

The Effect of Delivery Timeliness and E-Service Quality Mediated by Customer Satisfaction on Tokopedia's Customer Loyalty in Indonesia

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ABSTRACT

This study aims to analyze the impact of delivery timeliness and e-service quality on the satisfaction and loyalty of Tokopedia customers, as well as to examine the role of customer satisfaction as a mediating variable in the relationship between delivery timeliness, e-service quality, and customer loyalty. A quantitative approach was employed, involving 200 Tokopedia users in Indonesia who had experience using delivery services and had encountered issues regarding delivery timing. Data were analyzed using the Partial Least Squares-Structural Equation Modeling (PLS-SEM) method with the SmartPLS 4.1.1.4 application. The results indicate that delivery timeliness has a positive and significant effect on customer satisfaction, with a path coefficient of 0.410, a T-statistic of 5.223, and a P-value of 0.000. E-service quality also has a positive and significant effect on customer satisfaction, with a coefficient of 0.417, a T-statistic of 5.261, and a P-value of 0.000. Customer satisfaction positively and significantly influences customer loyalty, with a coefficient of 0.539, a T-statistic of 7.706, and a P-value of 0.000. Furthermore, both delivery timeliness and e-service quality individually exert a positive and significant influence on customer loyalty. Customer satisfaction was found to mediate the effect of delivery timeliness on customer loyalty (T-statistic: 4.225; P-value: 0.000) and the effect of e-service quality on customer loyalty (T-statistic: 4.387; P-value: 0.000). R-square values of 0.557 for customer satisfaction and 0.640 for customer loyalty indicate that the model possesses good explanatory power. These findings confirm that improving delivery timeliness and e-service quality, alongside efforts to enhance customer satisfaction, are crucial aspects of strengthening Tokopedia customer loyalty.

INTRODUCTION

The development of information technology and the internet has driven significant changes in various aspects of life, including economic activities and people's consumption behavior. The use of digital technology allows the transaction process to be carried out faster, practically, and without geographical restrictions. In the business world, the development of the internet is one of the important factors that encourage companies to adapt and utilize digital technology in maintaining and expanding the market (Fauziah et al., 2021). Internet access through smartphone devices also makes it easier for consumers to obtain information, compare products, and make online purchases (Juhria et al., 2021).

One form of digital economic development that is experiencing rapid growth is e-commerce. E-commerce is a trading system that allows the process of buying and selling goods and services to be carried out through the internet network, starting from product searches, interactions between sellers and buyers, payment transactions, to the delivery of goods. The presence of various marketplace platforms has provided convenience for consumers while opening up wider opportunities for business actors to reach the market (Fauziah et al., 2021; Rahayu & Lubis, 2020). This condition ultimately encourages competition between e-commerce platforms to improve service quality and retain consumers.

Indonesia's e-commerce industry shows an increasingly competitive level of competition. Based on SimilarWeb data (2025), Shopee has a traffic share of 38%, followed by Tokopedia at 23%, Blibli at 9%, Lazada at 8%, and Orami at 3%. The data shows that Tokopedia is still one of the main platforms in the Indonesian marketplace industry. Meanwhile, data from the Indonesian Internet Service Providers Association (APJII) in the April-July 2025 period shows that Shopee occupies the first position in the marketplace access share at 53.22%, followed by TikTok Shop at 27.37%, Tokopedia at 9.57%, and Lazada at 9.09%. The difference in visitation rates and competition between these platforms shows that retaining customers is an important challenge for any e-commerce company.

In a competitive digital business environment, a company's success is not only determined by its ability to attract new customers, but also by its ability to retain customers through the creation of satisfaction and loyalty. Customer loyalty is a consumer's commitment to continue using or repurchasing a product or service in the future. Loyal consumers tend to make repeat purchases, provide positive recommendations, and have a greater tolerance for service interruptions than customers who do not have an attachment to the company (Kotler & Keller, 2022; Rafiah, 2019). Therefore, e-commerce companies need to pay attention to various factors that can form customer satisfaction as a basis for building long-term loyalty.

One of the important factors in e-commerce services is e-service quality. The quality of electronic services describes the ability of a platform to provide effective and efficient services through a digital system to support consumer needs during the process of searching, purchasing, transacting, and solving problems faced by customers. In the context of marketplaces, the quality of electronic services is related to the ease of use of applications,

system reliability, transaction security, information availability, and the company's ability to provide support to customers in a responsive manner (Juhria et al., 2021). Good service quality is expected to be able to create a positive shopping experience and increase consumer satisfaction.

In addition to the quality of electronic services, the timeliness of delivery is also an important factor in determining customer experience in e-commerce transactions. Consumers generally use estimated delivery time as one of the indicators in evaluating the quality of service received. Delivery of goods that match estimates can increase customer satisfaction, while delivery delays have the potential to lead to dissatisfaction and encourage consumers to switch to other platforms (Arroffi et al., 2021). Thus, the quality of digital services and the performance of logistics services are two aspects that complement each other in creating an optimal customer experience on the marketplace platform.

Tokopedia as one of the major marketplaces in Indonesia faces these challenges along with the high transaction activity on its platform. Based on internal data from the research, the number of orders in the period from April to July 2025 showed a consistent increase, from 2,848,072 transactions in April to 4,056,638 transactions in May, 5,746,465 transactions in June, and reached 8,853,179 transactions in July 2025. The increase in transaction activity shows the high use of the platform, but at the same time it also increases the complexity in service management, especially related to the delivery process and handling customer problems.

This condition can be seen from the increasing number of complaints related to delivery delays during the same period. The research data shows that the number of delayed delivery complaints increased from 7,216 tickets in April to 10,855 tickets in May, 11,751 tickets in June, and 12,264 tickets in July 2025. The increase in complaints indicates that transaction growth has not been fully followed by the ability of logistics services to meet customer expectations. Delays in delivery and service issues that are not addressed immediately have the potential to lower customer satisfaction, which can further affect the sustainability of customer relationships with the platform.

Research on the relationship between service quality, satisfaction, and customer loyalty has been widely conducted in various digital service contexts. Hernando and Nugroho (2022) found that delivery quality affects customer loyalty through customer satisfaction. Asror et al. (2024) also showed that service quality and delivery timeliness affect customer loyalty with customer satisfaction as a mediating variable. In the context of digital services, Novyantri and Setiawardani (2021) proved that e-service quality affects customer loyalty through customer satisfaction, while Septiani (2020) found the role of customer satisfaction mediation in the relationship between e-service quality and customer loyalty.

While previous research has provided evidence on the importance of service quality and customer satisfaction, most research has been conducted in the context of more specific services, such as food delivery services, courier services, digital wallets, and online

transportation. Research that simultaneously integrates delivery timeliness and e-service quality in explaining customer loyalty through customer satisfaction on large-scale e-commerce marketplace platforms is still relatively limited. In addition, the characteristics of the marketplace have different complexities because the customer experience is not only influenced by the digital systems provided by the platform, but also by the performance of the logistics service in the order fulfillment process.

Based on the research gap, this study aims to analyze the effect of delivery timeliness and e-service quality on customer loyalty with customer satisfaction as a mediating variable in Tokopedia users in Indonesia. This research is expected to make an empirical contribution to the development of consumer behavior studies and digital service management, especially in understanding the role of electronic service quality and delivery accuracy in building customer satisfaction and loyalty in the marketplace industry. Practically, the results of the research are expected to be a consideration for e-commerce platform managers in improving service quality and customer experience management strategies in an ongoing manner.

RESEARCH METHODS

This study uses a quantitative approach with an explanatory research design to analyze the causal relationship between delivery timeliness and e-service quality on customer loyalty through customer satisfaction as a mediating variable. The research was conducted on users of the Tokopedia platform in Indonesia who have experience using the delivery services available on the platform. Data collection will be carried out in the period from September 2025 to January 2026.

The research population is Tokopedia users who have made transactions and used delivery services on the Tokopedia platform. Given the large population of Tokopedia users and cannot be identified with certainty, this study uses a nonprobability sampling technique with a purposive sampling approach. The selected respondents are Tokopedia users who have experience making purchases and receiving order delivery through the delivery service available on Tokopedia. The number of samples used was 200 respondents. This number has met the sample size guidelines for studies using Structural Equation Modeling (SEM), which is a minimum of 100 respondents and can be adjusted to the number of parameters and indicators used in the study (Ghozali & Latan, 2021).

Primary data was collected through the distribution of questionnaires to respondents who met the research criteria. The questionnaire was compiled based on indicators from each research variable and measured using a five-point Likert scale, ranging from 1 = strongly disagree to 5 = strongly agree. In addition to primary data, this study also uses secondary data obtained from relevant scientific documents, reports, publications, and literature to support the research analysis.

This research involves four constructs, namely delivery timeliness and e-service quality as independent variables, customer satisfaction as a mediating variable, and customer

loyalty as dependent variables. Delivery timeliness refers to the ability of a delivery service to meet the delivery time and delivery estimates that have been promised to customers. The measurement includes accuracy in service execution and delivery time fulfillment. E-service quality refers to the ability of Tokopedia's electronic system to facilitate the process of searching for information, transactions, delivery, and customer interactions effectively and efficiently. This construct is measured through the aspects of ease of use, system design, reliability, privacy, and responsiveness (Candra & Juliani, 2018).

Customer satisfaction is defined as a customer's evaluation of the suitability between expectations and experiences gained while using Tokopedia's services. Satisfaction measurement includes satisfaction with the fulfillment of customer expectations, user experience, and perceived value (Liting, 2023). Meanwhile, customer loyalty describes a customer's commitment to continue using the service and reusing it on an ongoing basis. Loyalty is measured through the tendency to give recommendations to others, the intention to reuse, and insensitivity to price changes (Hamidin & Hendrayati, 2022). All variable indicators were adapted from previous research and adjusted to the context of Tokopedia's marketplace services.

Data analysis was carried out using the Partial Least Squares-Structural Equation Modeling (PLS-SEM) approach with the help of SmartPLS software version 4. PLS-SEM is used because this study involves several latent constructs that are measured through a number of indicators and aims to analyze the direct and indirect relationships between variables simultaneously. The analysis was carried out through the evaluation of measurement models (outer models) and structural models (inner models).

The evaluation of the outer model was carried out to test the validity and reliability of the construct. Convergent validity was evaluated based on outer loading values and Average Variance Extracted (AVE), while construct reliability was evaluated through Cronbach's alpha and composite reliability values. Discriminant validity was evaluated using Fornell–Larcker and Heterotrait-Monotrait Ratio (HTMT) criteria. In general, a construct is declared to meet reliability if Cronbach's alpha and composite reliability values are at or above 0.70, while adequate convergent validity is indicated by AVE values above 0.50 (Ghozali & Latan, 2021).

Furthermore, an internal evaluation of the model was carried out to assess the model's ability to explain the relationship between variables through the value of the determination coefficient (R^2), predictive relevance (Q^2), and path coefficient. Testing of the significance of the relationship between variables was carried out through a bootstrapping procedure. A relationship is declared significant at a significance level of 5% if the t-statistical value is greater than 1.96 and the p-value is less than 0.05. In addition to direct influences, this study also examines indirect influences to analyze the role of customer satisfaction in mediating the relationship between delivery timeliness and e-service quality on customer loyalty.

RESULTS AND DISCUSSION

Respondent Characteristics

This study involved 200 respondents who used Tokopedia in Indonesia. The characteristics of the respondents were analyzed based on gender, age, occupation, need to use Tokopedia, intensity of use of delivery services, number of transactions, and experience of delivery time incompatibility. These characteristics are important to provide an overview of the user profile that is the source of research data while providing context for the results of testing the relationship between delivery timeliness, *e-service quality*, customer satisfaction, and customer loyalty.

Table 1. Respondent Profiles by Gender

Gender	Frequency	Percentage (%)
Women	106	53%
Male	94	47%
Total	200	100%

Source: Data Processing with SmartPLS 4.1.1.4

Based on Table 1, female respondents amounted to 106 people (53%), while male respondents amounted to 94 people (47%). Thus, the study respondents were dominated by women. The composition shows that the use of Tokopedia in the study sample is relatively more from female consumers, although the difference with male respondents is not too large.

Table 2. Respondent Profiles by Age

Age	Percentage (%)
≤ 20 years old	21%
21–30 years old	39%
31–40 years	29%
> 40 years old	12%
Total	100%

Source: Data Processing with SmartPLS 4.1.1.4

The 21–30 year old age group is the largest group with a proportion of 39%, while the age group of >40 years is the smallest group with a proportion of 12%. The dominance of the 21–30 year age group shows that the users in this study mainly come from the productive age group who are relatively close to digital transaction activities.

Table 2. Respondent Profiles by Type of Job

Jobs	Frequency	Percentage (%)
Student/Student	49	25%
Civil Servant	42	21%
Private Employees	72	36%
Entrepreneurship	37	19%
Total	200	100%

Source: Data Processing with SmartPLS 4.1.1.4

The most respondents were private employees, namely 72 people or 36%, while the least respondents were entrepreneurs as many as 37 people or 19%. This condition shows that Tokopedia users in this study are quite a lot from private worker groups.

Furthermore, based on the needs of using Tokopedia, as many as 150 respondents (75%) use Tokopedia for personal purposes and 50 respondents (25%) for business purposes. All respondents have also used the delivery services available on Tokopedia at least three times and shopped on Tokopedia at least three times in one month. Thus, respondents can be categorized as users who have sufficient experience with Tokopedia's services and the delivery services available in it. The important thing to note is that all respondents (100%) stated that they had experienced a discrepancy in delivery time when shopping at Tokopedia. These findings provide a strong context to the study because it shows that the timeliness of delivery is a real experience experienced by all respondents, so the evaluation of these variables is not just an abstract perception.

Timely Delivery Has a Positive Effect on Customer Satisfaction

The test results showed that the timeliness of delivery had a positive and significant effect on customer satisfaction, with a *T-statistic* value of 5.223 and a *P-value* of 0.000. The value meets the criteria for hypothesis acceptance because the *T-value* is greater than 1.96 and the *P-value* is smaller than 0.05.

Table 3. Hypothesis Testing Results

Variable Relationships	T-statistics	P-value	Verdict
On-time Delivery → Customer Satisfaction	5,223	0,000	Accepted
E-Service Quality → Customer Satisfaction	5,261	0,000	Accepted
Customer Satisfaction → Customer Loyalty	7,705	0,000	Accepted
Delivery Timeliness → Customer Loyalty	2,510	0,012	Accepted
E-Service Quality → Customer Loyalty	2,376	0,018	Accepted

Source: Data Processing with SmartPLS 4.1.1.4

These findings show that timeliness is an important aspect in shaping Tokopedia's customer satisfaction. When the estimated time given can be realized properly, the customer gets an experience that meets his expectations. On the other hand, a mismatch in delivery time can lead to dissatisfaction.

These results are consistent with Agsa et al. (2022), who found that the timeliness of delivery has a positive and significant effect on customer satisfaction. The study obtained a T-statistics score of 2.201. The findings of this study are also in line with Anggraini and Nettysumidartiny (2021), who show that the timeliness of delivery is one of the important elements in the quality of delivery services.

Thus, the results of the study reinforce the findings of previous research that the more consistent the delivery time is according to the estimate, the higher the likelihood of consumers feeling satisfied. In the context of Tokopedia, this result becomes increasingly relevant because all study respondents have experienced a discrepancy in delivery time. Therefore, the management of delivery timeliness should be an important part of improving the customer experience.

E-Service Quality Has a Positive Effect on Customer Satisfaction

The test results showed that e-service quality had a positive and significant effect on customer satisfaction with a T-statistic of 5.261 and a P-value of 0.000. Thus, the second hypothesis is accepted. These findings are in line with Juhria et al. (2021), who found that e-service quality has a positive and significant effect on customer satisfaction. The results of the study are also consistent with Yanto and Anjarsari (2021), who show that improving the quality of electronic services is able to improve customer experience and subsequently shape satisfaction.

Empirically, the descriptive results of the study show that the information security aspect received a relatively high rating, while the resolution of complaints by customer service received the lowest score. This condition shows that e-service quality is not enough to only be built through the security and convenience of the system, but also requires a rapid response and problem resolution mechanism. Therefore, improving the quality of Tokopedia's electronic services needs to be carried out comprehensively, starting from information access, tracking transparency, transaction security to customer service response.

Customer Satisfaction Has a Positive Effect on Customer Loyalty

Customer satisfaction has been proven to have a positive and significant effect on customer loyalty with a T-statistic value of 7.705 and a P-value of 0.000. This value is one of the largest T-statistical values in the research model, thus showing that satisfaction has a strong role in the formation of customer loyalty.

The results of this study are in line with Wardhani et al. (2020), who found that there is a positive influence of customer satisfaction on loyalty with a T-statistic of 2,550 and a P-value of 0.012. These findings are also consistent with Tariq and Abbas (2020) and Lin and Chu (2020), which show a positive relationship between customer satisfaction and loyalty.

These findings show that satisfaction is an important mechanism in retaining customers. However, descriptive results show that customers' willingness to recommend services is still relatively low. Thus, the customer satisfaction that is formed has not completely transformed into a form of advocacy loyalty. Tokopedia not only needs to ensure customers are satisfied when a transaction is successful, but also needs to build an experience that encourages customers to voluntarily recommend the platform to others.

Delivery Timeliness Has a Positive Effect on Customer Loyalty

The timeliness of delivery was also proven to have a direct effect on customer loyalty with a T-statistic of 2.510 and a P-value of 0.012. Thus, the better the timeliness of delivery, the higher the customer's tendency to stick with the service.

These results are in line with Sartika et al. (2022), who found the effect of delivery timeliness on consumer loyalty with a T-statistic of 5.169 and a P-value of 0.012. The research shows that consumers tend to give a positive assessment when goods arrive on time or even faster.

The results of this study show that punctuality has two functions at once, namely increasing satisfaction and building loyalty directly. Consumers who get a consistent delivery

experience will form the perception that Tokopedia's services are reliable. Thus, improving the performance of logistics partners is a strategic part of retaining customers.

E-Service Quality Has a Positive Effect on Customer Loyalty

E-Service quality has a positive and significant effect on customer loyalty with a T-statistic value of 2.376 and a P-value of 0.018. Thus, the fifth hypothesis is accepted. These results are in line with Ardila and Rahmidani (2023), who found that e-service quality has a positive and significant effect on customer loyalty. The study produced 2,142 T-statistics. The findings of this study are also consistent with Situmorang et al. (2025), which show that the quality of electronic services affects customer loyalty.

In the context of Tokopedia, this influence can be understood because almost the entire consumer transaction experience takes place through a digital environment. Ease of navigation, accuracy of information, transaction security, speed of response, and ease of obtaining delivery information will shape the overall customer experience. If the experience is consistent, customers have a stronger reason to continue using Tokopedia than to move to another platform.

The Role of Customer Satisfaction as a Mediating Variable

The next test was carried out to find out whether customer satisfaction was able to mediate the influence of delivery timeliness and *e-service quality* on customer loyalty. The results of the indirect effect showed that the two indirect relationships were significant.

Table 4. Indirect Effects Test Results

Indirect Relationships	Original Sample (O)	Sample Mean (M)	STDEV	T-statistics	P-value	Remarks
Timely Delivery × Customer Satisfaction → Customer Loyalty	0,225	0,226	0,053	4,225	0,000	Accepted
<i>E-Service Quality</i> × Customer Satisfaction → Customer Loyalty	0,221	0,221	0,050	4,387	0,000	Accepted

Source: Data Processing with SmartPLS 4.1.1.4

The results in Table 13 show that the timeliness of delivery has an indirect effect on loyalty through customer satisfaction with an original sample of 0.225, T-statistics of 4.225, and a P-value of 0.000. Meanwhile, e-service quality has an indirect influence on loyalty through customer satisfaction with an original sample of 0.221, T-statistics of 4.387, and P-value of 0.000. Both relationships are significant because the T-value is greater than 1.96 and the P-value is smaller than 0.05.

The findings suggest that customer satisfaction is an important mechanism that bridges service experience with customer loyalty. Timeliness of delivery not only directly drives loyalty, but also increases satisfaction which further strengthens loyalty. Similarly, the quality of electronic services does not stop at the formation of a good digital experience, but generates stronger loyalty when the experience first creates customer satisfaction.

These results reinforce previous research on the relationship between service quality, satisfaction, and loyalty. Research on e-service quality shows that better quality of digital services can create satisfaction which then drives loyalty. Septiani's (2020) research, for example, shows that e-service quality has a positive effect on satisfaction and loyalty, while customer satisfaction also has a positive effect on loyalty.

Overall, the results of the study show that Tokopedia's customer loyalty is not formed just because of one aspect of service. Delivery timeliness contributes through the reliability of the logistics process, while e-service quality contributes through the quality of the digital experience. Both factors are then reinforced by customer satisfaction. Thus, increasing customer loyalty requires an integrated approach between the quality of logistics services and the quality of digital services.

CONCLUSIONS AND SUGGESTIONS

Based on the results of research and discussion, it can be concluded that the timeliness of delivery and e-service quality are important factors in shaping Tokopedia customer satisfaction and loyalty. Timely delivery has been proven to have a positive and significant effect on customer satisfaction, which shows that the better the delivery time matches the given estimate, the higher the satisfaction felt by customers. In addition, e-service quality also has a positive and significant effect on customer satisfaction, so the quality of electronic services, which includes ease of access, accuracy of information, security, and service response, also determines the customer experience.

Furthermore, customer satisfaction has been proven to have a positive and significant effect on customer loyalty. These results show that service experiences that are able to meet customer needs and expectations can encourage customers to stay with the service, re-choose it, and have a lower tendency to switch to competitors. Timeliness of delivery and e-service quality have also been proven to have a direct effect on customer loyalty, so that these two aspects not only play a role in shaping satisfaction, but also have a direct contribution to the sustainability of customer relationships with services.

The findings of the study further show that customer satisfaction plays a mediating variable in the relationship between delivery timeliness and e-service quality on customer loyalty. Thus, improved delivery timeliness and electronic service quality can strengthen customer loyalty through increased satisfaction. The R-square value indicates that the model is able to explain 55.7% of the customer satisfaction variation and 64.0% of the customer loyalty variation, while the Q² value indicates that the model has good predictive capabilities.

Overall, this study confirms that Tokopedia's customer loyalty is not only determined by the success of the transaction, but also by the quality of the customer experience during the service process. Therefore, improving the consistency of delivery time, digital service quality, information security, and customer service ability to handle and resolve complaints need to be a concern to increase satisfaction while maintaining customer loyalty.

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