



Original Article

E-commerce Customer Loyalty Model: An Examination of Website design, Information quality, and Satisfaction on Tokopedia Users.

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Abstract:

The rapid growth of e-commerce in Indonesia has intensified competition between platforms, especially between e-commerce platforms. Meanwhile, Tokopedia's index in the Top Brand Award has shown a downward trend over the past five years, but user preference for this platform remains very high. This study examines how website design and information quality influence customer loyalty, both directly and through customer e-satisfaction, among Tokopedia users in Semarang City. This research uses an explanatory quantitative approach with a population of active Tokopedia users in Semarang City. The sample consisted of 199 respondents. Sampling was conducted using purposive sampling techniques, and data was collected through an online questionnaire. The data was analyzed using (SEM-PLS). The results showed that customer loyalty was influenced by information quality and customer e-satisfaction, while website design was found to have no direct influence on loyalty. Website design and information quality were also found to have a significant influence on the customer e-satisfaction variable. Furthermore, customer e-satisfaction significantly mediates the relationship between website design and customer loyalty, as well as mediates the relationship between information quality and customer loyalty. These findings highlight the central role of information quality and customer satisfaction in strengthening loyalty, and suggest that Tokopedia should prioritize improving information quality and user experience design to increase long-term customer retention.

Keywords: customer loyalty; customer e-satisfaction; information quality; website design

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Introduction

Digitalization in the era of the Fourth Industrial Revolution has given rise to e-commerce platforms that facilitate fast and convenient buying and selling transactions without the constraints of time and space. Indonesia has become a country with a high penetration rate for online buying and selling transactions, with Tokopedia becoming one of the e-commerce platforms competing with Shopee. According to a survey by the Indonesian Internet Service Providers Association (APJII), Tokopedia's market share is only around 9.57% compared to its competitors, lagging far behind Shopee (53.22%), which controls more than half of the national e-commerce user access (APJII, 2025).

With such a wide gap in access, this topic warrants further research, especially in urban areas such as Semarang City, which has a dense population and a high level of online shopping culture.

A survey conducted by APJII shows that in 2025, 61.28% of all respondents stated that they felt comfortable shopping online, an increase from the previous year's figure of 46.03% (Seluler.id, 2025). In such conditions, urban areas such as Semarang City tend to have a higher average online transaction volume than rural areas due to better internet access and relatively higher income levels, thereby fostering both the desire and ability to purchase. Loyalty is formed when customers commit to using, buying, or consuming a product repeatedly and consistently in the future, although contextual factors and marketing activities can shift this behavior pattern (Hurriyati, 2005). Ideally, when users feel comfortable and interested in using an e-commerce platform, this situation is converted into strong loyalty to the platform. In this context, Tokopedia can increase comfort through an easy shopping process, quality product information, and guaranteed transaction security to fulfill user trust. If these aspects are managed well, Tokopedia can increase user satisfaction, thereby increasing the likelihood of loyalty and consistent use of Tokopedia.

Customer loyalty is important, especially for the survival of a company (Ayu Wulandari & Vembri Aulia Rahmi, 2025). The main focus of this study is on website design, information quality, customer e-satisfaction, and customer loyalty. By focusing on these four variables, Tokopedia can “attract” new visitors to use their platform and “retain” customers who are already loyal to Tokopedia. An appropriate and consistent focus on user comfort and security is useful in ensuring that customers are satisfied with their experience using Tokopedia (Akbar, 2025). Several previous studies have mentioned that the quality of user experience plays an important role in shaping customer satisfaction and loyalty (Taqdirul Alim et al., 2025), research by (Candrawati et al., 2020; Deliana & Nadila, 2022; Ghali, 2021; Guo et al., 2023a; Indrasari et al., 2022; Misra & Pandey, 2022; Setyaning & Nugroho, 2020; Tang et al., 2025) found that reliable and accurate information and website design have a positive influence on customer satisfaction, which in turn plays a role in shaping user shopping loyalty on e-commerce platforms. These findings indicate that e-commerce platforms must provide quality information to ensure user safety and attractive website design to maintain user comfort.

Other studies have found how information quality determines customer loyalty on online store platforms, making it important for platform managers to provide quality information (Amin, M. A. & Chandra, 2022; Dharmesti & Nugroho, 2013; Misra & Pandey, 2022; T. E. Mofokeng, 2021; Patma et al., 2021; Singh et al., 2025; Yoo et al., 2023). Security, completeness, and good quality of information can enhance the user experience, thereby gradually building loyalty (Hakim et al., 2025). Other findings regarding the relationship between e-satisfaction and customer loyalty have also been reported by (Ghali, 2021; Guo et al., 2023a; Huddin et al., 2024; Kurniadi & Rana, 2023; Singh et al., 2025; Situmorang et al., 2025), whose research found a positive and significant relationship between customer satisfaction and loyalty, emphasizing the importance of customer satisfaction in building loyalty, especially for platforms such as Tokopedia, as an appropriate strategy for generating or retaining customers. In several of the studies mentioned, the results obtained are a combination of variable constructs with direct and indirect relationships. The results of these various studies show a positive and significant relationship, thereby strengthening the hypothesis between variables that have direct and indirect effects.

Referring to previous theories and research results, the results generally show a positive and significant relationship between website design, information quality, customer satisfaction, and customer loyalty. However, several other studies have produced different results. The results of the studies (Dharmesti & Nugroho, 2013; Rahmawaty et al., 2021) show that although information quality and website design have a positive and significant effect on customer loyalty, the relationship between these two dependent variables, which is mediated by customer satisfaction, is not able to mediate the relationship with customer loyalty well. Other studies on online shopping in general also show that E-Satisfaction does not have a significant positive relationship with E-Loyalty (Bernarto et al., 2019; R. A. Pratama et al., 2024; Teaningrum et al., 2025; Wijaya et al., 2021). In the independent variables, both were found to have no relationship with customer satisfaction. Several previous studies mention (Arizal et al., 2025; Qatawneh et al., 2023; Shankar & Jebarajakirthy, 2019) that website design does not always have a significant positive effect on loyalty. Their samples stated that the reasons for using the platform were convenience and security, not the aesthetics of the website. The information quality variable also showed non-positive and non-significant results on customer loyalty, as cited from previous studies (Cantika & Wirdianto, 2022; Sanjaya, 2021; "The Impact of Pre-Sales E-CRM Features on Customer Satisfaction and Customer Loyalty: Examining the Role of Website Usability, Information Quality, and Personalization in e-Commerce Websites," 2025), information quality was not found to have a significant positive effect on consumer loyalty. Instead, other variables such as personalization features had a significant positive effect on user loyalty. A gap in the relationship between independent variables and mediation was also found in several articles. Website design was found to have no significant positive effect on e-satisfaction (Dharmesti & Nugroho, 2013; Patrada & Andajani, 2021), while in other studies focusing on information quality, no significant relationship was found between the information quality of a platform and user satisfaction (Cantika & Wirdianto, 2022, 2022; Rahmawaty et al., 2021). Based on the findings of the above research gap, it can be the beginning and basis for why this model needs to be studied further. The differences in these findings also indicate that the relationship between website design, information quality, e-satisfaction, and e-loyalty is still not entirely clear.

In addition to gaps in previous research, there are also gaps in the phenomena observed in the field. An APJII survey states that in 2025, Shopee will be at the top of the competition among frequently used e-commerce platforms, as evidenced by a total of 54.22% of active users in that year. Meanwhile, Tokopedia is in third place, just below TikTok Shop, with a total of 9.57% active users. According to a survey conducted by Top Brand Award, Tokopedia has experienced a consistent and significant decline in its index over the past five years. Top Brand Award itself is an assessment and award platform in Indonesia that is given to well-known brands for their good performance throughout the year, based on large-scale consumer research (*Top Brand Award.*, 2025). In 2023, the survey stated that Shopee was the leader with an index of 52.80, while Tokopedia only received an index of 4.10. The same trend repeated itself in 2025, where Shopee recorded an index of 39.30, while Tokopedia only received an index of 1.10. These figures are even far below Lazada with an index of 19.60 and Blibli with an index of 18.20. Interestingly, data from Populix in July 2023 shows that Tokopedia is the most preferred e-commerce platform among consumers with 44% of respondents, followed by Shopee with 40% and Lazada with 11%. The contradiction between the declining brand index trend and the high consumer preference for Tokopedia indicates issues in the user experience dimension, such as website design quality, information quality, and satisfaction that are not fully reflected in customer loyalty performance, necessitating further investigation in this study.

From the previous discussion, this study examines website design and

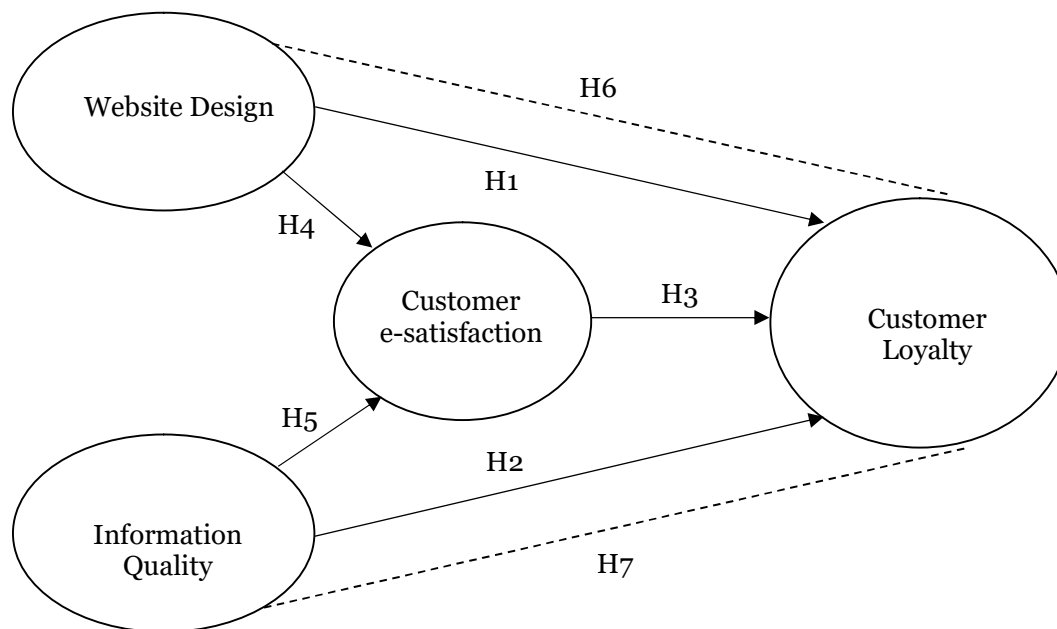
information quality as independent variables and e-satisfaction as a mediator with loyalty as the outcome. The study focuses on Tokopedia platform users by replicating the model presented by (Yoo et al., 2023) in the context of marketplaces and consumer loyalty. This study also examines the role of customer satisfaction, which has shown inconsistent results in previous studies (P. Kedaton, 2021; R. A. Pratama et al., 2024). The results of this study will contribute to the academic world for Tokopedia management, enabling it to optimize and maintain the quality of its website design and the information presented for a better customer experience.

Methods

Research Design

The research design in this study describes the causal relationship between website design, information quality, customer e-satisfaction, and customer loyalty among Tokopedia users in Semarang City. This model is based on a review of previous theories and studies that emphasize the role of information quality and user experience in shaping customer satisfaction and loyalty. Website design and information quality are positioned as independent variables that influence customer loyalty, both directly and indirectly through customer satisfaction as a mediating variable (Slater & Hasson, 2024). Based on this framework, several research hypotheses were formulated and are presented in Figure 1.

Figure 1. Research Framework



In the research design diagram, solid lines indicate direct effects, while dotted lines indicate indirect effects through mediating variables. The above framework shows seven hypotheses in this study, with the following explanations:

- H1: Website Design has a positive and significant effect on Customer Loyalty.
- H2: Information Quality has a positive and significant effect on Customer Loyalty.
- H3: Customer E-satisfaction has a positive and significant effect on Customer Loyalty.
- H4: Website Design has a positive and significant effect on Customer E-satisfaction.

H5: Information Quality has a positive and significant effect on Customer E-satisfaction.

H6: Website Design has a positive and significant effect on Customer Loyalty through the mediation of Customer E-satisfaction.

H7: Information Quality has a positive and significant effect on Customer Loyalty through the mediation of Customer E-satisfaction.

Research Methodology

This study uses a quantitative method with an explanatory research approach. The quantitative method is suitable because the study uses data-based testing, which is then analyzed using numbers and numerical values. The results of this quantitative method are to measure, test hypotheses, and find relationships between variables (Mohajan, 2020). The explanatory approach was chosen to test the cause-and-effect relationship between variables, which formed the basis for formulating hypotheses and testing them using a series of measurable indicators (Assayakurrohim et al., 2023). The data obtained was then analyzed statistically to find causal relationships in the model.

The population is the number of objects or subjects that have certain characteristics. The population becomes a large group that will be studied by researchers by drawing several samples based on the desired characteristics (Casteel & Bridier, 2021). In this study, the population used was Tokopedia users in Semarang City, whose number is unknown.

Because the population in Semarang City is unknown, the researchers used the method from Hair et al., whereby a sample of 100-200 respondents is considered adequate for a population of unknown size. The number of samples selected in this study was 199 respondents, which was chosen based on the rule of thumb guideline and considered adequate for SEM-PLS analysis (AndreasAdiMulyoa et al., 2024; Hair et al., 2018).

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Samples were collected using non-probability sampling through purposive sampling, as only respondents with certain criteria were selected as samples (Hair et al., 2018). By using purposive sampling, the study could focus on finding suitable samples through

predetermined criteria. The criteria for respondents used in this study were as follows:

- 1) Residing in Semarang City
- 2) Aged 17-42 years
- 3) Have made transactions on Tokopedia at least twice in the last 6 months

Respondents will be considered as samples when they meet the research criteria. The form filled out by respondents contains several indicator items with 5 answer choices for each item. The measurement method used in this study is the Likert scale, with a measuring instrument in the form of indicator statements containing 5 choice points. This measurement assigns a value of 1 (strongly disagree), 2 (disagree), 3 (neutral), 4 (agree), 5 (strongly agree) (Riduwan, 2020)

The data collection period was in November 2025. Respondents who had previously filled out the form were then selected one by one for sampling according to the criteria. These criteria were set so that the sample truly represented active Tokopedia users relevant to the research objectives.

Table 1. Measurement Item

Variable	Measurement Item	Source
Website Design	The visual appearance of the Tokopedia app/website is aesthetically appealing and neat.	(Shankar & Jebarajakirtty, 2019; Yoo et al., 2023)
	The Tokopedia app/website looks professional and trustworthy for transactions.	
	Products and information are easy to find because the menus and layout of features on Tokopedia are well organized.	
	The shopping process (selecting items - payment) on Tokopedia is easy to understand and carry out.	
	The interactive features on Tokopedia increase trust and satisfaction.	
Information Quality	The product information on Tokopedia is good, correct, and accurate.	(T. Mofokeng, 2024; B. P. Pratama et al., 2021; Yoo et al., 2023)
	Tokopedia provides information, chat features, and complete facilities to help make purchasing decisions.	
	Information about product stock availability on Tokopedia is always up-to-date.	
	The information (products, stores, video reviews) presented on Tokopedia is relevant to the products I need.	
	Overall, I feel confident and can rely on the information available on Tokopedia.	
Customer E-satisfaction	Tokopedia presents product information in an interesting and enjoyable way.	(T. Mofokeng, 2024; Rita et al., 2019; Yoo et al., 2023)
	Overall, Tokopedia provides a satisfying and enjoyable shopping experience.	
	The experience of using Tokopedia has met the needs and expectations of users.	
Customer	Shopping on Tokopedia is a wise choice.	
	Tokopedia leaves a good impression on users, making them want to shop there again in the future.	

Loyalty	Users are happy to recommend Tokopedia to friends or family.	(Rita et al., 2019; Yoo et al., 2023b)
	Tokopedia is the top choice for online shopping needs.	
	Users are unlikely to switch to other e-commerce platforms even if they offer the same promotions.	

Before structural model analysis was conducted, all questionnaire instruments were first tested for validity and reliability, then the data that passed the test was processed using SEM-PLS. Meanwhile, the hypotheses were tested by analyzing the inner model using the bootstrapping method in Smart PLS 4 software.

In the bootstrapping process, P-values and T-statistics were used to evaluate the significance between variables. A hypothesis was considered to have a significant effect if it had a P-value < 0.05 and a T-statistic > 1.96. In addition, the coefficient of determination (R^2) was used as a measure to determine how much of the variation in the dependent variable could be explained by the independent variables in the model. All analyses, tests, and measurements of the data obtained and declared valid were processed using SmartPLS 4 to ensure accurate and reliable interpretation of the results.

The use of the above methods became the basis for the author to take and test the sample size. In searching for samples, the respondents involved filled out a Google form link that was distributed directly to potential respondents. Based on the sample characteristics, the gap between male and female respondents was not too large. There were 106 female respondents (53.3%) and 93 male respondents (46.7%). In terms of occupation, the majority of respondents were students/university students, numbering 133 (66.8%), followed by private sector/state-owned enterprise employees, numbering 41 (20.6%), freelancers, numbering 10 (5%), civil servants, numbering 7 (3.5%), teachers, and other professional categories, each numbering 4 (2%). The characteristics of the respondents are listed in Table 2.

Table 2. Sample Characteristics

Variable	Category	Frequency	Percentage (%)
Gender	Male	93	46.7%
	Female	106	53.3%
	Total	199	100%
Job	Student	133	66.8%
	Private sector employee/state-owned enterprise employee	41	20.6%
	Freelancer	10	5%
	Civil servant	7	3.5%
	Teacher	4	2%
	Other	4	2%
	Total	199	100%

Research Results & Discussion

1. Outer Model

The outer model is part of SEM analysis that explains the relationship between latent variables and indicators. In this study, the indicators consist of several questionnaire items that will later be measured (Maulida. A, 2025). The outer model focuses on validity and reliability testing, which is conducted before moving on to inner testing that assesses the relationship between variables. The outer test is conducted in the study to show that the research indicators can truly reflect the latent variables in the test. The following are the outer loadings for this study, as shown in Table 3.

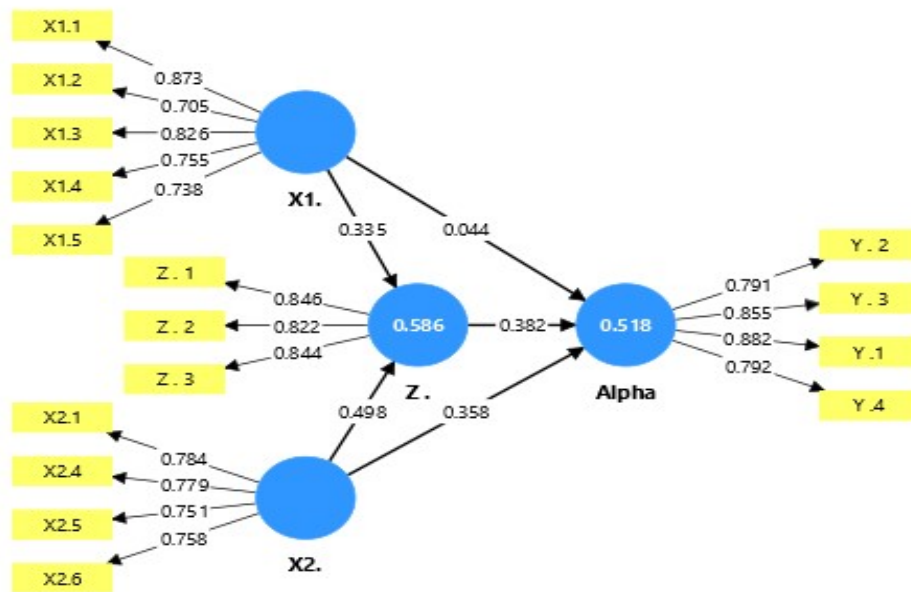


Image 1. Outer Loading

In this study, validity and reliability tests were conducted using outer model analysis to examine the quality of the data obtained. The results of the validity test are presented in Table 3.

Table 3. Validity Test

	Website Design	Information Quality	Cust Satisfaction	Cust Loyalty	Description.
X1.1	0.873				Valid
X1.2	0.705				Valid
X1.3	0.826				Valid
X1.4	0.755				Valid
X1.5	0.738				Valid
X2.1		0.784			Valid
X2.4		0.752			Valid
X2.5		0.706			Valid
X2.6		0.744			Valid
Y.2				0.793	Valid
Y.3				0.853	Valid

Y .1	0.882	Valid
Y .4	0.79	Valid
Z . 1	0.845	Valid
Z . 2	0.821	Valid
Z . 3	0.845	Valid

The validity test was conducted in two stages, because in the first stage there were two statement items with values > 0.7. The values on these items indicated that the information obtained was invalid. The statement items were: X2.2 (0.612) and X2.3 (0.629). Therefore, in the second stage, items X2.2 and X2.3 were removed to retest the validity of the statements in this study. The results are shown in Table 2, where all values of the statement items have a value > 0.7 loading factor, so all are considered valid (Blegur et al., 2024; Fithri et al., 2024).

Table 3. Realibility Test

	Cronbach's alpha	description
Cust Loyalty	0.851	Reliable
Cust Satisfaction	0.788	Reliable
Information Quality	0.769	Reliable
Website Design	0.839	Reliable

In the reliability test, the Cronbach's alpha value was above the recommended threshold of >0.70. Thus, the instrument used in this study has good internal consistency and the ability to measure the intended construct (Ardi & Isnayanti, 2020; Blegur et al., 2024; Fithri et al., 2024). Data that meets the criteria for validity and reliability will then be used to develop a structural model to determine the causality between constructs that have been organized into several hypotheses (Syafiq et al., 2022). Path coefficient analysis is performed to evaluate the strength and direction of the relationship between latent constructs in the model. Each path is assessed based on the coefficient size, p-value significance level, and t-statistic value, so that it can be determined which independent variables have a significant direct effect on the dependent variables (Haji-Othman & Yusuff, 2022).

Table 5. Analisis Pengaruh Langsung dan tidak langsung

Variable	Original sample	T statistics	P values	description
Website Design -> Customer Loyalty	0.044	0.471	0.319	Rejected
Information Quality -> Customer Loyalty	0.358	3.448	0	Accepted
Customer Satisfaction -> Customer Loyalty	0.382	4.045	0	Accepted
Website Design -> Customer Satisfaction	0.335	4.027	0	Accepted
Information Quality -> Customer Satisfaction	0.498	6.813	0	Accepted

Information Quality -> Customer Satisfaction -> customer Loyalty	0.190	3.64	0	Accepted
Website Design -> Customer Satisfaction -> Customer Loyalty	0.128	2.647	0	Accepted

The conclusion from the path coefficient analysis shows that e-satisfaction has a positive and significant effect on customer loyalty (Ayinaddis et al., 2023; Giao et al., 2020; Karim et al., 2023; Redda, 2023; Venkatakrishnan et al., 2023). Information quality has a positive and significant effect on customer loyalty (Kim et al., 2021; Kumar & Ayodeji, 2020; T. Mofokeng, 2021; Yoo et al., 2023; Zariman et al., 2022). The information quality variable has the strongest influence on e-satisfaction (Alshhadat & Raju, 2020; Dirgantari et al., 2020; Hidayat & Anasis, 2020; T. Mofokeng, 2021; Yoo et al., 2023). In contrast to these two findings, website design does not show a significant direct effect on customer loyalty (Dharmesti & Nugroho, 2013; Patrada & Andajani, 2021). However, website design still has a positive and significant effect on e-satisfaction (Giao et al., 2020; Guo et al., 2023b; Tey & Mahmoud, 2020; Yoo et al., 2023). Indirect effect testing was conducted to examine the role of e-satisfaction as a mediating variable in the relationship between the independent variable and customer loyalty. The analysis results show that website design has a positive and significant indirect effect on customer loyalty through e-satisfaction (Ghali, 2021; Guo et al., 2023a; Mavilinda & Nazaruddin, 2022; Qatawneh et al., 2023). Similarly, information quality has a positive and significant indirect effect on customer loyalty through e-satisfaction (Dharmesti & Nugroho, 2013; Misra & Pandey, 2022; T. Mofokeng, 2021; Yoo et al., 2023).

Conclusion

Based on the results of research and discussion regarding the influence of website design and information quality on customer loyalty through customer e-satisfaction as a mediator, the following conclusions were obtained. Website design does not show a significant direct influence on customer loyalty, so improving the appearance and layout alone is not enough to increase user loyalty. Meanwhile, in terms of information quality, customer satisfaction can be achieved through user comfort and security in receiving and accessing information from Tokopedia. The more accurate, complete, clear, and reliable the information presented by Tokopedia is, the greater the tendency for users to continue using the platform and not switch to competitors. Customer e-satisfaction also has a positive and significant effect on customer loyalty. This means that the higher the level of user satisfaction with Tokopedia, the greater the tendency for them to continue using Tokopedia and not switch to other platforms, both in terms of using Tokopedia repeatedly and recommending Tokopedia to others. In conclusion, if Tokopedia can provide good quality information and satisfy platform users, then loyalty among Tokopedia users will be formed and maintained.

Website design has been proven to have a positive and significant effect on e-satisfaction. It was found that Tokopedia's attractive, easy-to-use, and comfortable design contributes to user satisfaction, concluding that website design is a trigger for customer e-satisfaction. Information quality has the strongest influence on e-satisfaction. It was found that the dimension of Tokopedia's information quality is the

strongest influence, so that the accuracy, relevance, and completeness of the information presented by Tokopedia are the main reasons for satisfaction.

Customer e-satisfaction plays an important role as a mediator in the relationship between website design and customer loyalty. The indirect value indicates that although website design does not directly affect loyalty, good design can increase customer satisfaction, thereby contributing to loyalty through this mediation channel. Significant results were also obtained when Tokopedia's information quality was good, with consumer satisfaction being the first thing to increase. This satisfaction then mediates the quality of information on Tokopedia in relation to consumer loyalty, such as the behavior of repurchasing.

Recommendations

Tokopedia shows good results in terms of customer e-satisfaction and customer loyalty. With the quality of information maintained and further improved, users will receive better personalization. The quality of information refers to accuracy, completeness, and timeliness, as these aspects have been proven to have a significant direct impact on customer satisfaction. Customer loyalty is also directly influenced by Tokopedia's good quality. In addition, customer satisfaction, which is influenced by good service information, can have an impact on customer loyalty.

Further research can expand the direction of research by adding or modifying research constructs, for example by adding variables outside this research model. Variables such as e-trust, customer experience, EWOM, ease of use, and personalization can be one option to examine whether these variables can strengthen the relationship between website design and customer loyalty. Changing the mediating variable to moderation may strengthen the relationship between website design and the loyalty of Tokopedia platform users. Researchers can also change the independent variable to see the possibility of broader research results in the future.

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