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THE PATH TO LOYALTY: EXAMINING SHOPEE'S SERVICE ATTRIBUTES AND CUSTOMER SATISFACTION AMONG CUSTOMERS IN JAKARTA

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Abstract

Background: The post-pandemic period has presented challenges for e-commerce platforms, including Shopee, as they face declining customer loyalty, which affects user experience. Customer loyalty is a critical factor in sustaining business competitiveness, making it essential to understand the role of service attributes.

Purpose: This study examines the impact of information quality, privacy, security, and delivery on customer loyalty among Shopee users in Jakarta. Furthermore, it investigates the role of customer satisfaction in mediating the relationship between service attributes and customer loyalty.

Design/methodology/approach: The study employed a quantitative approach using the Partial Least Squares Structural Equation Modeling (PLS-SEM) version 4.1.0.8 for data analysis. A total of 241 Shopee users in Jakarta were surveyed through a purposive sampling method. Data was collected using Google Forms distributed through various social media platforms, ensuring responses from active Shopee users familiar with the platform's service attributes.

Finding/result: Information quality, security, and delivery positively and significantly impact customer loyalty, impact on customer loyalty. Information quality, privacy, security, and delivery positively and significantly influence customer satisfaction. Customer satisfaction mediates the effects of information quality, security, and delivery on customer loyalty.

Conclusion: Service attributes, namely information quality, security, and delivery, are essential in influencing customer loyalty through customer satisfaction among online shopping platform users.

Originality/value (State of the art): This is the first study of how service attributes influence customer loyalty among Shopee users in Jakarta through the mediating role of customer satisfaction. This study contributes to the existing literature by addressing an empirical gap and examining the influence of information quality on customer loyalty and privacy on customer satisfaction. While previous studies have explored these relationships, inconsistencies in findings highlight the need for further empirical validation. By reassessing these variables within the context of Shopee users in Jakarta, this research provides deeper insights into their roles in shaping customer satisfaction and loyalty.

Keywords: Service Attributes, customer satisfaction, customer loyalty, Shopee, e-commerce

INTRODUCTION

Background

In the era of digitalization, the Internet has become an inseparable part of people's daily lives. In Indonesia, internet usage continues to grow rapidly, with 66.5% of the total population, or around 185.3 million active users as of January 2024 (Wearesocial & Meltwater, 2024). This rapid development creates great opportunities for e-commerce, revolutionising how consumers shop and driving economic growth in various sectors. E-commerce allows transactions to be carried out online with ease of access, speed, and broader reach.

One of the leading e-commerce platforms in Indonesia is Shopee. During the COVID-19 pandemic, Shopee recorded a significant spike in transactions, with transaction volume in the second quarter of 2020 increasing by 130% compared to the previous period (Detiklnet, 2020). Shopee has shown a decreasing number of yearly visitors compared to the pandemic.. In 2021, Shopee recorded 340 million users. However, there were only 270 and 295 million Shopee users in 2022 and 2023 (Curry, 2025). In February 2024, Shopee recorded 235.9 million visits in a month. However, recent data recorded that Shopee's monthly visitors decreased by 4.01% in 2024 (eDot, 2025). Due to the rising concern of decreasing monthly visitors, Shopee needs to maintain customer loyalty, which fluctuates and is influenced by various factors, including technical challenges that users repeatedly complain about.

To overcome these challenges, it is essential for e-commerce like Shopee to focus on exogenous variables that play a role in increasing customer loyalty, namely information quality, privacy, security, and delivery. Good information quality can help customers obtain relevant and accurate product information, supporting purchasing decisions (Mofokeng, 2021). Guaranteed privacy and security can increase customer trust in the platform, while timely and reliable delivery contributes to a satisfying shopping experience Sitompul *et al.* (2023).

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However, these exogenous variables do not directly affect customer loyalty. Customer satisfaction is essential as a mediating variable that connects exogenous variables with endogenous variables, namely customer loyalty. High customer satisfaction, which comes from a positive shopping experience, encourages customers to remain loyal to the platform (Supertini *et al.*, 2020). Satisfied customers tend to make repeat transactions and are reluctant to switch to other platforms.

Previous research has identified the determinants of customer satisfaction. Prior studies have studied the determinants of customer satisfaction, such as service quality, perceived quality, and omnichannel implementation¹⁰ (Putra & Sobari, 2024). Cempaka and Hadiprawoto (2025), Mofokeng (2021), Mahendra *et al.* (2021), and Haykal *et al.* (2023) concluded that information quality has positive and significant influence on customer satisfaction. Haq and Awan (2020) also found that privacy positively affects customer satisfaction. Research conducted by Tamara *et al.* (2021) also confirmed security as one of the determinants of customer satisfaction. Furthermore, Kaligis *et al.* (2024) found that delivery has positive influence on customer satisfaction. In relation to customer loyalty, Aqitika *et al.* (2024) confirmed that customer satisfaction has a positive and significant effect on customer loyalty.

Although many studies show a positive relationship between exogenous variables and customer loyalty, there are different research results. Studies conducted by Mofokeng (2021) and Islami and Putra (2024) found that information quality has a positive and significant effect on customer loyalty, while Sanjaya and Hapsari (2021)'s study showed a positive but insignificant effect. Meanwhile, the privacy variable also shows mixed results. Basith and Sugiyanto (2023)'s study stated that privacy does not have a significant effect on customer satisfaction, while the study conducted by Perdana *et al.*

(2024) showed a significant effect. Prior studies also concluded that security have been found to positively and significantly influence customer loyalty (Saputri & Karsono, 2023; Hosang & Ariadi, 2023). Research conducted by Olivar and Leon (2023) also confirmed that delivery has positive and significant effect on customer loyalty.

Different approaches have been employed in prior studies to investigate the determinants of customer loyalty. Chotisarn and Phuthong (2025) investigated the determinants of customer loyalty by combining four theories, namely Technology Adoption Model (TAM), SERVQUAL model, Stimulus-Organism-Response (SOR) theory, and Humannes-Value-Loyalty (HVL) model. Le et al. (2025) used the customer perceived value theory to study the drivers of customer loyalty among Vietnamese energy-efficient appliances customers. Furthermore, Katili et al. (2024) have also employed the Theory of Planned Behavior (TPB) and Information system success model (ISSM) to study the factors influencing the customer loyalty of Gojek, a ride-hailing app, customers in Indonesia. Mehrabioun (2024) has also studied the drivers of continuance intention by using the Expectation-Confirmation Theory. The Expectation-Confirmation Theory states that customers' intention to repurchase a product from a certain seller is influenced by their satisfaction. This research uses the Expectation-Confirmation Theory due to the theory being the most suitable to study how satisfaction influences customer loyalty.

In addition to its theoretical contributions, this research also holds practical significance for e-commerce businesses, particularly Shopee. The findings can serve as valuable input for companies in formulating service and product strategies to enhance customer satisfaction and loyalty. Given the increasingly competitive nature of the e-commerce industry, understanding the key factors that influence customer behavior is crucial for businesses striving to maintain a loyal customer base. Therefore, this study is expected to offer practical insights that can help Shopee and other e-commerce platforms develop more effective strategies to sustain and improve customer loyalty.

METHODS

Research Location and Time

This research is conducted from June to September 2024 in Jakarta. The online questionnaire in the form of Google Form is distributed through multiple social media platforms, including Instagram, WhatsApp, Line, and Telegram. Respondents who do not meet the criteria of being domiciled in Jakarta will be eliminated based on the screening questions regarding the area of domicile of the respondents.

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Types and sources of data

This study collects quantitative data because it gathers numerical data from respondents through structured online questionnaires. The responses are analyzed using statistical methods to examine relationships between variables such as information quality, privacy, security, delivery, customer satisfaction, and customer loyalty. Additionally, the study employs a sample size calculation method (inverse square root method) and follows statistical significance principles, further confirming its quantitative research approach. The type of data instrument used in this research is primary data, as the researcher directly collects data from the source by distributing an online questionnaire via Google Forms. The questionnaire was shared through various social media platforms, including Instagram, WhatsApp, Line, and Telegram.

Data collection techniques

The data are collected by using online questionnaires through Google Form distributed through various social media platforms, including Instagram, WhatsApp, Line, and Telegram, from June to September 2024 in Jakarta. The respondents of this research must meet specific criteria: having made at least two

transactions on Shopee, having transacted within the past six months, being over 17 years old, and residing in Jakarta. This study also employs the inverse square root method, which determines the minimum sample size based on statistical significance and power levels. Considering a significance level of 5% and a path coefficient of 0.2, the minimum sample size calculated is 155 respondents (Hair *et al.*, 2022). Drawing on previous research, such as the study conducted by Mofokeng (2021) with 287 respondents, this research sets a minimum sample size of 200 respondents. By the end of the collection period, this research managed to collect 254 responses. After the selection phase, this research managed to obtain 241 responses.

Data analysis techniques

The data collected in this research is analyzed and processed using SmartPLS 4.1.0.8, employing the Partial Least Squares Structural Equation Modeling (PLS-SEM) method for statistical analysis. PLS-SEM is particularly suitable for this study as it allows for the examination of complex relationships between multiple independent and dependent variables, making it an effective approach for assessing customer loyalty and satisfaction in the e-commerce industry. This method is widely used in business and social science research due to its ability to handle small to medium sample sizes while providing robust results. In addition to PLS-SEM, descriptive statistical analysis is used to examine the characteristics of respondents, including gender, age, domicile, occupation, and shopping behavior on Shopee. Frequency distribution and percentage analysis are applied to summarize respondent demographics, ensuring a comprehensive understanding of the study sample.

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To ensure the accuracy and reliability of the findings, this study conducts a comprehensive validity and reliability assessment before hypothesis testing. Convergent validity is evaluated to determine whether the indicators effectively measure the intended constructs, while discriminant validity confirms that each construct is distinct. Additionally, reliability tests, such as Cronbach's alpha and composite reliability, verify the internal consistency of the data. Once validity and reliability are established, the study examines the R-square (R^2) values, which indicate the proportion of variance in the dependent variables explained by the independent variables. A higher R^2 value suggests a stronger explanatory power of the model. Finally, hypothesis testing is conducted using SmartPLS, where path coefficients, t-values, and p-values are analyzed to determine the statistical significance of relationships between variables. Through this rigorous analytical approach, the study provides meaningful insights into the factors influencing customer loyalty in the Shopee marketplace.

Hypothesis

According to Wang and Yan (2022), information quality is the ability of how information may benefit the customers. The marketing significance of information quality lies in its strong influence on consumers' willingness to adopt information and make purchasing decisions. The quality and attributes of online information play a crucial role in shaping tourists' decision-making processes. Information quality is something that is relative and oriented towards the needs of users or recipients of information. Information quality must be able to meet user needs and be relevant to user goals. Good information quality is accurate, free from errors and able to provide current data. Information quality is determined by how the information is used by the user concerned.

Islami and Putra (2024) found that information quality positively and significantly affected customer loyalty. Mahendra *et al.* (2021) conducted a study to analyze the effect of information quality on customer satisfaction. The results of this study show a positive and significant effect of the information quality variable on customer satisfaction. Haykal *et al.* (2023) conducted a study to empirically test the effect of information quality on customer loyalty, with customer satisfaction as a mediating variable. They found that information quality positively and significantly affects customer loyalty with customer satisfaction as a mediator.

H_{1a} : IQ has a positive and significant impact on CL.

H_{1b} : IQ has a positive and significant impact on CS.

H_{1c} : IQ has a positive and significant impact on CL, with CS as a mediator.

In this research, Gutierrez *et al.* (2019) define privacy as an important issue in traditional communication and online environments. Therefore, it is important to consider in customer decisions to be loyal to online services. Shankar and Jebarajakirthy (2019) found that privacy positively and significantly affects customer loyalty. Haq and Awan (2020) found that privacy has a positive and significant effect on customer loyalty. Irgui and Qmichchou (2023) discovered that customer satisfaction can mediate positively and significantly from the privacy variable to customer loyalty.

H_{2a} : PRIV has a positive and significant impact on CL.

H_{2b} : PRIV has a positive and significant impact on CS.

H_{2c} : PRIV has a positive and significant impact on CL, with CS as a mediator.

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According to Şchiopu and Costea (2015), security is an important element that defines the quality of a system, represents the capacity of a system to preserve its functional characteristics under pressure of external disruptive agents capable of representing danger for the system, for the environment of the system, and for the lives of people inside the defined risk zone.

Security is an important element in maintaining the system's quality from various external threats to protect its functionality. Security also includes users' sense of security that their financial and personal data are protected. Security is also useful for managing information and privacy from hackers and ensuring that data is not distributed to other parties.

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Saputri and Karsono (2023) found that security had a positive and significant effect on customer loyalty. Previous study conducted by Evert and Ruslim (2024) determined that security has a positive and significant effect on customer satisfaction. Iqbal *et al.* (2021) also concluded that security has a positive and significant effect on customer loyalty with customer satisfaction as a mediator.

H_{3a} : SEC has positive and significant impacts on CL.

H_{3b} : SEC has positive and significant impacts on CS.

H_{3c} : SEC has a positive and significant impact on CL, with CS as a mediator.

Indrayani (2021) defines delivery services as the main supporting factor to ensure buying and selling transactions conducted by online shops with consumers can run well. Delivery is an important factor in sending an item to the recipient, including timely delivery, delivery to the destination address, and security. This delivery factor is the success of transactions between online sellers and buyers if the delivery is of good quality.

Kaligis *et al.* (2024) examined the effect of delivery on customer satisfaction on JNE customers. The results of their study indicate that delivery has a positive and significant effect on customer satisfaction. Apriyadi *et al.* (2023) found that delivery positively and significantly affects customer loyalty with customer satisfaction as a mediator.

H_{4a} : DEL has positive and significant impact on CL.

H_{4b} : DEL has positive and significant impact on CL.

H_{4c} : DEL has a positive and significant impact on CL, with CS as a mediator.

According to Syahsudarmi (2022), customer satisfaction is stated as follows: Customer satisfaction is a person's feeling of pleasure or disappointment that arises after comparing the performance (outcome) of the product being thought of against the expected performance (or result). Kim *et al.*

(2024) state that customer loyalty is a strong and ongoing relationship, built through a mutual value exchange between customers and firms. It emerges when firms effectively meet customers' needs and desires by providing quality products or services, leading to positive customer feedback and engagement. In return, customers develop trust in the firm, which fosters long-term commitment and repeated interactions. Ultimately, this loyalty strengthens the overall relationship between customers and firms, creating a cycle of satisfaction and trust.

Customer loyalty is a positive belief in a company's value, leading to increased purchases over time. Customer loyalty is a form of commitment to a product or service they use consistently. This loyalty occurs when a situation or form of marketing tempts them to switch. Customer loyalty is based on positive beliefs from the company and remains with customers even if there are mistakes or unsatisfactory services from the company. Haykal *et al.* (2023) conducted a test on the effect of customer satisfaction on customer loyalty variables. The sampling method used non-probability sampling found that customer satisfaction significantly and positively affects customer loyalty.

H₅: CS has positive and significant impact on CL.

Framework of Thought

The framework of thought depicted in the form of research model can be seen in Figure 1 below. This research suggests that service attributes, namely **information quality**, **privacy**, **security**, and **delivery**, directly and positively affect **customer loyalty**. The framework hypothesises these relationships in H1a, H2a, H3a, and H4a. This research also posits that **information quality**, **privacy**, **security**, and **delivery** directly and positively influence **customer satisfaction**, as depicted in H1b, H2b, H3b, and H4b. Consequently, this research suggests that customer satisfaction mediates the relationships between service attributes and customer loyalty, as depicted in H1c, H2c, H3c, and H4c. Furthermore, this research also suggests that customer satisfaction is also presumed to have a direct and positive influence on customer loyalty, as depicted in H5.

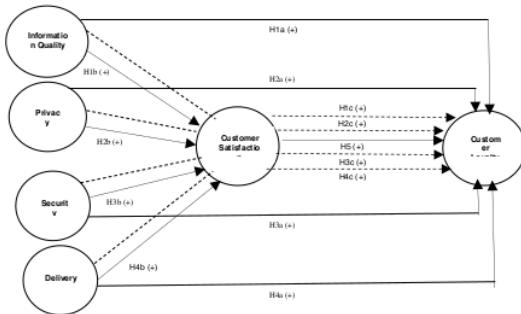


Figure 1. Research Model

The straight or normal lines indicated direct relationships between the variables. The direct relationships are shown by H1a, H2a, H3a, H4a, H1b, H2b, H3b, H4b, and H5. The dashed lines depict how the variables are related through indirect relationships between the independent, dependent, and mediating variables. The indirect relationships are as shown in H1c, H2c, H3c, and H4c.

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RESULT

The respondents in this study consisted of 34% men and 66% women, the majority aged 18-24 years (66%), with the majority domiciled in West Jakarta (47.70%). Most respondents were students (50.60%) with monthly expenses of less than IDR 3,000,000 (53.10%). Most respondents had used Shopee for 1-5 years (60.60%) and the most frequently purchased product category was clothing (44.80%).

According to the assessment as seen in Table 1, the loading factor value of each indicator is valid because it has a value above 0.70 (Hair *et al.*, 2022). Similarly, Table 1 shows the results of the Average Variance Extracted (AVE) value, proving that each variable in this study is valid. Table 1 shows reliable results because all variables have a Cronbach's alpha value higher than 0.70 as well as a composite reliability value higher than 0.70. The instruments in this study have strong internal consistency and each variable can be used to measure the construct (Hair *et al.*, 2022).

Based on the cross-loadings analysis results and Fornell-Larcker criteria, all the variables are also considered valid (Hair *et al.*, 2022). The R-Squared value of the customer loyalty variable is 0.590. This means that a moderate influence of 59% of the variation in the customer loyalty variable can be explained by information quality, privacy, security, delivery, and customer satisfaction, while the remaining 41% can be explained by variations in other variables (Hair *et al.*, 2022).

Table 2 shows that the delivery, information quality, privacy, and security variables positively influence customer loyalty and satisfaction. The customer satisfaction variable has also been proven to positively influence customer loyalty. The delivery, information quality, privacy and security variables also positively influence customer loyalty, with customer satisfaction as a mediating variable in testing indirect relationships. The customer satisfaction variable contributes most significantly to changes in the increase or decrease of the customer loyalty variable with a path coefficient of 0.392. Meanwhile, the information quality variable contributes most significantly to changes in the increase or decrease of the customer satisfaction variable with a path coefficient of 0.321. The information quality variable contributes most significantly to changes in the increase or decrease of the customer loyalty variable, with customer satisfaction acting as a mediating variable with a path coefficient of 0.126.

Table 1. Measurement Items, Convergent Validity, and Reliability Testing Results

Measurement Items	References	Factor Loading s	AVE	α	CR
IQ = Information Quality					
Latest Information		0.626	0.801	0.801	
Clarity of Information	(Mofokeng, 2021; Aslam <i>et al.</i> 2019)	0.827			
Relevance of Information		0.785			
Ease of Transaction		0.789			
		0.764			
PRIV = Privacy					
Transparency Data		0.643	0.861	0.869	
Clarity of Privacy Policy		0.787			
Data Minimization	(Mofokeng, 2021)	0.824			
Consent for Data Sharing		0.725			
Compliance with Data Protection Law		0.831			
		0.836			
SEC = Security					
Payment Information Protection		0.675	0.879	0.880	
Detailed Security Information		0.854			
Control Over Data Usage	(Mofokeng, 2021; Aslam <i>et al.</i> 2019)	0.800			
Financial Risk Prevention		0.816			
		0.839			
		0.797			
DEL = Delivery	(Mofokeng, 2021)	0.622	0.798	0.802	

On-Time Delivery	0.759
Order Accuracy	0.834
Good Packaging Quality	0.778
Varied Delivery Methods	0.782
CS = Customer Satisfaction	0.640
On-Time Delivery	0.724
Order Accuracy	0.822
Good Packaging Quality	0.819
Varied Delivery Methods	0.809
On-Time Delivery	0.820
CL = Customer Loyalty	0.662
Recommendation Intention	0.731
Continued Usage Intention	0.833
Platform Preference	0.847
Low Switching Intention	0.789
Frequent Engagement	0.851
Primary Choice	0.824

Table 2. Hypothesis Testing Result

Hypothesis Code	Hypothesis	Original Sample (O)	p-values	Result
Direct Effect				
H1a	IQ → CL	0.297	0.000	Accepted
H2a	PRIV → CL	0.034	0.309	Rejected
H3a	SEC → CL	0.169	0.022	Accepted
H4a	DEL → CL	0.013	0.426	Rejected
H1b	IQ → CS	0.321	0.000	Accepted
H2b	PRIV → CS	0.166	0.043	Accepted
H3b	SEC → CS	0.200	0.017	Accepted
H4b	DEL → CS	0.179	0.015	Accepted
H5	CS → CL	0.392	0.000	Accepted
Indirect Effect				
H1c	IQ → CS → CL	0.126	0.003	Accepted
H2c	PRIV → CS → CL	0.065	0.082	Rejected
H3c	SEC → CS → CL	0.079	0.032	Accepted
H4c	DEL → CS → CL	0.070	0.032	Accepted

Abbreviations: IQ = Information Quality, PRIV = Privacy, SEC = Security, DEL = Delivery, CS = Customer Satisfaction, CL = Customer Loyalty

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Commented [L4]: Suggestion: Add a table of direct and indirect influences and their total influences, so that a stronger influence between direct and indirect influences can be compared to sharpen the managerial implications.

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H_{1a} states that information quality positively and significantly affects customer loyalty. The resulting p-value is 0.000, so H_{1a} is supported. Information quality positively and significantly affects Shopee customer loyalty in Jakarta. The results align with previous studies conducted by Mofokeng (2021) and Islami and Putra (2024), which have found that information quality has a positive and significant effect on customer loyalty. Companies must build information quality that is accurate, clear, relevant, and consistent. Information quality that meets these components makes customers feel comfortable and confident in their transactions.

H_{2a} states that privacy has a positive and significant effect on customer loyalty. The resulting p-value is 0.426, so H_{2a} is not supported. Privacy does not have a significant effect on Shopee customer loyalty in Jakarta. This study's results align with research conducted by Muis *et al.* (2021), which states that the more customer privacy is maintained correctly, the less it affects customer loyalty. E-commerce

that cannot provide strong security for users' data cannot form customer loyalty because users must feel satisfied first (Rosalinda & Sinambela, 2023).

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H_{3a} states that security has a positive and significant effect on customer loyalty. The resulting p-value is 0.022, so H_{3a} is supported. Security has a positive and significant effect on Shopee customer loyalty in Jakarta. The results of H_{3a} in this study align with the results of previous studies, namely Saputri and Karsono (2023) and Hosang and Ariadi (2023), where the study stated that security has a positive and significant effect on customer loyalty. Companies need to guarantee customer security by maintaining customer trust, where companies can create a sense of security for customers when making transactions.

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H_{4a} states that delivery has a positive and significant effect on customer loyalty. The resulting p-value is 0.309, so H_{4a} is not supported. Delivery does not have a significant effect on Shopee customer loyalty in Jakarta. This study's results align with research conducted by Adianti and Trimarjono (2024) which revealed that the delivery factor does not have a significant effect on customer loyalty. Customers are suspected to consider the delivery factor not the main factor that can shape their loyalty. In their research, Ashiq and Hussain (2024) stated that delivery, an element of convenience, is not the main factor in building consumer loyalty.

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H_{1b} states that information quality positively and significantly affects customer satisfaction. The resulting p-value is 0.000, so H_{1b} is supported. Information quality positively and significantly affects Shopee's customer satisfaction in Jakarta. This study's results are in line with previous studies conducted by Motokeng (2021), Mahendra *et al.* (2021), and Haykal *et al.* (2023), whose research results state that information quality has a positive and significant effect on customer satisfaction.

H_{2b} states that privacy has a positive and significant effect on customer satisfaction. The resulting p-value is 0.043, so H_{2b} is supported. Privacy has a positive and significant effect on Shopee customer satisfaction in Jakarta. The study's results are in line with previous studies conducted by Haq and Awan (2020) and Santoso and Ruslim (2024), which stated that privacy has a positive and significant effect on customer satisfaction.

H_{3b} states that security has a positive and significant effect on customer satisfaction. The resulting p-value is 0.017, so H_{3b} is supported. Security has a positive and significant effect on Shopee customer satisfaction in Jakarta. The results of the study for H_{3b} are in line with existing research conducted by Evert and Ruslim (2024) and Tamara *et al.* (2021), who stated that security has a positive and significant effect on customer satisfaction in their research.

H_{4b} states that delivery has a positive and significant effect on customer satisfaction. The resulting p-value is 0.015, so H_{4b} is supported. Delivery has a positive and significant effect on Shopee customer satisfaction in Jakarta. The results of H_{4b} in this study are in line with the results of previous studies conducted by Kaligis *et al.* (2024) and Dündar and Öztürk (2020), who stated in their research that delivery has a positive and significant effect on customer satisfaction.

H_5 states that customer satisfaction positively and significantly affects customer loyalty. The resulting p-value is 0.000, so H_5 is supported. Customer satisfaction positively and significantly affects customer loyalty at Shopee in Jakarta. The results of this study for H_5 are in accordance with previous studies conducted by Haykal *et al.* (2023) and Aqmala *et al.* (2021), who stated that customer satisfaction has a positive and significant effect on customer loyalty. Customer satisfaction has an effect on customer loyalty.

The results of hypothesis testing in this study reveal several factors that significantly influence customer loyalty. H_{1c} indicates that information quality positively and significantly impacts customer loyalty with customer satisfaction as a mediator, as evidenced by a p-value of 0.003. This finding is consistent with

previous research by Islami and Putra (2024), Haykal *et al.* (2023), and Mahendra *et al.* (2021), which highlight the importance of accurate, relevant, clear, and consistent information in fostering trust and satisfaction, ultimately leading to customer loyalty. Customers who perceive the information provided as transparent and reliable are more likely to maintain long-term loyalty to the company.

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H_{2c} posits that privacy **positively and significantly affects customer loyalty with customer satisfaction as a mediator**, is not supported in this study, as shown by a p-value of 0.082. This result aligns with the findings of Rosalinda and Sinambela (2023), which suggest that privacy does not significantly impact loyalty in contexts where customer satisfaction is a mediator. A closer examination reveals that this finding may be attributed to the demographic characteristics of the respondents, predominantly aged 18–24 years, representing Generation Z. Generation Z respondents may overlook detailed privacy policies, especially if the services provided meet their expectations, thus diminishing the role of privacy protection in influencing their loyalty.

In contrast, H_{3c} establishes that security has a positive and significant effect on customer loyalty, mediated by customer satisfaction, with a p-value of 0.032. This finding corroborates previous studies by Haq and Awan (2020), Santoso and Ruslim (2024), and Iqbal *et al.* (2021), which emphasize the critical role of security in enhancing customer satisfaction and loyalty. Customers who feel secure about their data and transactions are less likely to worry about risks such as identity theft or fraud, leading to increased satisfaction and loyalty.

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Lastly, H_{4c} demonstrates that delivery **has a positive and significant effect on customer loyalty, mediated by customer satisfaction**, as reflected by a p-value of 0.032. This result supports the research of Sarifah *et al.* (2023) and Apriyadi *et al.* (2023), which highlight the importance of reliable delivery services in meeting customer expectations. Timely and accurate delivery, along with proper handling of goods, enhances customer satisfaction, which in turn drives loyalty.

MANAGERIAL IMPLICATIONS

The managerial implications of this research suggest that companies, especially e-commerce platforms like Shopee, should focus on enhancing information quality and security to foster customer loyalty and satisfaction. The findings indicate that accurate, clear, relevant, and consistent information significantly influences both customer satisfaction and loyalty, emphasizing the need for well-structured product descriptions, transparent pricing, and comprehensive customer support. Security plays a crucial role in ensuring customer satisfaction. Shopee must continuously invest in satisfaction cybersecurity measures, such as encrypted transactions, fraud detection systems, and secure payment gateways, to protect users from data breaches and financial risks.

To enhance information quality and improve customer satisfaction and loyalty, Shopee should implement real-time AI-driven updates to ensure the latest product details, pricing, and stock availability while enabling automated seller updates to minimize discrepancies. Standardizing product descriptions with clear guidelines and a quality check mechanism before listings go live will improve clarity, while personalized recommendations based on user behaviour and intelligent search functions will enhance relevance. Additionally, streamlining the checkout process with fewer steps, one-click purchasing for returning users, and an AI-powered chatbot for real-time transaction assistance will ensure ease of transaction, ultimately fostering a seamless shopping experience and stronger customer loyalty.

Although privacy does not significantly affect loyalty, companies should still maintain strong data protection policies to ensure customer confidence, particularly as privacy concerns may become more relevant over time. While delivery was not a key determinant of loyalty, it significantly influenced satisfaction, suggesting that improving delivery reliability, accuracy, and speed could enhance the overall customer experience. Given that customer satisfaction drives loyalty, Shopee should adopt a

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holistic approach by integrating seamless service quality, security enhancements, and customer-centric strategies to sustain long-term customer relationships.

CONCLUSIONS AND SUGGESTIONS

Conclusions

The results of the analysis show that information quality, security, and delivery have a positive influence on customer satisfaction. Customer satisfaction has also been proven to have a direct positive influence on customer loyalty. Information quality and security also show a direct and significant positive influence on customer loyalty, while delivery and privacy have a positive but insignificant influence on customer loyalty. This research further finds that all independent variables, namely information quality, privacy, security, and delivery, have indirect positive and significant influences on customer loyalty through customer satisfaction as the mediating variable. Overall, these results confirm the importance of the role of customer satisfaction as a mediator in strengthening the relationship between the independent variables and customer loyalty.

Suggestions

Future research may consider incorporating other variables, such as e-commerce innovation (Tanlim & Ruslim, 2024), corporate social responsibility (Khan *et al.*, 2021), trust (Cardoso *et al.*, 2022) and customer engagement (Kini *et al.*, 2024). For future research, it is also recommended that the sample size be increased to better represent the actual population. A larger sample will help minimize bias and ensure that the study findings more accurately reflect real-world conditions. Additionally, extending the data collection period would enhance the accuracy and representativeness of the results, allowing for more reliable insights into customer behaviour. Future studies should also consider expanding the sample beyond DKI Jakarta to include other cities, such as Bandung, Yogyakarta, Semarang, and Surabaya. This broader geographic coverage would provide a more comprehensive understanding of the variables studied and improve the generalizability of the research findings.

This research also encourages Shopee to enhance user convenience in transactions by optimizing the presentation of feature and service information. Establishing a more structured information centre would help users easily access solutions to their concerns. Additionally, Shopee should ensure greater accuracy in product details, promotional discounts, and pricing to provide clear and reliable information. Strengthening transaction security with real-time notifications can also help users feel safer and more confident when making purchases. To build long-term customer loyalty, Shopee needs to improve overall service quality, including accessibility and response speed.

Furthermore, Shopee should enhance information quality by implementing real-time product availability, pricing, and description updates while ensuring clarity through standardized guidelines and seller compliance checks. Security measures must be reinforced with encrypted transactions, fraud detection systems, and visible security assurances to increase customer trust. Since customer satisfaction significantly impacts loyalty, Shopee should improve its customer service responsiveness, optimize return policies, and introduce personalized support channels. Additionally, while delivery does not directly affect loyalty, its influence through satisfaction suggests the need for more reliable shipping options, tracking transparency, and improved packaging standards. By focusing on these aspects, Shopee can strengthen customer trust, satisfaction, and long-term loyalty.

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CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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