennials (aged 25–40), while TikTok Shop and Lazada are more popular among Gen Z (aged 18–24). This emphasizes the importance of understanding e-commerce user behavior based on generation, as their preferences and expectations for services and products differ. Despite the rapid growth of e-commerce, various issues still arise regarding service quality (Ibrahim & Zeebaree, 2025). Common complaints include product mismatches, delivery delays, transaction security, and slow service responses. These conditions have an impact on customer satisfaction, which is fluctuating and can hinder the formation of customer loyalty in the long term.

Research by Sheu & Chang, (2022a) shows that service quality significantly affects customer satisfaction and loyalty on e-commerce platforms. This study emphasizes that responsive, accurate, and secure services, as well as products that meet expectations, are key factors in shaping long-term customer loyalty. Research by O. D. Safi & S. Alagha, (2020) found that obstacles to service quality, such as delayed responses and inaccurate information, can reduce customer satisfaction. Meanwhile, Gani & Oroh, (2021) assert that product quality that is consistent with consumer descriptions and expectations plays a role in increasing customer loyalty. Customer loyalty can be viewed from two perspectives: attitudinal loyalty and behavioral loyalty (Singh et al., 2023). In ecommerce, loyalty is reflected not only in the intensity of repeat purchases but also in the tendency of customers to provide positive recommendations, engage with loyalty programs, and remain resilient against competitor offers (Anora et al., 2025). Loyalty reflects a company's success in creating long term relationships based on value. Previous studies have confirmed the causal relationships among these variables. The study by Sheu & Chang, (2022b) emphasizes that service quality significantly affects customer satisfaction and loyalty, with satisfaction serving as the main mediator. O. D. Safi & S. Alagha, (2020) found that slow responses and inaccurate service information negatively affect satisfaction, which in turn reduces loyalty. Gani & Oroh, (2021) highlight that product quality that matches consumer expectations is an important determinant of loyalty in ecommerce. In addition, Millennial and Gen Z consumers, who are the dominant users of ecommerce, have high expectations and tend to switch brands when their experience is disappointing (Syamsudin et al., 2025). These findings support the view that service quality plays a crucial role in creating customer satisfaction that later leads to loyalty. However, most previous studies are still limited to a single platform or specific region, resulting in

a gap in understanding consumer behavior more broadly, especially among Millennials and Gen Z across various e-commerce platforms.

Based on this background, this study was conducted to analyze the effect of service quality on customer satisfaction and loyalty on e-commerce platforms in Indonesia, focusing on Millennial and Gen Z consumers as the dominant users and main drivers of the market. This study is expected to contribute theoretically to the development of digital marketing literature, as well as practically to industry players in designing strategies to improve service and product quality to strengthen customer loyalty amid increasingly competitive e-commerce competition.

METHODS

This study uses a quantitative approach with an explanatory research method, which aims to explain the causal relationship between the independent variable, namely service quality, and the dependent variables, namely customer satisfaction and customer loyalty, on e-commerce platforms in Indonesia. The explanatory approach was used because this study sought to test hypotheses formulated in the theoretical framework and analyze the direct and indirect effects between variables through statistical testing. The population in this study was active users of e-commerce platforms in Indonesia from the Millennial generation (aged 25–40 years) and Generation Z (aged 18–24 years). These two generations were chosen because they have a high level of digital technology adoption and are the dominant user groups in online transactions. The sampling technique used was purposive sampling, with the following criteria: (1) respondents aged between 18–40 years, (2) actively using e-commerce platforms such as Shopee, Tokopedia, Lazada, Blibli, or TikTok Shop, and (3) having made at least two online purchases of physical products in the last six months. The sample size in this study was 200 respondents, which was considered adequate for multiple regression analysis in quantitative research.Research data was collected through an online survey using Google Forms distributed via social media such as Instagram, WhatsApp, and Telegram. The research instrument used a five-point Likert scale, with a range of values from 1 ("strongly disagree") to 5 ("strongly agree"). The questionnaire consisted of two main parts, the first part containing demographic data of respondents, while the second part contained statements that measured research variables according to indicators that had been determined based on previous theories and research. The data collection instrument was developed from indicators that had been validated by previous research. Next, testing was conducted using SmartPLS, which included testing the measurement model (outer model) and structural model (inner model) to assess validity, reliability, and the relationships between variables. Data processing was carried out using SmartPLS software. Hypothesis testing was conducted through PLS-SEM analysis by looking at the t-statistics and p-value values. The hypothesis was accepted if the t-statistics value was greater than 1.96 and the p-value was less than 0.05. The results of the analysis were used to answer the research objectives and test the five main hypotheses that had been formulated, namely the effect of service quality and product quality on customer satisfaction and its implications for customer loyalty on e-commerce platforms in IndonesiaS.

RESULTS AND DISCUSSION

The Influence of Service Quality on Customer Satisfaction

The PLS analysis results show that service quality consists of only two dimensions: efficiency (SQE) and fulfillment (SQF). These two dimensions were found to have a significant

influence on customer satisfaction. The path coefficient for efficiency is 0.426 with t equal to 5.096 (p equal to 0.000), and the coefficient for fulfillment is 0.253 with t equal to 2.380 (p equal to 0.018). These findings indicate that the main factors determining customer satisfaction are ease of use, easy navigation, fast transaction processes, and the platform's ability to deliver service promises on time.

In contrast, the other two dimensions, system availability (SQS) and privacy (SQP), did not show a significant influence on satisfaction, as indicated by their relatively low t values, t equal to 0.728 (p equal to 0.467) for system availability and t equal to 0.415 (p equal to 0.678) for privacy. These results show that a stable system and data security tend to be perceived as essential features that are already expected in contemporary ecommerce platforms. These aspects no longer influence user satisfaction because they are considered standard requirements. This finding suggests that customer satisfaction is more strongly affected by efficient transaction experiences and reliable service fulfillment than by technical factors such as system stability and data security.

The influence of Service Quality on Customer Loyalty

Fulfillment (SQF) and privacy (SQP) are the two service quality dimensions that have an impact on customer loyalty, which differs from their influence on satisfaction. Fulfillment has a coefficient of 0.161 with t equal to 2.356 (p equal to 0.019), while privacy has a coefficient of 0.211 with t equal to 3.385 (p equal to 0.001). These results indicate that long term relationships and user trust in the platform can be built through accurate service fulfillment and well maintained data security.

However, the efficiency dimension (SQE) does not have a significant influence on loyalty (beta equal to 0.123, t equal to 1.863, p equal to 0.063), even though it was proven significant in forming satisfaction. This shows that although efficiency helps create a positive experience, it is not strong enough by itself to encourage customers to become truly loyal without the support of other factors. In addition, the system availability dimension (SQS) also shows no influence. Therefore, customer loyalty is shaped more by the platform's reliability in delivering promised services and the sense of security provided through personal data protection.

The Influence of Customer Satisfaction on Customer Loyalty

The results show that customer satisfaction has a very strong influence on customer loyalty. The coefficient of 0.421 with t equal to 6.461 (p equal to 0.000) demonstrates this. When customers feel satisfied with their transaction experience, including ease, comfort, and service reliability, they are more likely to become loyal, such as making repeat purchases, recommending the platform to others, and continuing to use the platform even when attractive offers from competitors exist. This suggests that customer satisfaction may be the main factor in maintaining continued use of an ecommerce platform.

Instrument Testing and Hypothesis Examination

Each research instrument used in this study has undergone reliability and validity testing. The results show that the indicators for each variable meet the required criteria for convergent validity, discriminant validity, and construct reliability. In addition, collinearity examination shows that the model does not experience multicollinearity issues because all VIF values are below 5. The model also meets the requirements for model fit, with an SRMR value of 0.083, which remains within the acceptable limit. The results of the hypothesis testing can be seen in Table 1.

Table 1. Summary of Hypothesis Testing Results

No	Influence	T	P	Description
1	SQE → CS	5.096	0.000	Accepted
2	SQF → CS	2.380	0.018	Accepted
3	SQS → CS	0.728	0.467	Rejected
4	SQP → CS	0.415	0.678	Rejected
5	SQE → L	1.863	0.063	Rejected
6	SQF → L	2.356	0.019	Accepted
7	SQS → L	1.475	0.141	Rejected
8	SQP → L	3.385	0.001	Accepted
9	CS → L	6.461	0.000	Accepted

Source : processed data

Several key points can be concluded based on the model estimation results:

a. Efficiency (SQE) and fulfillment (SQF) are proven to increase customer satisfaction.
b. Privacy (SQP) and fulfillment (SQF) influence customer loyalty.
c. Customer satisfaction influences customer loyalty.
d. System availability (SQS) does not influence customer satisfaction or customer loyalty.

These findings show that digital experiences that are efficient, accurate, and secure are the factors most valued by users, especially Generation Z and Millennials, when interacting with ecommerce platforms.

Table 2. Respondent Characteristics

No	Characteristic	Category	Number (n)	Percentage (%)
1	Jenis Kelamin	Male	47	23.50
		Female	153	76.50
2	Umur	17–20 years	23	11.50
		20–29 years	148	74.00
		30–39 years	20	10.00
		40–49 years	7	3.50
		> 50 years	2	1.00
3	Education	Senior High School/Vocational School	91	45.50
		Diploma	10	5.00
		Bachelor Degree	97	48.50
		Master Degree	2	1.00

Table 3. Reliability Test for Variable Items

Variable	Item Code	Item Statements	Cronbach's Alpha

Service Quality – Efficiency (SQE)	SQE1	Application loading is fast	0.692
	SQE2	Recommendations match my needs	
	SQE3	Transaction process is fast	
	SQE4	Application is easy to use	
	SQE5	Application is fast for shopping	
Service Quality – Fulfillment (SQF)	SQF1	Product quantity is adequate	0.863
	SQF2	Products are genuine	
	SQF3	Sellers do not send incorrect items	
	SQF4	Items are not sent to the wrong address	
	SQF5	Delivery is on the promised time	
	SQF6	Dana ditransfer setelah barang diterima	
Service Quality – System Availability (SQS)	SQS1	Application opens easily and runs smoothly	0.703
	SQS2	Website does not experience disruptions	
	SQS3	Fitur chat tidak mengalami kelambatan	
Service Quality – Privacy (SQP)	SQP1	Platform protects data and transaction history	0.650
	SQP2	Does not share personal data	
	SQP3	Secures credit card information	
Customer Satisfaction (CS)	CS1	Shopping experience is satisfying	0.803
	CS2	I feel very satisfied	
	CS3	Using this platform is the right decision	
	CS4	The service is worth the cost	
Customer Loyalty (L)	L1	I like using this platform	0.676
	L2	I will use it again	
	L3	It becomes my priority for online shopping	
	L4	I recommend it to others	
	L5	I do not consider moving to another platform	
	L6	I keep using it even if lower prices exist elsewhere	

Because SmartPLS works with relationships among latent variables, the respondent characteristics table is not directly included in the structural modeling. The respondent profile is still important to discuss because it shows the source of the data and how these attributes may influence response patterns. The demographic results show that most respondents are between 20 and 29 years old, with a majority being female. This composition indicates that the PLS model represents the group that is most active in online shopping. This group is usually more familiar with digital applications and more sensitive to service quality, making their perceptions of efficiency, fulfillment, and privacy more meaningful. Since the main respondents of this study

come from groups that frequently use ecommerce, the PLS modeling results can be considered quite stable.

Meanwhile, the reliability table, which contains Cronbach Alpha values for each construct, is very important for the outer model analysis in SmartPLS. This table shows that all constructs, including SQE, SQF, SQS, SQP, CS, and Loyalty, have Cronbach Alpha values of at least 0.60. In other words, all variables show an adequate level of internal consistency. The higher values for the fulfillment construct (SQF) and customer satisfaction indicate that the indicators of these two constructs move consistently and align well with their conceptual definitions. On the other hand, the loyalty and privacy variables have slightly lower alpha values but are still considered reliable. This condition is acceptable in SmartPLS, especially for predictive social research. After evaluation in SmartPLS, the reliability of this structure shows that the measurement model or outer model is appropriate for use. Once reliability and validity are confirmed, SmartPLS can then calculate relationships among latent variables through path ratio estimation. The reliability table ensures that all indicators used are truly able to reflect their respective constructs before entering the structural analysis stage. Hypothesis testing within the model and the bootstrapping results will ultimately generate more accurate estimates when reliability conditions are satisfactory.

The respondent characteristics structure also supports the findings in the inner model. For example, the fulfillment variable has a high reliability value, possibly because the respondents come from a younger age group that is highly concerned about delivery accuracy and product quality. In addition, the efficiency variable has a fairly high reliability value, likely influenced by the respondents' habit of using various digital applications. The relatively homogeneous composition of respondents in terms of digital application usage contributes to the stability of these variables. Both the respondent characteristics table and the reliability table play important roles in SmartPLS. The characteristics table helps explain the context of the data and why certain variables become more dominant, while the reliability table shows that the constructs meet the measurement standards of PLS SEM, making the model suitable for structural analysis with valid results.

DISCUSSION

The results of this study indicate that good digital services remain an important factor in determining customer satisfaction and loyalty on e-commerce platforms. The significant findings regarding efficiency and satisfaction dimensions show that both are crucial for user experience, especially in digital-based transactions. This aligns with the E-SERVQUAL framework, which positions ease of use, processing speed, and accuracy of service fulfillment as key components in assessing online service quality. In the literature on digital service quality, these two aspects are also described as primary value drivers (Rauf et al., 2025).

These findings are supported by Sheu & Chang, (2022b), who state that customers tend to be highly sensitive to the quality of online interactions in an increasingly competitive digital business environment. Efficiency which includes transaction processing speed, easy navigation, and the convenience of completing activities within the app, can reduce transaction costs and customers' cognitive effort, and is considered to play an important role in shaping customer satisfaction perceptions. Customers are more likely to have a satisfying experience when transactions are completed quickly and without obstacles. Fulfillment, in addition to efficiency, is also essential for customer satisfaction and loyalty. Fulfillment refers to a platform's ability to meet its service promises, such as product accuracy, information reliability, and delivery speed.

According to (Sheu & Chang, (2022b), this element is a key measure of a platform's reliability and has a major impact on overall perceptions of service quality. Consequently, the results of this study support the position of satisfaction as the foundation of a reliable digital service experience.

Meanwhile, the increasingly advanced technological development of the Indonesian e-commerce industry may explain the lack of influence of system availability on customer satisfaction and loyalty. Since the system performance of most major platforms has become stable, system availability is no longer seen as a factor that differentiates service quality between platforms. Customers consider system stability a basic service feature that must already be present. As a result, this aspect no longer plays a significant role in shaping loyalty and satisfaction.

The finding that privacy does not only affect satisfaction but also influences loyalty is also very interesting. This is consistent with Sheu and Chang who state that privacy protection and data security are more closely related to long term strategic factors rather than the immediate experience during a transaction. Customers may not instantly feel more satisfied simply because their privacy is protected, but they will feel safer, more trusting, and eventually more loyal to the platform. This finding is supported by Fatimah and colleagues who state that trust functions as an important mediator between perceived security and loyalty. In other words, the sense of safety created by privacy keeps users tied to a platform. Users may not always notice data security features during transactions, yet they still hold a long term belief that the platform is safe to use, which influences their decision to stay loyal. This shows that privacy is not crucial for satisfaction, but it is critical for loyalty.

In addition, the significant path coefficient values show that customer satisfaction has a significant influence on customer loyalty. This is in line with the theoretical model of Sheu and Chang, as well as other consumer behavior studies, which assert that satisfaction is an important factor in the formation of attitudinal and behavioral loyalty. Customers tend to make repeat purchases and recommend the platform to others when they experience consistently positive interactions. Therefore, they are not easily attracted to competitors. Moreover, this finding supports the argument of Singh and colleagues that satisfaction is the most stable factor influencing repurchase intentions and customer retention in digital services. One of the new contributions of this study is the specific focus on Millennial and Gen Z users, two groups that dominate e-commerce use in Indonesia. Fast service, simple digital processes, and privacy security are expected by both groups. The results of this study provide empirical evidence explaining how each aspect of service quality affects the satisfaction and loyalty of increasingly digital customers.

The study shows that a digital experience that is fast, accurate, and secure is what customers look for the most. E-commerce industry players must prioritize the development of service features that improve efficiency, increase fulfillment accuracy, and maintain data security standards as key strategies for improving digital service quality if they want to retain customers in the long term.

CONCLUSION

Based on the results of the PLS analysis and all research results and discussions, this study shows that digital service quality is still an important factor for e-commerce users, especially Millennials and Gen Z. Two main dimensions, namely efficiency and satisfaction, have been proven to have a significant effect on customer satisfaction: an easy, fast, and barrier-free application experience, as well as the platform's ability to fulfill their service promises. Conversely, the aspects of privacy and system accessibility do not affect satisfaction. Although not strong

enough to directly increase satisfaction, these two elements are considered important features that must be present in modern e-commerce platforms. However, privacy is very important in shaping user loyalty. The sense of security and safety of personal data offered by the platform keeps users loyal and continues to use it in the long term.

The results of the study also show that repeat satisfaction is an important factor in fostering loyalty; when the services provided are always consistent and reliable, customers tend to be more trusting and continue to use the platform. Conversely, efficiency and stable system availability are not strong enough to foster loyalty because both are considered standard features that no longer differentiate platforms from one another.

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