SERVICE QUALITY AND TRANSACTION SECURITY AFFECTS ON LOYALTY THROUGH SATISFACTION IN ACCESS BY KAI

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ABSTRACT

In the current digital era, the development of information and communication technology is experiencing very rapid developments and changes. The rapid development of information and communication technology has made it easier for humans to carry out daily activities, from searching for information to making transactions that can now be done digitally. This progress encourages digital transformation in various industries, including the public transportation sector which is now increasingly oriented towards digital-based services. The purpose of this study is to examine the quality of service and transaction security on user loyalty through satisfaction as a mediation variable in the Access by KAI. This study uses primary data obtained from the distribution of questionnaires to 130 respondents. The respondent is an Access by KAI user over 17 years old who has purchased a train ticket through the application at least three times. The analysis tools used in the study were validity test and reliability test, R-Square test, predictive relevance test, fit model goodness test, and hypothesis through bootstrapping. The results of this study show that service quality and transaction security have no direct influence on user loyalty with a P-Value of 0.141 and 0.475, in other words, greater than 0.05. However, it has an indirect effect through satisfaction as a mediation variable in the Access by KAI application. Thus, satisfaction has been proven to play a role as a full mediator in shaping user loyalty, this can be seen with each indirect test value minus the T-Statistical value > T-Table and P-Value < 0.05.

Keywords : *User Loyalti, User Satisfaction, Service Quality, Transaction Security*

INTRODUCTION

Information and communication technology in the digital era is currently experiencing very rapid development and change. The rapid development of information and communication technology has made it easier for humans to carry out daily activities, from searching for information to making transactions that can now be done digitally. This progress encourages digital transformat ion in various industries, including the public transportation sector which is now increasingly oriented towards digital-based services.

Changes in consumer behavior that increasingly rely on digital technology encourage companies to adapt by developing digital application-based service systems (Kotler and Keller, 2016). In the context of transportation, the presence of online applications is a solution for people to access travel information, order tickets, and make transactions online without having to come directly to the counter. One of the applications of technology in the transportation sector is the provider of online ticket booking services through the Access by KAI application.

Access by KAI is an official application released by PT Kereta Api Indonesia (Persero) as an application for selling train tickets electronically. The performance of the Access by KAI application shows very positive growth as the main channel for ticket bookings (www.kai.id, 2025). To date, the app has recorded more than 29 million downloads, as well as 23 million registered accounts. Throughout the January–August 2025 period. The following is data from the Indonesian Central Statistics Agency which shows the number of Indonesian Railways passengers for the January-August 2025 period in Figure 1 on the next page.



Kereta Api	Jumlah Penumpang Kereta Api (Ribu Orang)											
	2025											
	Januari	Februari	Maret	April	Mei	Juni	Juli	Agustus	September	Oktober	November	Desember
Jabodetabek	27.522	27.304	26.978	27.552	28.381	28.208	31.401	28.847	-	-	-	-
Non Jabodetabek (Jawa)	7.763	7.067	6.763	8.350	8.197	9.006	9.083	7.748	-	-	-	-
Jawa (Jabodetabek+Non Jabodetabek)	35.286	34.371	33.736	35.902	36.709	37.211	40.484	36.594	-	-	-	-
Non Jawa (Sumatera + Sulawesi)	603	541	503	719	635	668	648	548	-	-	-	-
Kereta Bandara	785	709	662	838	754	773	822	788	-	-	-	-
MRT	3.530	3.477	3.197	3.259	3.632	3.609	4.354	3.660	-	-	-	-
LRT	2.626	2.559	2.436	2.631	2.767	2.811	3.219	3.037	-	-	-	-
Kereta cepat (Whoosh)	526	477	346	469	529	555	580	534	-	-	-	-
Total	43.337	42.034	40.879	44.848	45.084	45.614	50.303	45.583	-	-	-	-

Figure 1. Number of Indonesian Railway Passengers (2025)
Source: Indonesian Central Statistics Agency

The number of train passengers for the 2025 period shows an upward trend throughout the year, with a peak in July, then a slight decline in the following month. The highest number of passengers in July was recorded at 50,105 thousand people and the lowest in March at 40,879 thousand people. This shows a seasonal pattern, where there is a spike in school holidays and holidays such as Eid. From the data above, booking train tickets through Access by KAI dominates most of the passengers.

Supporting data from the Indonesian News Agency stated that during the January-August 2025 period, Access by KAI recorded 17,211,190 ticket sales transactions or equivalent to 71.73%

of KAI's total ticket sales, then business-to-business (20.17%), station counters (6.70%), KAI website (1.19%), vending machines (0.20%), and *Contact Center* 121 (0,02%). This fact confirms that the digitalization presented by KAI is increasingly trusted by the public as a practical, safe, and efficient travel solution.

The quality of services provided by the company is an effort to meet the needs and desires of consumers in order to achieve a level of excellence of what is expected by the consumers themselves if the services received are in accordance with expectations. Service quality can also be interpreted as the difference between customer reality and expectations (Lorensia & Ningrum, 2023). In addition to the quality of services provided, transaction security is also one of the important variables in driving user loyalty through satisfaction. Transaction security is defined as the ability of websites or online service providers to manage and protect consumer information in the form of consumers' personal data and their financial transaction data from data misuse, transaction damage, and theft (Husain et al., 2025). Security is the biggest consideration for users when transacting online, therefore privacy protection and information security management are key to user trust in websites (Tsai et al., 2022).

Satisfaction is the result of a comparison between the performance of the product received and the user's expectations (Kotler & Keller, 2021). Higher levels of customer satisfaction result in increased customer loyalty, which further contributes to improved company performance (Wardhana, 2024). User loyalty is a strong commitment to repurchase or subscribe to a particular product or service in the future, despite the influence of a situation or marketing plan that could potentially lead to a change in Decision (Wardhana, 2024). It can be concluded that loyalty arises from the positive attitude and high satisfaction of consumers towards the product or service received, so they choose to continue using it despite the influence of the situation or offers from competitors.

RESEARCH METHODS

Table 1. Explanation of Variable Operations, Indicators, and References

Variabel	Explanation	Indicator	Mold
Quality of Service (X1)	Service quality is an effort to meet the needs and desires of consumers in order to achieve a level of service that is considered superior to what is expected by consumers after consumers use the product or service.	1. Tangible 2. Reliability 3. Responsiveness 4. Assurance 5. Empathy	Arsyadi *et al* (2025)
Transaction Security (X2)	Transaction security is the ability of websites or online service providers to manage and protect consumer information in the form of consumers' personal data and their financial transaction data	1. Personal data protection 2. Security of payment information 3. Prevention of abuse & fraud 4. Control and security systems	Husain *et al*, (2025)

		5. Cultivate consumer trust 6. Increase user satisfaction	
User Loyalty (Y)	Loyalty is a form of commitment behavior held by customers in purchasing or using favored goods or services repeatedly in the future regardless of the influence and marketing efforts to switch.	1. *Repeat Purchase* 2. *Retention* 3. *Referalls*	Kotler & Keller, (2021)
Satisfaction (Z)	Satisfaction is a situation shown by consumers when they realize that their needs and desires are in accordance with expectations and are well met.	1. Overall satisfaction 2. Confirmation of expectation 3. Comparison to ideal	Tjiptono, (2018)

Type of Research and Population and Sample

This study focused on the user population of the Access by KAI who had purchased train tickets through the application at least three times. The focus of this research is limited to only four variables, namely service quality, transaction security, user loyalty and user satisfaction. This research or research takes place within a period of 4 months, starting in October 2025 and ending in February 2026. Primary data were obtained through a survey using *google form* distributed to respondents and quantitative methods were used in this study.

The sample used in this study was 130 respondents. The questionnaire was distributed to 130 respondents with each item on the instrument being assessed using a Likert scale consisting of a range of 1 to 5. Point 1 stated the rating level of "strongly disagree", point 2 "disagree", point 3 "neutral", point 4 "agree", and point 5 "strongly agree". The data was then processed using SmartPLS software and involved several tests including validity & reliability tests, R-square tests, q-square tests, model goodness tests, and hypothesis tests via *bootstrapping*.

Research Hypotheses

This study proposes several research hypotheses as below:

H1: Service Quality has a direct effect on User Loyalty on the Access by KAI Application
H2: Transaction Security has a direct effect on User Loyalty on the Access by KAI Application
H3: User Satisfaction Affects User Loyalty on the Access by KAI Application
H4: Service Quality has a positive effect on Satisfaction on the Access by KAI application
H5: Transaction Security affects Satisfaction on the Access by KAI application
H6: Service Quality indirectly affects User Loyalty through Satisfaction on the Access by KAI Application
H7: Transaction Security indirectly affects User Loyalty through Satisfaction on the Access by KAI Application

Conceptual Framework

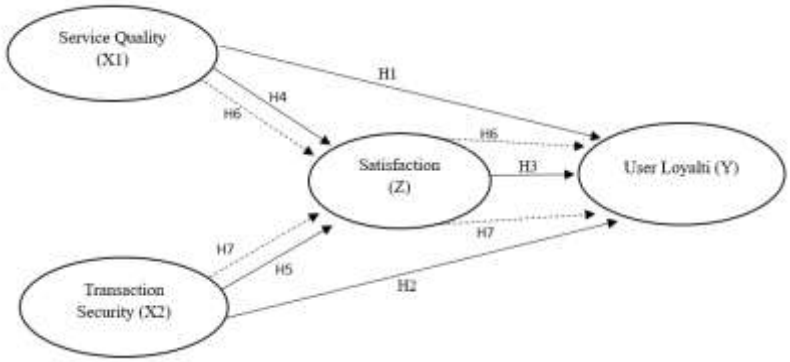


Figure 2. Research Conceptual Framework
Sources: Putra & Rahaejo (2021); Pratopo (2021); Dirnaeni et al., (2021); Saputri & Sukresna (2022); Wibowo & Rachbini (2025); Harsono et al., (2025); Husain el al., (2025)

Data Analysis and Testing Techniques

The model used in this study is a mediation model which is stated as follows:

$$Y = a1 + \beta 1X1 + \beta 2X2 + e1$$
$$Z = a2 + \beta 1X1 + \beta 2X2 + \beta 43 + e2$$

Description:

Y : User Loyalty
Z : Satisfaction
B1 : Service Quality Coefficient
B2 : Transaction Security Coefficient
X1 : Quality of Service
X2 : Transaction Security
a : Constant Value

Table 1 is an explanation of the operational variables, indicators, and reference instruments applied in the questionnaire.

RESULTS AND DISCUSSION

Research Results

Outer Model Test

Validity and reliability tests were applied to 30 respondents, in convergent validity tests, each with a value of loading factor > 0.70 and AVE > 0.50. Then the validity of the discriminator by showing that the value cross loading of all the indicators on each variable has a value greater than the value of cross loading other variables. As well as reliability testing shows that the composite Reliability all variables have a value of ≥ 0.70 and a value of cronbach Alpha ≥ 0.60. From all these tests, the results showed that the instruments used were considered valid for all four variables.

Respondent Overview

Respondents consisted of users of the Access by KAI application who had made purchases through the application, with a total of 130 people, involving 28 male respondents and 102 female respondents. The majority of respondents in the age range of 22-26 years were 70 respondents,

followed by 52 respondents aged 17-21, and the remaining 8 respondents with an age range of 27-31. Most of the respondents were students or college students. 80 respondents had an income or allowance of IDR 3,000,000 < IDR 3,000,000, then 36 respondents had an income or allowance range of IDR 3,000,001 – IDR 5,000,000, and 14 respondents > IDR 5,000,001.

Inner Model Test Results

R-Square Test

Table 2. R-Square Test Results

Variabel	R-Square	R-Square adjusted	Remarks
User Loyalty (LP)	0,361	0,345	Medium
User Satisfaction (KP)	0,459	0,450	Medium

Source: SmartPLS 4.0 output results, 2025

Based on the results, the LP variable obtained an R^2 value of 0.361 *adjusted* of 0.345, which falls into the medium category. This shows that the independent variables in the model were able to explain User Loyalty by 36.1%, while the remaining 63.9% were influenced by other variables that were not discussed in the study such as user experience, trust, brand image and price. Meanwhile, the user satisfaction variable has an R^2 value of 0.459 and *adjusted* 0.450 which is also included in the medium category. This means that independent variables were able to explain user satisfaction by 45.9% while 54.1% were influenced by other factors outside the research model.

Predective Relevance Test (Q^2)

$$Q^2 = 1 - (1 - {R_1}^2)(1 - {R_2}^2)$$
$$Q^2 = 1 - (1 - 0{,}361^2)(1 - 0{,}459^2)$$
$$Q^2 = 1 - (1 - 0{,}130321)(1 - 0{,}210681)$$
$$Q^2 = 1 - (0{,}869679)(0{,}789319)$$
$$Q^2 = 1 - \ 0{,}6865$$
$$Q^2 = \ 0{,}3135$$

Based on the calculations made, the Q^2 value was 0.3135 or rounded to 0.31. Therefore, it can be concluded that this study has a fairly good *predictive relevance value* , because the Q^2 value > 0 and the model is included in the strong category.

Goodness of Fit

Table 3. Model Goodness Test

Fit Summary	Saturated model	Estimated model	Remarks
SRMR	0.074	0.074	Accepted
NFI	0.804	0.804	Accepted

Source: SmartPLS 4.0 output results, 2025

Based on the results of the data processing, the SRMR value is 0.074 and the NFI value is 0.759. According to Ghozali (2021), the criteria for a good fit model have an SRMR value of < 0.08 and an NFI value between 0 – 1, the closer the NFI value to 1, the better. In line with Ghozali (2021), this study meets the criteria and it can be concluded that the model in this study is suitable or good to use.

Hypothesis (Bootstrapping)
Path Coefficient (Direct Influence)

Table 4. Path Coefficient Test

Relationships Between Variables	Original Sampel (O)	T-Statistics (O/STDEV)	P-Value (Significant)	Remarks
Quality of Service (KL) → User Loyalty (LP)	0,163	1,474	0,141	Rejected
Transaction Security (KT) → User Loyalty (LP)	0,078	0,741	0,475	Rejected
User Satisfaction (KP) → User Loyalty (LP)	0,435	4,268	0,000	Accepted
Quality of Service (KL) → User Satisfaction (KP)	0,378	4,931	0,000	Accepted
Transaction Security (KT) → User Satisfaction (KP)	0,392	5,065	0,000	Accepted

Source: SmartPLS 4.0 output results, 2025

Indirect Effect

Table 5. Indirect Effect Test

Relationships Between Variables	Original Sampel (O)	T-Statistics (O/STDEV)	P-Value (Significant)	Remarks
Quality of Service (KL) → User Satisfaction (KP) → User Loyalty (LP)	0,164	3,492	0,000	Accepted
Transaction Security (KT) → User Satisfaction (KP) → User Loyalty (LP)	0,171	2,922	0,003	Accepted

Source: SmartPLS 4.0 output results, 2025

Based on the results of the hypothesis test regarding the path coefficient and indirect effect, the following equations were obtained:

$$Y = 0.163X1 + 0.078X2 + 0.435Z + 0.639$$
$$Z = 0.378X1 + 0.392X2 + 0.541$$

Discussion

Based on the results of the test through path coefficient in Table 4. and indirect effect in table 5. It can be described as follows:

a. The quality of service has no effect on user loyalty
   Based on the path coefficient of service quality (KL) test that had no direct influence on user loyalty (LP), the test obtained a T-Statistic result of 1.749 and a P-Value of 0.141.
   According to Ghozali (2021), in a hypothesis study, it can be declared acceptable if the path coefficient value shows the T-Statistic value > T-Table and with a singular level (5%), namely

P-Value < 0.05, then it can be concluded that H1 is rejected. The original sample value of 0.163 indicates that this effect is insignificant (P-Value 0.141), which means that the quality of service is not able to directly increase user loyalty.

b. Transaction security has no effect on user loyalty
Based on the calculation in the path coefficient test, the security variable on user loyalty obtained a T-Statistic result of 0.741 and a P-Value of 0.475. According to Ghozali (2021), in a hypothesis study, it is stated that it is accepted if the path coefficient value shows the T-Statistic value > T-Table and with a singular level (5%), namely P-Value < 0.05, it can be concluded that H2 is rejected. The original sample value of 0.078 indicates that this effect is not significant (p-value 0.475), meaning that transaction security does not directly affect user loyalty.

c. Satisfaction affects user loyalty
Based on the results of the path coefficient test in table 4, the variable of user satisfaction with user loyalty obtained a T-Statistic value of 4.268 and a P-Value of 0.000. In line with Ghozali (2021) who presented the hypothesis in a study that if the T-Statistical value > T-Table and P-Value < 0.05, it can be concluded that H3 is accepted, so that user satisfaction (Z) affects user loyalty (Y), then the variable of user satisfaction with user loyalty shows a positive relationship direction because the original sample value is 0.435 with a P-Value of <0.05.

d. Service quality affects satisfaction
Based on the results of the path coefficient test, the variable of service quality to user satisfaction obtained a T-Statistic value of 4.931 and a P-Value value of 0.000. According to Ghozali (2021), if the hypothesis in a study is accepted if the T-Statistical value > T-Table (1.96) and the P-Value < 0.05, it can be concluded that H4 is accepted, so that the quality of service (KL) affects user satisfaction (KP). The variable of ease of use on user satisfaction shows a positive relationship direction because the original sample value is 0.278 with a P-Value of 0.000.

e. Transaction security affects satisfaction
Based on the results of the path coefficient test, it shows that the transaction security variable on user satisfaction obtained a T-Statistic value of 5.065 and a P-Value of 0.000. According to Ghozali (2021), if the hypothesis in a study is accepted if the T-Statistical value > T-Table (1.96) and the P-Value < 0.05, it can be concluded that H7 is accepted, so that transaction security (KT) affects user satisfaction (KP). The transaction security variable on user satisfaction shows a positive relationship direction because the original sample value is 0.392.

f. The quality of service has an indirect effect on loyalty through satisfaction
Based on the results of the indirect effect test in table 5, it shows that the service quality variable obtained a T-Statistic value of 3.492 and a P-Value of 0.000. According to Ghozali (2021), the hypothesis is acceptable if the significance value of the T-Statistic is > 1.96 (T Table) and the P-Value is < 0.05 (5%). The results of the indirect effect in this study are qualified, so it can be concluded that H6 is accepted. The service quality variable obtained an original sample value of 0.164, indicating a positive relationship direction. Based on the results of this study, it can be seen that the role of user satisfaction as a mediating variable can affect service quality and user loyalty. This means that when users feel that the service is appropriate or even more than their expectations, this causes a sense of satisfaction in

consumers. User satisfaction reflects the results of a thorough evaluation of the user's experience in receiving the service. Once the user is satisfied, there will be a tendency to continue using the service, reduce the desire to switch to other services, and recommend the service to other parties, which is a form of user loyalty.

g. Transaction security indirectly affects user loyalty through satisfaction
Based on the results of the indirect effect test, the transaction security variable obtained a T-Statistic value of 2.922 and a P-Value of 0.003. According to Ghozali (2021), the hypothesis is acceptable if the significance value of the T-Statistic > T-Table and P-Value < 0.05 (5%). The results of the indirect effect in this study are qualified, so it can be concluded that H7 is accepted. The transaction security variable obtained an original sample value of 0.171, indicating a positive relationship direction. This study shows that the user satisfaction variable plays an important role in mediating the variables of transaction security and user loyalty. When users feel that transactions made through the application are safe, personal data is protected, and the risk of errors or misuse can be minimized, a sense of security and trust will arise which will then be reflected in user satisfaction. Once the user is satisfied, there will be a tendency to continue using the application, making transactions repeatedly, and recommending it to other parties, which is an indicator of user loyalty. Based on the results of the study, this study provides novelty by showing that transaction security is the most dominant factor in influencing customer loyalty through satisfaction. These findings expand on previous research that tends to place more emphasis on service quality, by asserting that in the context of digital services, security aspects are a key factor in building user trust and loyalty

CONCLUSION

Based on the findings of the study, it can be concluded that service quality and transaction security do not have a significant effect on user loyalty directly, but satisfaction has a significant effect on user loyalty. On the other hand, the quality of service and the security of transactions have a positive influence on satisfaction. Service quality and transaction security indirectly affect user loyalty through satisfaction.

Referring to the results of this study, information was obtained that satisfaction plays an important role as a mediating variable in shaping user loyalty. In other words, user loyalty cannot be achieved directly through the quality of service and security of transactions, but rather must first pass through increasing user satisfaction. This means that user satisfaction is a key factor that bridges the influence of these two variables on user loyalty. Access by KAI managers need to view service quality and transaction security as factors that shape user experience. Both factors contribute to creating user satisfaction which ultimately determines the level of loyalty. Therefore, service development and evaluation strategies should focus on how each aspect of the service is able to meet and exceed user expectations.

However, this study has several limitations, including the limited number of respondents and the scope of the study that only focuses on Access by KAI users, so the results of the study cannot be generalized widely. In addition, the variables used in this study are still limited to service quality, transaction security, satisfaction, and customer loyalty.

This research is expected to contribute as a reference for future researchers in conducting related studies. Further research is suggested to develop or add variables that are not discussed in this study, such as user experience, trust, brand image, and price. Further research is also expected to increase the number of samples, while still referring to existing theories.

REFERENCES

Andryanto. (2016). Pengaruh Kepercayaan, Persepsi Manfaat, Dan Persepsi Kemudahan Penggunaan Terhadap Minat Beli Di Toko Online (Studi Empiris yang dilakukan pada OLX.co.id di Yogyakarta).

Davis, F. D., & Davis, F. (2015). Perceived Usefulness , Perceived Ease of Use , and User Acceptance of Information Technology. September 1989. https://doi.org/10.2307/249008

Desti, D., Handrijaningsih, L., Mariani, S., & Anisah. (2021). Persepsi Kemudahan , Customer Relationship Management Dan Kualitas Layanan Terhadap Loyalitas Pelanggan E-Wallet Melalui Kepuasan. *13*(20), 287–303.

Husain, F., Mansyur, S., Harris, S. N., Ardilla, F., Manajemen, P. S., Ekonomi, F., & Makassar, U. N. (2025). Pengaruh Kemudahan Penggunaan dan Keamanan Transaksi terhadap Loyalitas Pengguna dengan Kepuasan Pengguna sebagai Variabel Mediasi pada Platform E-Commerce Shopee. *2*(2), 3530–3545.

Ghozali, I. (2021). Partial Least Square (PLS): Konsep, teknik, dan aplikasi menggunakan program SmartPLS 3.2.9 untuk penelitian empiris (Edisi ke 3). Fakultas Ekonomika dan Bisnis, Badan Penerbit Universitas Diponegoro.

Ghozali, I. (2023). Partial Least Square (PLS): Konsep, teknik, dan aplikasi menggunakan program SmartPLS 4.0 untuk penelitian empiris (Edisi 2). Fakultas Ekonomika dan Bisnis, Badan Penerbit Universitas Diponegoro.

Hair, J. F., Babin, B. J., & Anderson, R. E. (2022). Multivariate Data Analysis: A Global Perspective (9th ed.). Cengage Learning.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2020). Multivariate Data Analysis (8th ed.). Cengage Learning.

Hair, J. J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., Danks, N. P., & Ray, S. (2021). Partial least squares structural equation modeling (PLS-SEM) using R: A workbook. Springer Nature.

Handayani, H., & Rahayu, R. (2021). Pengaruh Perilaku Digital Konsumen Terhadap Keputusan Pembelian Dengan Minat Beli Sebagai Variabel Mediasi. Jurnal Ekonomi Dan Bisnis, 15(2), 210–225.

Handayani, W., & Yusuf, M. A. (2022). Analisis Dan Mitigasi Resiko Rantai Pasok Dengan Metode AHP dan FMEA. REVITALISASI: Jurnal Ilmu Manajemen, 11(1), 43–53.

Jogiyanto, H. M. (2007). Sistem informasi keperilakuan. Yogyakarta. Kotler, P., & Armstrong, G. (2018). Prinsip-Prinsip Pemasaran. Erlangga.

Kotler, P., & Keller, K. L. (2016). Marketing Management (15th ed.). Pearson Education, Inc.

Kotler, P., & Keller, K. L. (2021). Manajemen Pemasaran. Erlangga.

Lorensia, S., & Ningrum, N. K. (2023). Pengaruh Kualitas Pelayanan dan Kepercayaan terhadap Loyalitas Pelanggan dengan Kepuasan Pelanggan sebagai Variabel Intervening pada Gojek

di Yogyakarta. *7*(2), 816–825. https://doi.org/10.33087/ekonomis.v7i2.934

Munfaqiroh, S., & Dea, D. (2022). Pengaruh kualitas pelayanan dan kemudahan terhadap loyalitas dengan kepuasan pelanggan sebagai variabel intervening. *Jurnal Manajemen Dirgantara*, 15(1), 122–132.

Putra, D., & Rahaejo, S. (2021). Analisis Pengaruh Kemudahan Penggunaan, Kualitas Layanan, Dan Persepsi Manfaat Terhadap Loyalitas Pengguna Dengan Kepuasan Pengguna Sebagai Variabel Intervening (Studi pada Pengguna Aplikasi Grab di Kota Semarang). *10*(2017), 1–15.

Saputri, F., & Sukresna, I. M. (2022). Pengaruh Kualitas Layanan Website, Kemudahan Penggunaan Website, Keamanan Website, Dan Kepuasan Terhadap Loyalitas Pelanggan *(Studi pada E-commerce Shopee)*. *23*(02), 1–17.

Tsai, S. C., Chen, C. H., & Shih, K. C. (2022). Exploring Transaction Security on Consumers' Willingness to Use Mobile Payment by Using the Technology Acceptance Model. Applied System Innovation, *5*(6). https://doi.org/10.3390/asi5060113

Wardhana, A. (2024). Consumer Satisfaction In The Digital Edge [2] Edisi Indonesia.