Journal of Information Systems Engineering and Management

2025, 10(30s) e-ISSN: 2468-4376

https://www.jisem-journal.com/

Research Article

Analysis of Factors Affecting Internet Customer Satisfaction Service Provider in Jabodetabek

Abimantrana Hasta Prawir, Ardhianiswari Diah Ekawati

Industrial Engineering Study Program, Universitas Bina Nusantara, Jakarta, Indonesia *Corresponding Author: hastaprawira113@gmail.com

ARTICLE INFO

ABSTRACT

Received: 31 Dec 2024 Revised: 20 Feb 2025

Accepted: 28 Feb 2025

Improvements in telecommunications infrastructure and internet access in Indonesia have driven internet user growth significantly. Based on APJII data (2022), as much as 77% of Indonesia's population will use the internet in 2022, creating great opportunities for internet service providers or Internet Service Providers (ISP). This research aims to analyze the influence of service quality, product quality, price and promotion on ISP customer satisfaction in Indonesia. The method used is a quantitative approach. Data was collected through a survey of respondents who used ISP services, then analyzed using descriptive and statistical techniques Structural Equation Modeling. The results of this research show that service quality, product quality, price and promotion have a positive influence on ISP customer satisfaction. However, among these four variables, price and promotion are the most dominant factors. Promotion has the greatest influence on customer satisfaction. Then price, as one of the variables that has the second biggest influence after promotion, also contributes to attracting and retaining customers. The conclusions of this research emphasize the importance for ISPs to not only continue to improve the quality of services and products, but also offer competitive prices and design more effective promotional strategies. In this way, ISPs can increase customer satisfaction and loyalty amidst intense competition in the telecommunications industry.

Keywords: customer satisfaction, service quality, product quality, price, promotion

INTRODUCTION

Improvement and expansion of infrastructure availability and telecommunications access have driven rapid growth in internet use in Indonesia. The development of telecommunications has given rise to the term digital society which is widespread in urban to rural areas in every region in Indonesia. This is based on a climate of information openness and public acceptance of telecommunications innovation which has encouraged a significant increase in internet users from year to year (Central Statistics Agency, 2020). According to the Association of Indonesian Internet Service Providers or APJII (2022), internet users in Indonesia have increased from year to year, with the latest data showing that 79.5% of the entire Indonesian population will have used the internet in 2024. Telecommunication innovations, especially in internet technology, have eliminated distance boundaries and reduced differences between one area of society and another, so that this phenomenon opens up broad market access for companies that provide internet connection services or are known as internet service providers. (Dolata, 2018).

Internet service providers or so-called *Internet Service Provider* (ISP) is a company that provides services to the public so they can connect to the internet. This company operating in one of the telecommunications sectors facilitates a technology-based service so that its users can connect to the internet via ISP connection access using a modem or Wi-Fi connected to a computer or *gadget* like *smartphone* (Ilham & Dirgantara, 2020). The emergence of many companies providing internet services is a response to the high public demand for the internet in various activities that demand aspects of efficiency and easy access to information. (Huang *et al.*, 2018). Public consumption of internet connectivity also arises due to developments in communication technology, the complexity of work in the modern era, as well as the need for internet networks in various fields such as education, economics, business, politics and social (Joudeh & Dandis, 2018).

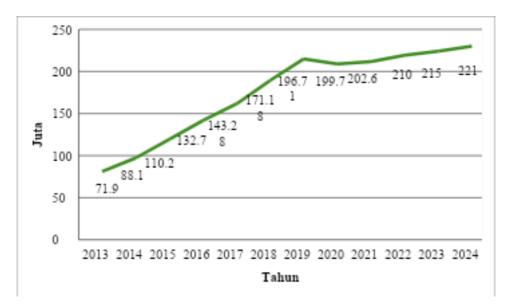


Figure 1. Data on Internet User Growth in Indonesia for 2013-2024

Source: Indonesian Internet Service Providers Association (2024)

Figure 1 shows data on the growth of internet users in Indonesia which has increased from year to year from 2013 to 2024, where the growth percentage over the last 10 years shows a surplus of 68.3%. The number of internet users in Indonesia in 2024 will be 221 million people, so this gain makes Indonesia the country with the most internet users in fourth place in the world. According to APJII, the growth of internet users in Indonesia from 2019 to 2024 was influenced by the global COVID-19 pandemic. This is due to restrictions on people's mobility as a result of the pandemic which means a number of activities are carried out temporarily *online*, such as distance learning or *elearning*, movement *work from home* (WFH), the intensity of digital transactions through *e-commerce*, and so on (APJII, 2024).

Central Statistics Agency, (2020) stated that the growth of internet usage in Indonesia always increases every year, but this increase in data network intensity is not directly proportional to the increase in income of each internet service provider or telecommunications operator, both on the network *broadband* as well as mobile. This is likely due to the tight competitive climate among internet service providers to reach potential customers, so that there is an imbalance in market share acquisition or *market share* which is quite high.

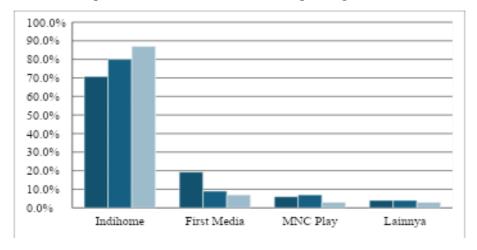


Figure 2. Broadband ISP Market Share in Indonesia 2019-2021

Source: katadata.co.id (2022)

Based on Figure 2, it is known that there are three highest rankings for the types of internet service provider networks. On network services *broadband* which is an internet connection with *sharing bandwidth* or usually used in the home or office, companies are always gaining *market share* the highest during the 2019 to 2021 period was Indihome with

an average *market share* amounting to 79.2%. This data is in line with the statement from the Central Statistics Agency (2020), namely that income inequality occurs *market share* which is quite high from year to year among internet service providers. A market leader who dominates too much indicates that there is a very tight competitive climate, so the right strategy is needed to survive amidst business competition in an industry. In particular, the most important strategy in winning competition is implementing certain methods to make customers satisfied which will then encourage the formation of loyalty to the product and company. Customer satisfaction and loyalty will be able to direct the company to a higher level of profit and gain a position in the targeted market (Lee & Seong, 2020).

Efforts to maintain customer satisfaction and loyalty are the main consideration for companies today because the costs of acquiring new customers are increasingly expensive in an increasingly tight competitive climate. This also occurs in telecommunications business competition, especially between companies providing internet services or *Internet Service Provider* (ISP) which is currently experiencing an upward trend in line with the increasing public need for internet connectivity (Dolata, 2018). The competition faced by internet service provider companies has led to non-price competition, such as competing to improve responsive and reliable service as one aspect of service quality, as well as providing more stable and extensive connections as one aspect of product quality. (Akroush & Mahadin, 2019). Internet service providers must be able to identify the desires and needs of various customers in using the internet, so that the products offered can be well received by users. Internet service provider companies also need to know what attributes can encourage customer satisfaction so that they can then create the expected loyalty (Huang *et al.*, 2018).

Service quality is one of the most important aspects in companies operating in the service sector, including internet service providers. Customers are now increasingly aware that there is a high or low level of service quality they receive when using a service. This is a consideration for companies to pay more attention to the quality of the services provided to customers in order to be able to form satisfaction and in turn lead to customer loyalty (Joudeh & Dandis, 2018). Intense competition encourages each company to put more effort into improving the quality of service better than its competitors. Service quality is the overall combination of service indicators resulting from the process of providing services from the company to customers which causes the service to meet customer expectations (Wilson, 2018). Satisfaction and loyalty are responses to fulfilling customer expectations, namely the extent to which the level of fulfillment of service quality is considered to please customers. If the service received or felt by customers is in accordance with what they expected, then the quality of the service is perceived as good and is able to create higher satisfaction and loyalty, and vice versa. Therefore, the level of service quality depends on the service provider's ability to consistently meet customer expectations (Rachmawati, 2020).

Product quality is a factor that determines the success of a business in any field as a manifestation of the company's ability to provide or provide products in the form of quality goods or services to customers, including internet service providers. The strategy of evaluating and improving product quality is one way to maintain a company in the market and achieve success in facing competition (Dhasan & Aryupong, 2019). Product quality is not assessed from the point of view of the product provider, but rather based on the perception of customers who purchase and use the product. Companies offer a product with the aim of meeting customer needs and desires, so that the accuracy of the quality level of the product is an effort to balance customer expectations (Nuraini & Zuliarni, 2021). Efforts to meet customer expectations through product quality are able to make the company survive in the market because providing products that meet customer expectations can create a higher level of customer satisfaction and foster customer loyalty. (Suttikun & Meeprom, 2020).

In increasing customer satisfaction when using internet services, it is not only limited to product quality. However, there are also other factors that support the formation of customer satisfaction, as in research conducted by Munyanti (2018) which states that service quality, customer service, billing and price as well as network connectivity have a high impact on customer satisfaction. Therefore, companies must review their services whether or not they are in line with the price, quality and also the attitude of the staff who handle their customers. In motivating cellular telecommunications customers, cellular network operators or providers must continue to satisfy their customers by improving all the factors analyzed in this research, especially service quality in ensuring customer intentions to purchase their products are achieved.

According to data from APJII summarized in the Indonesian Internet Profile Survey Data report in 2022, it was found that 62.17% of the internet user population in DKI Jakarta uses *mobile data* or personal internet users of mobile operators. Meanwhile, another 37.64% use WiFi installed at home which is used together with the family (APJII,

2022). It is estimated that in 2020, the total number of internet users in DKI Jakarta reached 8,928,485 people. (Prastya, 2020), so that it can be known that internet users *single* more dominant than family internet users. Due to this, this research will explore the influence of service quality and service product quality on customer satisfaction and loyalty in internet service providers in which users are compared between personal and family users. This is done so that the research results that will be obtained will be more focused on groups of personal and family internet users, because there is a possibility that the influence given will not be the same because the characteristics of the users are different.

RESEARCH METHODS

This research uses quantitative research methods. The data collection method in this research uses a survey method to obtain or collect information data about a large population using a relatively smaller sample with a data collection tool in the form of a questionnaire. The location of this research was carried out in Jabodetabek by conducting a survey by distributing questionnaires to customers from internet service providers on broadband and cellular networks who were willing to provide the required information related to the research. This research was conducted for 3 months, namely by distributing an online questionnaire in the form of a Google form which was distributed via social media.

The population in this research are people in Jabodetabek who are customers of internet service providers in Indonesia. Based on the population size, the exact number is not known using *sampling eror* 6% = 0.06, so the number of samples taken in this research is according to the formula *Cochran* is:

n =
$$\frac{1,96^2(0,5)(0,5)}{0,06^2}$$
 = 266.7 (rounded to 267)

Based on the formula above, the sample taken was 266.7 and rounded up to 267, so the number of samples to be studied in this research was 267 respondents. The sampling technique used in this research is *non probability sampling* by using the method *purposive sampling*. *Non probability sampling* is a sampling technique that does not provide equal opportunities or opportunities for each element or member of the population to be selected as a sample, temporarily *purposive sampling* is a data source sampling technique with certain considerations (Sugiyono, 2017).

This research uses two types of data which are grouped according to their nature, namely qualitative and quantitative data. This research uses two types of data sources, namely primary data sources and secondary data sources. The primary data source in this research is the results of questionnaire answers from respondents regarding the variables studied. The secondary data source in this research is data publication of news articles and data originating from empirical studies that have been carried out by previous researchers related to the objects studied in this research. The secondary data source in this research is data publication of news articles and data originating from empirical studies that have been carried out by previous researchers related to the objects studied in this research. The data analysis technique in this research uses *Partial Least Square* (PLS 3) which is an equation model *Structural Equation Modeling* (SEM) with an approach based on *variance* or *component based structural equation modeling*.

RESULTS

Evaluation of the Measurement Model (Outer Model)

Convergent validity testing is carried out by looking at the outer loading value of each indicator on the latent variable. An outer loading value >0.7 indicates that a variable has explained 50% or more of the variance of the indicator.

Variable	Indicator	Outer Loading	
	H1	0,796	
Price	H2	0,920	
	Н3	0,909	
	H4	0,905	
	KL1	0,738	
Service Quality	KL2	0,838	
	KL3	0,832	

Table 1. Outer Loading Value (Before Modification)

	KL4	0,864	
	KL5	0,865	
	KL6	0,815	
	KL7	0,878	
	KL8	0,843	
	KL9	0,828	
	KL10	0,758	
	KL11	0,803	
	KL12	0,761	
	KL13	0,772	
	KL14	0,701	
	KL15	0,722	
	KP1	0,819	
	KP2	0,850	
	KP3	0,811	
	KP4	0,705	
	KP5	0,792	
Product Quality	KP6	0,819	
	KP7	0,847	
	KP8	0,808	
	KP9	0,827	
	KP10	0,821	
	KP11	0,707	
	KPL1	0,820	
	KPL2	0,782	
Customer Satisfaction -	KPL3	0,790	
Customer Satisfaction	KPL4	0,816	
	KPL5	0,806	
	KPL6	0,719	
	P1	0,791	
	P2	0,827	
	Р3	0,815	
Promotion	P4	0,723	
	P5	0,805	
	P6	0,760	
	P7	0,759	

(Source: Results SmartPLS 3, 2024)

Based on the table above, it can be seen that all indicators have a loading factor score above 0.7. This value means that the indicators have met the requirements for convergent validity and have good validity.

Apart from the cross loadings value, the results of the discriminant validity test can also be known through the Average Variant Extracted (AVE) value. Each latent construct must have an AVE value >0.5 to reflect a good measurement model. The AVE values for the variables in this research can be seen in the following table:

Table 2. Variable AVE Value

	Average variance extracted (AVE)
Service Quality (X1)	0,643
Product Quality (X2)	0,645
Price (X3)	0,782
Promotions (X4)	0,614
Customer Satisfaction (Y)	0,623

(source: Output PLS 3, 2024)

Based on the table above, it is known that each indicator of the latent construct has an AVE score above 0.5, which means the construct is able to explain 50% or more of the variance (Wong, 2013).

In SEM-PLS 3 analysis, a construct is declared reliable if it has a composite reliability value of >0.6 and is strengthened by a Cronbach's Alpha value of >0.7. The composite reliability test results can be seen in the following table:

Table 3. Composite Reliability Values

	Cronbach's	Composite	
	alpha	reliability	
Service Quality (X1)	0,952	0,944	
Product Quality (X2)	0,964	0,960	
Price (X3)	0,934	0,906	
Promotions (X4)	0,917	0,895	
Customer Satisfaction (Y)	0,908	0,879	

(sumber: output SmartPLS 3, 2024)

A composite reliability value of 0.6 - 0.7 and a Cronbach's alpha value of >0.7 are considered to have good reliability (Sarstedt, et al., 2011). Based on the table above, all constructs have composite reliability and Cronbach's alpha values >0.7, so it can be concluded that the constructs of all research variables are reliable.

Structural Model Evaluation (Inner Model)

The evaluation stage of the structural model (inner model) consists of testing the goodness of the model (model fit) and hypothesis testing. The model goodness-of-fit test was carried out by paying attention to the R-square (R2) and Q-square (Q2) values. Partial hypothesis testing is carried out by paying attention to the significance value of the relationship between variables (direct and indirect effects). The results of the bootstrapping process on the structural model can be seen in the following image:

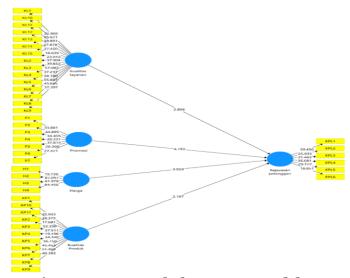


Figure 3. Structural Chart Inner Model

1. Model Goodness Test (*Model Fit*) R-Square

The R-Square (R2) value is used to determine the predictive power of the structural model in SEM-PLS 3 analysis. The criterion for an Rsquare value that is close to 0.67 is considered strong, 0.33 as moderate, and 0.19 as weak (Chin & Wynne, 1999). The R-square value can be seen in the following table:

Table 4. Values R-Square

	R Square	R Square Adjusted		
Customer satisfaction	0,611	0,606		

(Sumber: Output PLS 3, 2024)

Based on this table, it can be seen that the R-Square value is 0.611, which shows that the strength of the influence of the independent variable on customer satisfaction is strong with an influence size of 61.1%.

2. Model Goodness Test (Model Fit) Q Square

The Q Square value is used to find out whether the model has good predictive relevance. A Q square score of more than o indicates the model has good predictive relevance. The Q square results can be seen in the following table.

Table 5. Mark Q-Square

	SSO	SSE	Q ² (=1-SSE/SSO)
Quality of service	5235,000	5235,000	
Promotion	2443,000	2443,000	
Price	1396,000	1396,000	
Product Quality	3839,000	3839,000	
Customer satisfaction	2094,000	1307,261	0,376

(Source: Output SmartPLS 3, 2024)

Based on the table above, it can be seen that the Q square score is 0.376, which means it is greater than 0. This shows that the research model has good predictive relevance.

3. Hypothesis Testing

Hypothesis testing is carried out by paying attention to values *Orignal Sample Estimates* (O) to determine the direction of the relationship between variables, as well *t-statistics* (T), and *p-values* (P) to determine the level of significance of this relationship. Mark *original sample* something close to +1 indicates a positive relationship, while a value close to -1 indicates a negative relationship (Sarstedt et al., 2017). A t-statistics value of more than 1.96 or a p-value that is smaller than the significance level (<0.05) indicates that a relationship between variables is significant. The results of research hypothesis testing can be seen in the following table:

Table 6. Value of the Relationship Between Variables

No ·	Variable Relationships	THE	Т	P	Information
1	Price -> Customer Satisfaction	0.285	3.924	0,000	Accepted
2	Service Quality -> Customer Satisfaction	0.186	2.894	0.031	Accepted
3	Product Quality -> Customer Satisfaction	0.144	2.167	0.004	Accepted
4	Promotion -> Customer Satisfaction	0,280	4.793	0.000	Accepted

(Source: Output SmartPLS 3, 2024)

Based on the table above, the relationship between study variables can be explained as follows:

- 1. The influence value of Service Quality on Customer Satisfaction (Y) is -0.186 with a P-value of 0.031 (<0.05). Thus, the hypothesis is accepted because this value shows that service quality has a significant positive effect on customer satisfaction. These results are in line with research conducted by Joudeh & Dandis (2018) where service quality has a positive effect on customer satisfaction.
- 2. The influence value of Product Quality on Customer Satisfaction is 0.144 with a P-value of 0.004 (<0.05). Thus, the hypothesis is accepted because this value shows that product quality has a significant positive effect on customer satisfaction. This is in line with the results of research conducted by (Akroush & Mahadin, 2019), namely that product quality has a positive effect on customer satisfaction and loyalty.
- 3. The influence value of price on customer satisfaction is 0.285 with a P-value of 0.000 (<0.05). Thus, the hypothesis is accepted because this value shows that price has a significant positive effect on customer satisfaction. These results are in line with research by Nuraini & Zuliarni (2021) where price has a positive and significant effect on customer satisfaction, service quality has a positive and significant effect on customer satisfaction, and product quality has a positive and significant effect on customer satisfaction.
- 4. The value of the influence of Promotion on Customer Satisfaction is 0.280 with a P-value of 0.000 (<0.05). Thus, the hypothesis is accepted because the value shows that promotion has a significant positive effect on customer satisfaction. These results are in line with research conducted by Nivianti., et al, (2018) where promotion directly affects customer satisfaction and customer loyalty.

DISCUSSION

The Effect of Service Quality on Customer Satisfaction

The Service Quality variable has a positive effect on customer satisfaction, which shows that the hypothesis is accepted. This can be stated that for consumers or customers, service quality is something that can increase satisfaction with subscriptions. This means that the better the service provided, the more satisfied customers will be. The higher the quality of service a customer receives, the more likely they are to feel valued and well served. This not only increases satisfaction, but also builds long-term customer loyalty. Research also shows that consistent and friendly service can strengthen the relationship between customers and service providers, thereby encouraging customer retention.

The Effect of Product Quality on Customer Satisfaction

The Product Quality variable has a positive effect on customer satisfaction, which shows that the hypothesis is accepted. Products that meet or exceed customer expectations in terms of durability, functionality, and design will provide a positive experience that increases customer satisfaction. In general, good product quality is able to create added value that is felt by customers, so that they feel that they are getting what they deserve for the price they pay. Quality products also tend to generate positive word-of-mouth recommendations, which can attract more potential customers.

The Influence of Price on Customer Satisfaction

The price variable has a positive effect on customer satisfaction, which shows that the hypothesis is accepted. This can be stated that for consumers or customers, price is one of the things that can increase satisfaction in subscribing. Prices that are competitive and match the quality of the product or service can increase the perception of value from the customer's perspective. Consumers tend to be satisfied if they feel they are getting the appropriate value or more than what they paid for. Prices that are too high or not balanced with the value offered can cause dissatisfaction. On the other hand, transparent and fair prices can increase consumer convenience, thereby strengthening their purchasing decisions.

The Influence of Promotion on Customer Satisfaction

The promotion variable has a positive effect on customer satisfaction, which shows that the hypothesis is accepted. This can be stated that for consumers or customers, promotional techniques are one of the interesting things that can increase satisfaction with subscriptions. The more attractive the promotion is, the more customer satisfaction will increase. Attractive and creative promotions can attract consumers' attention and increase their interest in products or services. However, effective promotions not only provide attractive offers, they must also be relevant and timely

to achieve maximum impact. Promotional techniques such as discounts, gifts, or loyalty programs can create a positive experience for customers and encourage them to make repeat purchases.

CONCLUSION

Based on the research results, there is no difference between small groups and large groups. The significant positive influence value on price (O = 0.300, P-value < 0.05) shows that competitive and affordable prices will increase customer satisfaction. The significant positive influence value on service quality (O = 0.209, P-value < 0.05) indicates that improving service quality will increase customer satisfaction. The significant positive influence value on product quality (O = 0.088, P-value < 0.05) shows that increasing product quality will increase customer satisfaction. The significant positive influence value of Promotion (O = 0.302, P-value < 0.05) shows that attractive and effective promotions can increase customer satisfaction.

Service improvement strategies to increase customer satisfaction for internet service providers in Indonesia must focus on service quality, product quality, price and promotion. Price and promotion are the most significant factors, so improvements can be focused on these two variables. Product innovation that is relevant to customer needs is also needed to maintain satisfaction. Apart from that, competitive and transparent prices and attractive promotions are other key elements. The right promotion is not only a temporary incentive, but also increases long-term loyalty. The development of loyalty programs, digital campaigns, and adaptation to competition from satellite internet and 5G technology must be prioritized to maintain satisfaction and competitiveness.

REFERENCES

- [1] Akroush, M., & Mahadin, B. (2019). An Intervariable Approach to Customer Satisfaction and Loyalty in The Internet Service Market. *Internet Research*, pp. 1066-2243.
- [2] APJII. (2022). Laporan Survei Internet APJII 2021-2022. Jakarta: Asosiasi Penyelenggara Jasa Internet Indonesia.
- [3] Badan Pusat Statistik. (2020). Statistik Telekomunikasi Indonesia. Jakarta: Katalog Badan Pusat Statistik.
- [4] Dhasan, D., & Aryupong, M. (2019). Effects of Product Quality, Service Quality and Price Fairness on Customer Engagement and Customer Loyalty. *ABAC Journal*, 39 (2), pp. 82-102.
- [5] Dolata, U. (2018). Internet Companies: Market Concentration, Competition and Power. *Collectivity and Power on the Internet*, pp. 82-134.
- [6] Huang, J., Zou, J., & Xing, C. (2018). Competitions Among Service Providers in Cloud Computing: A New Economic Model. *IEEE Transactions on Network and Service Management*, 15 (2), pp. 866-877.
- [7] Ilham, Y., & Dirgantara, I. (2020). Analisis Pengaruh Kualitas Jaringan, Kualitas Layanan, Kualitas Informasi, Keamanan dan Privasi pada Penyedia Layanan Internet Terhadap Kepuasan Pelanggan dan Dampak pada Niat Pembelian Ulang. *Diponegoro Journal of Management*, 9 (4), pp. 1-7.
- [8] Joudeh, J., & Dandis, A. (2018). Service Quality, Customer Satisfaction and Loyalty in an Internet Service Providers. *International Journal of Business and Management*, 13 (8), pp. 108-120.
- [9] Lee, H. J., & Seong, M. (2020). A Study on the Effects of Business Service Quality on Satisfaction, Commitment, Performance, and Loyalty at a Private University. *Journal of Asian Finance, Economics and Business*, 7 (9), pp. 439-453.
- [10] Nuraini, T., & Zuliarni, S. (2021). Pengaruh Harga, Kualitas Pelayanan dan Kualitas Produk Terhadap Kepuasan Pelanggan dalam Menggunakan Layanan Indihome. *Social and Humanities*, 7 (2), pp. 329-334.
- [11] Prastya, D. (2020). Ini Jumlah Pengguna Internet Indonesia 2020 per Provinsi. https://www.suara.com/tekno/2020/11/13/191253/ini-jumlah-pengguna-internet-indonesia-2020-per-provinsi. Diakses pada 4 Maret 2025.
- [12] Rachmawati, I. (2020). Service Quality Role on Customer's Loyalty of Indonesia Internet Service Provider During Covid-19. *Jurnal Manajemen dan Pemasaran Jasa*, 13 (2), pp. 167-180.
- [13] Sugiyono. (2017). Metode Penelitian Kuantitatif, Kualitatif dan R&D. Bandung: PT. Alfabet.
- [14] Suttikun, C., & Meeprom, S. (2021). Examining The Effect of Perceived Quality of Authentic Souvenir Product, Perceived Value, and Satisfaction on Customer Loyalty. *Cogent Business & Management*, 8 (1), pp. 1-19.
- [15] Wilson, N. (2018). The Impact of Service Quality and Brand Image toward Customer Loyalty in the Indonesian Airlines Industry. *Jurnal Manajemen Indonesia*, 18 (3), pp. 222-234.