

The Impact of Service Quality and Health Awareness on Customer Satisfaction and Loyalty: A Study on Perumda Tugu Tirta

Rofiaty Rofiaty^{*}, Nurul Hidayatinnisa² 

^{1,2} Department of Management, Universitas Brawijaya, Malang, Indonesia

ARTICLE INFO

Article history:

Received: 2024-07-12

Revised: 2024-08-18

Accepted: 2024-10-12

Available Online: 2024-12-25

Keywords:

Service Quality; Customer Awareness of Health; Satisfaction and Customer Loyalty

DOI:

<https://doi.org/10.38043/jimb.v9i2.6026>

ABSTRAK

This study aims to determine and analyze the effect of service quality and health awareness of drinking water products on customer satisfaction and loyalty at Perumda Air Minum Tugu Tirta, Malang City, in 2024. The novelty of this research lies in the measurement of service quality through indicators such as: requirements, system mechanisms and procedures, completion time, costs/tariffs, product specifications, types of services, executor competence, executor behavior, handling of complaints, suggestions and feedback, facilities and infrastructure, product quality, and distribution. Additionally, the novelty of this study is the inclusion of customer health awareness as an independent variable. The population consists of all customers, with a sample of 400 customers who are making payments at the counters of the Perumda Tugu Tirta office in Malang City. This sample was chosen because customers can directly assess the quality of service. The results show that service quality can increase customer satisfaction and loyalty, while health awareness does not significantly affect customer satisfaction and loyalty. Customer satisfaction mediates the effect of service quality on customer loyalty but does not mediate the effect of health awareness on customer loyalty. The impact of service quality on customer satisfaction is significant, even through the mediation of health awareness. The findings indicate that customer behavior in consuming clean water does not prioritize health awareness, as customers rely on the fact that Perumda Tugu Tirta Malang City has received halal certification from the Indonesian Ulema Council (MUI) as well as certifications from the Ministry of Health. The results of this study offer valuable insights

and suggestions for service improvements for the company and provide solutions to issues raised by customer complaints. Thus, the findings can serve as guidelines for future policy decisions.

This is an open-access article under the [CC BY-SA](https://creativecommons.org/licenses/by-sa/4.0/) license.



1. INTRODUCTION

The Regional Drinking Water Company (PDAM) is one of the regional companies engaged in public service, constantly striving to achieve superior performance. According to the Regulation of the Minister of Home Affairs No. 2 of 2007, PDAM can be defined as a Regional-Owned Enterprise that provides or serves drinking water to the community. The main objective of a regionally-owned enterprise is to serve the public interest and promote economic development in the respective region. Therefore, it is important for Regional Drinking Water Companies to continuously maintain the quality of their services as one of the strategies for achieving customer satisfaction and loyalty. Customer satisfaction and loyalty are key benchmarks of a company's success.

Perumda Air Minum Tugu Tirta Malang City, as a regional company engaged in the management of drinking water and wastewater facilities, aims to meet the clean water needs of the people in Malang City. As of December 2023, Perumda Air Minum Tugu Tirta Malang City has served 80% of Malang City's total area and provided service to 846,130 people, representing a significant portion of the city's population. The customers are spread across five sub-districts: Kedungkandang, Lowokwaru, Blimbing, Klojen, and Sukun.

In providing drinking water, Perumda Air Minum Tugu Tirta Malang City continues to strive to improve services to the community and maintain service quality. Perumda Tugu Tirta was selected as the subject of this research because the service quality variable is measured not only through the marketing mix but also using eleven distinct measurement items, covering both administrative service quality and marketing mix services. Research by Fu, X. M., Zhang, J. H., and Chan, F. T. (2018) has shown that service quality significantly contributes to increasing customer loyalty (Hizam et al., 2021; Ashiq, R., & Hussain, A., 2023; Ngo, V. M., & Nguyen, H. H., 2016; Yilmaz, V., & Ari, E., 2017; Juwaini, A., et al., 2022; Chodzaza, G. E., & Gombachika, H. S., 2013; Al-Dweeri et al., 2018).

Further research examining the effect of service quality on customer satisfaction indicates a significant impact, with service quality being measured through e-service quality (Chodzaza, G. E., & Gombachika, H. S.,

2013; Juwaini, A., et al., 2022), while Afifah, N., & Asnan, A. (2015) found that service quality also affects PDAM customer satisfaction. Health awareness has been shown to influence customer loyalty and purchasing decisions (Wijaya, 2016). Additionally, research examining the effect of health awareness on purchasing interest has yielded significant results, indicating that consumer purchasing interest can foster loyalty to a product (Deni et al., 2024).

Lay and Kartika (2019) conducted a study on the role of perceived restaurant food healthiness in perceived value and customer satisfaction at Madame Chang Restaurant in Surabaya. Their results showed that stronger health awareness positively impacted customer satisfaction. The reason for including health awareness in this study is due to various consumer behaviors that consider awareness of clean water quality as a factor that logically influences customer satisfaction and loyalty. Since most people use Perumda clean water for their daily drinking water needs, it is worthwhile to re-test this variable in the context of this research.

Research examining the relationship between customer satisfaction and loyalty is vital, as it demonstrates that satisfied customers are more likely to be loyal (Hizam et al., 2021; Ashiq, R., & Hussain, A., 2023; Ngo, V. M., & Nguyen, H. H., 2016; Yilmaz, V., & Ari, E., 2017; Juwaini, A., et al., 2022; Chodzaza, G. E., & Gombachika, H. S., 2013; Al-Dweeri et al., 2018).

The novelty of this study lies in the measurement of service quality, which is assessed using indicators such as new customer submission requirements, a customer classification system that considers customer conditions, fairness in adding services, a service mechanism that is easy to understand, and clear service procedures. Additionally, completion time, where officers are responsive and complete services as promised, and cost/tariff, where the charges are in accordance with published rates and considered reasonable, are also important factors. Product specifications and types of services provided are appropriate, and the competence of service implementers, including quick and clear responses, are also part of the evaluation criteria. The behavior of service providers is expected to be polite, neat, and friendly, while complaints, suggestions, and feedback should be handled quickly and precisely, with proper channels for customer input. Other factors, such as the quality and quantity of facilities, the quality of water products, and the smooth and continuous distribution of water, are also considered as part of the research's service quality indicators.

Every company aims to maintain customer loyalty, as it reflects the success of the company. The objectives of this research are to test and analyze the effects of service quality on customer loyalty, service quality on customer satisfaction, service quality on health awareness, customer satisfaction on customer loyalty, health awareness on customer loyalty, health awareness on customer satisfaction, and the mediating roles of health awareness and customer satisfaction in these relationships.

2. METHOD

This research is explanatory in nature, using a quantitative approach. Explanatory research is employed to explain the relationships between the variables being studied and the influence they have on each other. The aim of this study is to analyze and explain the effects of public service quality, customer satisfaction, and customer loyalty. A quantitative approach is used to process, analyze, and interpret the statistical data obtained through hypothesis testing. The population consists of PDAM customers, and the sampling technique used is purposive sampling, with 400 respondents who are either making water account payments at the PDAM office, applying for registration as new customers, or are willing to be interviewed at the counters. This approach was chosen because customers are able to directly assess the quality of the service. Data collection took place from April to June 2024. Purposive sampling is a technique that involves selecting respondents based on specific considerations, as described by Sugiyono (2016: 85).

3. RESULT AND DISCUSSION

3.1 Respondents Description

The respondents of this study are customers who pay their monthly water bills at payment counters, specifically at the head office and the WR Supratman branch office. The majority of respondents are aged between 40-49 years, accounting for 26% of the sample, followed by those aged 30-39 and 50-59 years, each representing 24%. Most of the respondents who use offline services (by visiting the office directly) are male customers, making up 57%, followed by female customers at 42%, and 1% are agency customers. The respondents' education levels vary, ranging from elementary school graduates to university graduates. In terms of occupation, the majority of respondents who use offline services are entrepreneurs or employees, making up 41% of the respondents.

3.2 Hypothesis test

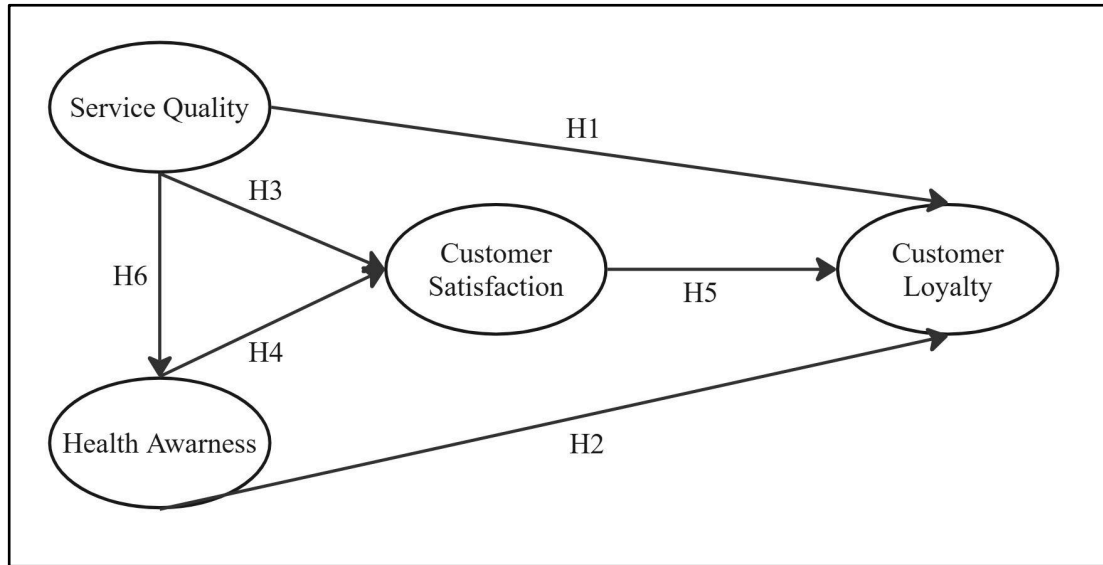


Figure 1. Research conceptual framework

Description:

- KL = Service Quality
- KS = Health Awareness
- KPL = Customer Satisfaction
- LP = Customer Loyalty

3.3 Validity test

To determine whether the model has good validity, it is characterized by a loading factor value greater than 0.7, in the table below shows the Loading Factor value above 0.7, so it can be said that the items on the measurement indicator are concluded to be Valid.

Table 1. Validity Test

VARIABLES	Indicator	Measurement Item	Outer Loading	Cronbach alpha
Service Quality	WP	WP1	0.716	0.921
S	S2	0.708		
S3	0.845			
S4	0.821			
D	D3	0.755		
SP	SP1	0.783		
SP2	0.771			
PA	PA3	0.779		
PA4	0.800			
Health Awareness	KS	KS1	0.930	0.883
KS2	0.940			
KS3	0.825			
Customer Satisfaction	PU	PU2	0.867	0.793
PU3	0.757			
PU4	0.896			

Customer Loyalty	LP	LP1	0.903	0.791
LP2	0.916			

Source: Primary data processed (2024)

From the table above, it can be observed that each of the remaining measurement items from the previous measurements shows an outer loading value greater than 0.7. This indicates that the convergent validity for the measurement model can be considered valid (Hair et al., 2019). These measurement items accurately reflect the variables being assessed in the study. For instance, in the service quality variable, the indicators S3 and S4 show outer loading values above 0.7. This suggests that these measurement items should be maintained at the implementation level.

3.4 Reliability test

Reliability testing is conducted to ensure that the questionnaire is sufficiently reliable, meaning that repeated measurements will yield consistent results. The parameters used to determine if the questionnaire is valid include a Cronbach's alpha value greater than 0.6 and composite reliability. The results of the calculations using Smart PLS version 4 are shown in the table below.

Table 2. Reliability Test

	Cronbach's alpha	Composite reliability (rho a)	Composite reliability (rho c)	Average variance extracted (AVE)
Customer Satisfaction	0.793	0.809	0.879	0.710
Health Awareness	0.883	0.923	0.927	0.809
Service Quality	0.921	0.924	0.934	0.564
Customer Loyalty	0.791	0.793	0.905	0.827

Source: Primary data processed (2024)

From the table above, it can be seen that each of these variables has a Cronbach's alpha, composite reliability, and AVE value above the standard. Therefore, the measurement model for these variables can be considered reliable.

3.5 Results of hypothesis test

The results of the direct effect test between variables with parameters P value <0.05 and T Statistics> 1.65.

Table 3. Direct Hypothesis Test Results

	Hypothesis	Path Analysis	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values	Description
H1	From Service Quality	To Customer Loyalty	0.581	0.607	0.115	5.056	0.000	Accepted
H2	Service Quality	Customer Satisfaction	0.0554	0.0559	0.100	5.538	0.000	Accepted
H3	Service Quality	Health Awareness	0.575	0.577	0.114	5.041	0.000	Accepted
H4	Customer Satisfaction	Customer Loyalty	0.199	0.188	0.083	2.383	0.017	Accepted

H5	Health Awareness	Customer Loyalty	0.223	0.200	0.122	1.829	0.067	Rejected
H6	Health Awareness	Customer Satisfaction	-0.021	-0.020	0.124	0.172	0.864	Rejected

Source: Primary data processed, 2024

Based on the table above, it can be seen that service quality has a significant effect on customer loyalty, customer satisfaction, and health awareness. However, health awareness has no effect on customer loyalty and customer satisfaction, with a P-value of 0.864. The findings indicate that customers who are more health-conscious do not necessarily exhibit higher loyalty. This is because some respondents do not consider health factors when deciding to consume clean water from Perumda Tugu Tirta. Customers perceive that the company has already addressed health concerns, as evidenced by certifications from the Indonesian Ministry of Health, ISO certification, and MUI halal certification. The health awareness variable does not improve customer satisfaction because customers' behavior regarding clean water consumption does not prioritize health issues, assuming that Perumda Tugu Tirta Malang City has already taken the necessary health factors into account. This is further supported by the company's MUI halal certification and an award from the Ministry of Health, which guarantee that the water quality meets health standards.

Table 4. Indirect Hypothesis Test Results

Hypothesis	Path Analysis			Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STD EV)	P values	Description
	From	Mediation	To						
H7	KL	KS	KPL	-0.012	-0.009	0.076	0.159	0.873	Rejected
H8	KL	KS	LP	0.128	0.116	0.078	1.642	0.101	Rejected
H9	KL	KPL	LP	0.110	0.105	0.053	2.082	0.037	Accepted
H10	KS	KPL	LP	-0.004	0.000	0.025	0.168	0.867	Rejected

Source: Primary data processed, 2024

Health awareness cannot mediate the relationship between service quality and customer satisfaction, with a P-value of 0.873. Similarly, health awareness does not mediate the relationship between service quality and customer loyalty, with a P-value of 0.101. However, customer satisfaction is able to mediate the relationship between service quality and customer loyalty. On the other hand, customer satisfaction does not mediate the relationship between health awareness and customer loyalty.

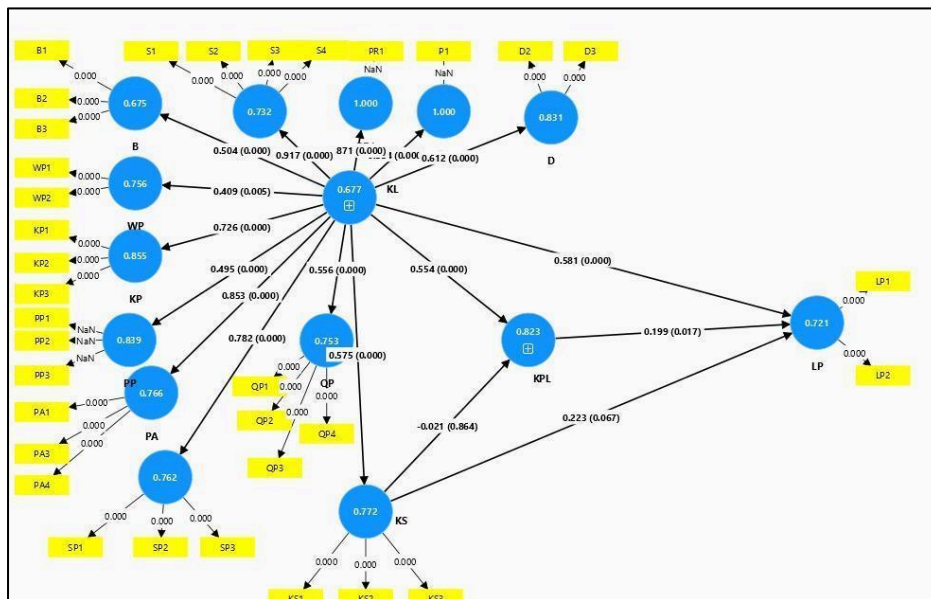


Figure 2. Direct Effect Path of Structural Model

Source: Primary data processed, 2024.

1. The higher the quality of service is proven to be able to increase customer loyalty at Perumda Air Minum Tugu Tirta Malang City through ease of requirements. Service quality as measured by the smoothness of water, odorless and tasteless, speed of service and complaint handling, as well as friendliness, politeness, and officer skills that drive high customer loyalty. In maintaining this, the strategy in maintaining it can be in the form of improving service quality to increase loyalty such as focusing on water reliability, optimizing complaint handling and improving officer skills.
2. The higher the quality of service provided, the higher the customer satisfaction. This shows that although the quality of service measured through smooth water, odorless and tasteless, speed of service and complaint handling, as well as friendliness, politeness, and skills of officers are the drivers of high customer satisfaction, including the cost and tariff of water are also considered reasonable and encourage customer satisfaction.
3. Good service quality is proven to be able to encourage increased public awareness of health. Clear water quality, no sediment, no odor and taste is what has a high role in increasing public awareness of health in the use of clean water Perumda Tugu Tirta Malang City.
4. The higher satisfaction that customers receive from the company's services through good water quality, complaint handling and fast service, as well as affordable prices and costs have proven to be able to increase customer loyalty.
5. The more health-conscious customers prove unable to increase customer loyalty, because it is never considered in making decisions to consume clean water from Perumda tugu tirta. Customers or the public have the perception that the company has automatically considered health issues, which is proven by having certification from the Indonesian Ministry of Health, ISO certification, and MUI halal certification.
6. Health awareness is not able to increase customer satisfaction, because customer behavior in consuming clean water does not consider health issues because they think that the Perumda Tugu Tirta Malang City company has considered various factors related to health as evidenced by having MUI halal certification and an award from the Ministry of Health which is a quality guarantee that water quality meets health requirements.
7. Health Awareness cannot mediate the relationship between Service Quality and Customer Satisfaction, which means that customers become satisfied without having to have health awareness because the quality of the company's products and services is guaranteed.
8. Health Awareness cannot mediate the relationship between Service Quality and Customer Loyalty, which means that customers become loyal do not have to have health awareness because the quality of the company's products and services is guaranteed.
9. Customer Satisfaction is able to mediate the effect of service quality on Customer Loyalty, which means that the level of customer loyalty can also be achieved not only by good service quality but also through efforts to achieve customer satisfaction. So customers who are satisfied with the service are a strategy to increase loyalty.
10. Customer satisfaction does not mediate the effect of Health Awareness on customer loyalty, because health awareness is not able to increase customer satisfaction and loyalty.

3.6 Implication

Theoretical Implications

Theoretical implications of this study contribute to the existing literature on service quality by strengthening the theory that links service quality to customer satisfaction and loyalty. The findings support earlier studies, such as those by [Parasuraman et al. \(1985\)](#) and [Zeithaml \(1988\)](#), which emphasize the importance of service quality in driving customer loyalty. Additionally, the research conducted by [Siswadi et al. \(2020\)](#) at the Bogor Agricultural Institute Library supports these findings, showing that service quality has a direct positive effect on customer satisfaction, which in turn increases customer loyalty.

While the study found that health awareness does not have a significant effect on customer loyalty, it provides new insights by incorporating the health awareness variable into the service quality model. This new perspective opens the door for further research exploring other factors that might moderate the relationship between health awareness and customer loyalty. The study also aligns with previous research on customer loyalty, such as that by [Kim, Lee, and Yoo \(2006\)](#), [Oliver \(1981\)](#), [Zeithaml et al. \(1996\)](#), and [Anderson \(1994\)](#), which explores how individuals decide to repurchase or reuse a product in the future.

Furthermore, the study highlights the mediation role of customer satisfaction in the relationship between service quality and customer loyalty. This finding reinforces the mediation theory discussed within the Structural Equation Modeling (SEM) framework, showing that customer satisfaction plays a crucial role in mediating the effect of service quality on customer loyalty.

From a practical standpoint, Perumda Air Minum Tugu Tirta can leverage the findings of this study to improve aspects of service that customers deem important. These include simplifying service procedures, ensuring timely completion, and responding effectively to complaints. One possible solution for enhancing service quality is to implement digital service automation for handling customer complaints via social media or web platforms.

Even though health awareness does not significantly affect customer loyalty, companies can still focus on enhancing communication about the importance of healthy drinking water. Health and halal certifications can be used as promotional tools to educate customers about the quality of the water they are consuming.

Since customer satisfaction is proven to mediate the relationship between service quality and customer loyalty, companies should place a strong emphasis on ensuring customer satisfaction. This can be achieved by maintaining service indicators such as facilities and infrastructure to meet customer expectations.

However, this study has several limitations. Firstly, the research has limited generalizability as it was conducted only with Perumda Air Minum Tugu Tirta customers in Malang City. Perumda Tugu Tirta, a regional company providing clean water services, primarily serves the people of Malang. As such, the results reflect customer experiences, perceptions, and satisfaction levels specific to this company, which may not apply to other companies or regions. Additionally, this study did not measure external variables such as economic factors or government policies, which could also influence customer loyalty. Lastly, the quantitative survey method using Likert scales has limitations in capturing the nuances of customer experiences. Qualitative research could offer deeper insights into customer behavior and provide a more comprehensive understanding.

4. CONCLUSION

Good service quality, which includes smooth water flow, odorless and tasteless water, fast service, effective complaint handling, as well as the friendliness, politeness, and skills of the staff, has been proven to enhance customer loyalty by simplifying requirements. Service quality contributes to increased customer satisfaction, and in turn, customer satisfaction leads to greater customer loyalty. Customer satisfaction acts as a partial mediator in the relationship between service quality and loyalty. However, health awareness does not have an effect on customer satisfaction or loyalty. Additionally, customer satisfaction does not mediate the effect of health awareness on loyalty because customers rarely consider health awareness when deciding to consume clean water. This is because customers generally perceive that health issues have already been addressed by PDAM, as evidenced by the company's certifications from the Indonesian Ministry of Health, ISO, and MUI Halal certifications.

5. REFERENCES

- Afifah, N., & Asnan, A. (2015). The impact of corporate social responsibility, service experience and intercultural competence on customer company identification, customer satisfaction and customer loyalty (case study: PDAM Tirta Khatulistiwa Pontianak West Kalimantan). *Procedia-Social and Behavioral Sciences*, 211, 277-284.
- Anderson, C., & Zeithaml, C.P. (1984). Stage of the product life cycle, business strategy, and business performance. *Academy of Management Journal*, 27(1), 5-24.
- Anderson, C., & Zeithaml, C.P. (1984). Stage of the product life cycle, business strategy, and business performance. *Academy of Management Journal*, 27(1), 5-24.
- Ashiq, R., & Hussain, A. (2023). Exploring the effects of e-service quality and e-trust on consumers' e-satisfaction and e-loyalty: insights from online shoppers in Pakistan. *Journal of Electronic Business & Digital Economics*.
- Astuti, H.J. and Nagase, K. (2016b). A framework for conceptualizing patient loyalty to healthcare organizations. *Health Services Management Research*, 29(3), pp.70-78. doi: <https://doi.org/10.1177/0951484816663562>.
- Chodzaza, G. E., & Gombachika, H. S. (2013). Service quality, customer satisfaction and loyalty among industrial customers of a public electricity utility in Malawi. *International Journal of Energy Sector Management*, 7(2), 269-282.

- Deni, Normala, Wijayanto, Gatot, Nursanti, Aida. (2024). The Effect of Health Awareness and Product Knowledge on Purchase Intention of Lemonilo Instant Mi Products Mediated by Attitude in Pekanbaru City. *JAMBU AIR: Journal of Accounting Management Business and International Research*.
- Fu, X. M., Zhang, J. H., & Chan, F. T. (2018). Determinants of loyalty to public transit: A model integrating Satisfaction-Loyalty Theory and Expectation-Confirmation Theory. *Transportation Research Part A: Policy and Practice*, 113, 476-490.
- Hizam, S. M., Ahmed, W., Akter, H., & Sentosa, I. (2021). Understanding the public rail quality of service towards commuters' loyalty behavior in Greater Kuala Lumpur. *Transportation Research Procedia*, 55, 370-377.
- Jen, W., Tu, R., Lu, T., 2011. Managing passenger behavioral intention: an integrated framework for service quality, satisfaction, perceived value, and switching barriers. *Transportation* 38, 321-342.
- Komar, K. (2019). THE EFFECT OF HEALTH CONSCIOUSNESS, PRODUCT KNOWLEDGE AND BRAND TRUST ON PURCHASE DECISIONS (Study on Tolak Angin Consumers in Kebumen Regency).
- Lay, V. V., & Kartika, E. W. (2019). THE ROLE OF PERCEIVED RESTAURANT FOOD HEALTHINESS ON PERCEIVED VALUE AND CUSTOMER SATISFACTION: A STUDY AT MADAME CHANG RESTAURANT SURABAYA. *Journal of Hospitality Management*, 5. <https://doi.org/10.9744/jmhot.5.2.109%E2%80%93116>.
- Marcella, C., Juniwati and Heriyadi (2024). The Effect of Health Awareness, Product Quality on Repurchase Interest with Trust as an Intervening Variable. *INOVASI: Journal of Economics, Finance and Management*, 20(3).
- Ngo, V. M., & Nguyen, H. H. (2016). The relationship between service quality, customer satisfaction and customer loyalty: An investigation in Vietnamese retail banking sector. *Journal of competitiveness*.
- Parasuraman, A., Zeithaml, V.A., Berry, L.L., 1988. SERVQUAL: A multiple item scale for measuring consumer perceptions of service quality. *Journal of Retailing*, 64(1), 12-40
- Wijaya, Ham Dennys Surya. (2016). Analysis of the Influence of Health Culture, Health Awareness, and Product Perception on Buying Decision of Male Condom Products for Young Adults in Surabaya: *Petra Business & Management Review* Vol.2, .1, 2016.
- WHO. (1986). The Otta Wa Charter For Health Promotion.
- Yilmaz, V., & Ari, E. (2017). The effects of service quality, image, and customer satisfaction on customer complaints and loyalty in high-speed rail service in Turkey: a proposal of the structural equation model. *Transportmetrica A: Transport Science*, 13(1), 67-90.
- Zeithaml, V.A. (2000). Service quality, profitability and the economic worth of customers: What we know and what we need to learn. *Journal of the Academy of Marketing Science*, 28(1), 67-85.