Analysis of the Influence of Price Perception, Service Quality and Safety on Customer Satisfaction in Increasing Customer Loyalty in PGN Jakarta Area

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Abstract:- **The purpose of this research is : a. To find out and analyze the effect of price perception on customer satisfaction, b. To find out and analyze the effect of service quality on customer satisfaction, c. To find out and analyze the effect of security on customer satisfaction, d. To find out and analyze the effect of price perception on customer loyalty, e. To find out and analyze the effect of service quality on customer loyalty, f. To find out and analyze the effect of security on customer loyalty, g. To find out and analyze the effect of gas customer satisfaction on customer loyalty. The analytical method used in this research is a PLS-based SEM approach. The research was conducted at PT Perusahaan Gas Negara Area Jakarta, by taking a population and a sample of 190 household customers and small customers. The results of the study found that price, service quality, and safety of each variable had a positive effect on customer satisfaction, price, service quality, and safety of each variable had a positive effect on customer loyalty, and customer satisfaction had a positive relationship to customer loyalty.**

Keywords:- Price perception, service quality, security, customer satisfaction, loyalty, SEM and PLS.

I. INTRODUCTION

Indonesia has a variety of major energy sources, including both new and renewable energy sources (EBT), such as geothermal, biomass, water, wind, sun, biogas, municipal waste, and biofuels, as well as fossil energy sources like coal, oil, and natural gas (BBN). These energy sources have been created and are being used to satisfy domestic and international energy demands. The primary energy supply is expected to be 314 MTOE and 943 MTOE under the BaU scenario in 2025 and 2050, respectively. Using an expected energy mix as shown in Figure 1, it is possible to meet these energy needs in 2018 with 32% coal, 28% gas, 32% oil, and 9% EBT. This energy mix will subsequently change in accordance with needs and technological advancements.

PGN, a government-owned natural gas supplier, must be able to coordinate its efforts and raise service standards for the usage of gas in both commercial and residential settings. Given that there is a government initiative to convert fuel oil to gas, PGN is prepared to assist and compete in the market for energy supplies for Indonesia.

Other energy sources including coal, oil, and EBT are PGN's key rivals in the gas sales market. Gas already accounts for 28% of Indonesia's energy supply, placing it in third place behind coal (32%), petroleum (32%), and the 2019 Indonesia Energy Outlook statistics from the Ministry of Energy and Mineral Resources.

PGN faces competition in the gas business from Pertagas, CNG, and even PLN to supply the energy needs of households. According to PGN's 2011-2020 financial reports, the company's revenue and sales decreased. To be able to expand PGN's sales, it is required to implement a plan so that existing customers do not switch and gas absorption increases. As a consequence, the researcher conducted a preliminary survey based on the results of prior studies, and the following findings were obtained:

No	Pernyataan	Variable	Jawaban Dalam %	
			Ya	Tidak
1	Saya menggunakan gas PGN karena persepsi harganya bersaing	Persepsi harga	83.9%	19.4%
2	Saya menggunakan gas PGN karena Kualitas layananya bagus	Kulaitas Layanan	90.6%	9.4%
3	Saya menggunakan gas PGN karena factor keamananya	Keamanan	90.6%	9.4%
4	Saya Puas menggunakan gas PGN karena memiliki persepsi harga, kualitas layanan, dan keamanan yang baik	Kepuasan	96.9%	3.1%
5	Saya akan loyal menggunakan Gas PGN karena persepsi harga, kualitas layanan, dan keamanan yang baik	Loyalitas	90.6%	9.4%

Table 1: Pre-survey processed results

To prove empirically the elements that influence consumer loyalty to gas in DKI Jakarta, the authors wish to undertake study titled "Analysis of the influence of perceived pricing, service quality, and safety on customer satisfaction in increasing customer loyalty in the Jakarta region."

II. LITERATUR REVIEW

A. Price
Pricing perception is the process through which customers understand price values or expected features of goods and services. When consumers review and study product prices, price perception is heavily influenced by consumer behavior (Malik and Yaqobo, 2012).

B. Service Quality
Lewin, as cited in Mamesah (2020), defines perceived quality as a customer's evaluation of the overall superiority or attributes of a price.

C. Safety
According to Kotler and Armstrong (2012), product quality is the combination of a product's durability, dependability, precision, and ease of maintenance, among other characteristics. The quality of gas products determines their safety.

D. Customer Satisfaction
According to Schiffman (2015), a person's level of satisfaction is determined by comparing the perceived product performance to their expectations. All marketing initiatives should aim to maximize client happiness.

E. Loyalty
According to Oliver (2014), customer loyalty is a customer's profound commitment to re-subscribe or repurchase selected products/services in the future, notwithstanding the possibility that situational effects and marketing efforts would create a change in behavior.

F. Hypothesis and Research Framework
The following seven hypotheses and frameworks were derived from past research findings and relevant literature:
- Perceived price has a positive and significant effect on customer satisfaction
- Service quality has a positive and significant effect on customer satisfaction
- Security has a positive and significant effect on customer satisfaction
- Price perception has a positive and significant effect on customer loyalty
- Service quality has a positive and significant effect on customer loyalty
- Security has a positive and significant effect on customer loyalty
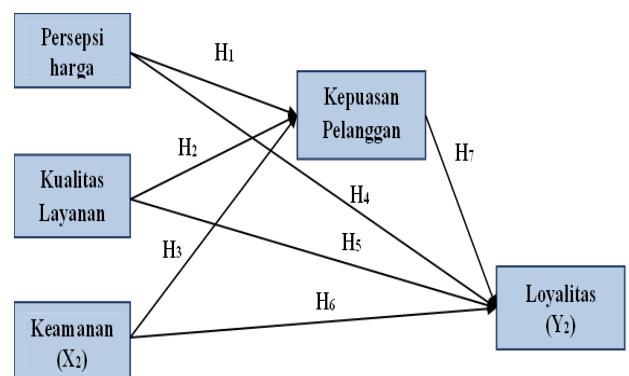- Customer satisfaction has a positive and significant effect on customer loyalty

Fig. 1: Research Thinking Framework

III. METODE PENELITIAN

A. Research desain
This research employs both quantitative and descriptive causal research approaches. Due to the lack of a relationship or direct interaction between the researcher and respondent, this study employs a quantitative methodology. Therefore, this study is objective and not subjective.

B. Data Collecting Method

Probability sampling was employed as the data gathering approach for this study. In this study, individuals were selected via cluster random sampling based on gas supply sites in specific regions. In this study, data were gathered by the distribution of questionnaires. Using a questionnaire, the study gathered data from PGN gas customers in the Jakarta sales area to answer numerous research variables. In addition, data was gathered through a literature review, which involved an examination of numerous literature articles, references, and documentation pertinent to the research topic.

C. Data Analysis Methods

A Partial Least Square (PLS)-based Structural Equation Model (SEM) technique was used to test the research hypothesis. PLS is a variant-based or component-based structural equation model (SEM). Structural Equation Model (SEM) is a statistical area that may evaluate a number of difficult-to-measure correlations simultaneously.

IV. RESULTS AND DISCUSSION

This study is to investigate and determine the impact of perceived pricing, service quality, and safety on consumer satisfaction and loyalty in the PGN Jakarta region. Distribution of research questionnaires to 190 PGN customers in the Jakarta Area sales area constituted the data gathering procedure.

A. Description of Respondents
- Out of 190 male respondents, 86 respondents (45.3%) and female respondents, 104 respondents (54.7%).
- Respondents with the customer type Household 1 had 118 responses (62.1%), respondents with the customer type Household 2 had 50 responses (26.3%), respondents with the customer type Small Customer 1 had 16 responses (8.4%), and respondents with the customer type Small 2 had 6 responses (3.2%).
- There were 121 respondents with a subscription length of >10 years (63.7%), 51 respondents with a subscription length of 5-10 years (26.8%), 14 respondents with a subscription length of 1-5 years (7.4%), and 4 respondents with a subscription length of 1 year (2.1%).

B. Descriptive Statistical Test Results

Variabel	Kode Item	Min	Max	Standard Deviation	Mean
Persepsi harga	X1.1	1	5	1.001	3.632
	X1.2	1	5	0.975	3.658
	X1.3	1	5	0.954	3.616
	X1.4	1	5	0.977	3.647
Total Nilai Rata-rata dan Standar Deviasi				0.977	3.638
Kualitas Layanan	X2.1	1	5	0.954	3.616
	X2.2	1	5	0.928	3.642
	X2.3	1	5	0.929	3.668
	X2.4	1	5	0.993	3.611
	X2.5	1	5	0.932	3.611
Total Nilai Rata-rata dan Standar Deviasi				0.947	3.630
Keamanan	X3.1	1	5	0.877	3.879
	X3.2	1	5	0.888	3.821
	X3.3	1	5	0.915	3.711
Total Nilai Rata-rata dan Standar Deviasi				0.893	3.804
Kepuasan Pelanggan	Y1.1	1	5	0.930	3.721
	Y1.2	1	5	0.894	3.700
	Y1.3	1	5	0.948	3.716
Total Nilai Rata-rata dan Standar Deviasi				0.924	3.712
Loyalitas Pelanggan	Y2.1	1	5	1.014	3.679
	Y2.2	1	5	1.022	3.579
	Y2.3	1	5	0.996	3.579
	Y2.4	1	5	0.948	3.621
Total Nilai Rata-rata dan Standar Deviasi				0.995	3.615

Table 2: Descriptive Statistics Test

The lowest, maximum, and average values of perceived pricing, service quality, safety, customer satisfaction, and customer loyalty at PGN in the Jakarta Area sales area are interpreted using descriptive statistics. From the information gathered in this study, it can be deduced that of the 19 items of the instrument that were administered as a trial to 190 respondents, a total of 18 were found to be statistically significant.

C. Analysing SEM Using SmartPLS

➤ Validity Testing

According to Chin in Ghozali and Latan's (2015) convergent validity examination of each construct indicator, an indicator is considered valid if its value is larger than 0.5.
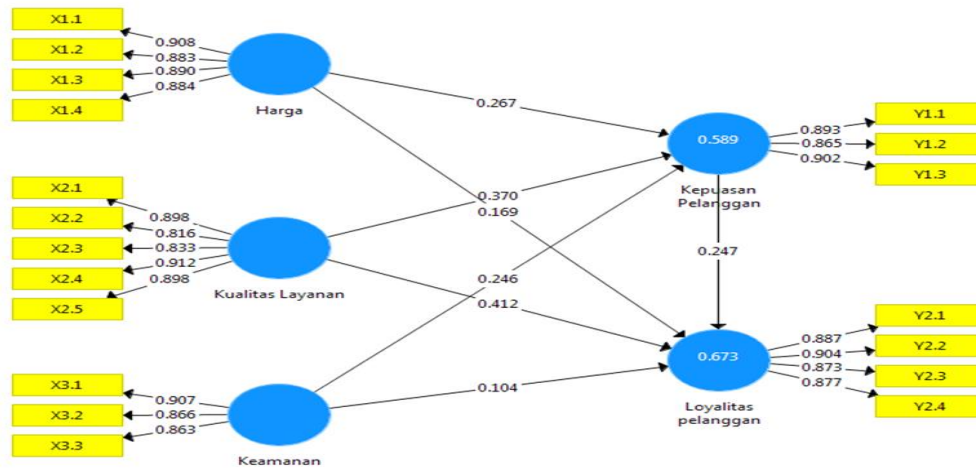
Fig. 2: PLS models

Variabel	Kode Item	*Outer Loadings*	Keterangan
Persepsi harga	X1.1	0.908	Valid
	X1.2	0.883	Valid
	X1.3	0.890	Valid
	X1.4	0.884	Valid
Kualitas Layanan	X2.1	0.898	Valid
	X2.2	0.816	Valid
	X2.3	0.833	Valid
	X2.4	0.912	Valid
	X2.5	0.898	Valid
Keamanan	X3.1	0.907	Valid
	X3.2	0.866	Valid
	X3.3	0.863	Valid
Kepuasan Pelanggan	Y1.1	0.893	Valid
	Y1.2	0.865	Valid
	Y1.3	0.902	Valid
Loyalitas Pelanggan	Y2.1	0.887	Valid
	Y2.2	0.904	Valid
	Y2.3	0.873	Valid
	Y2.4	0.877	Valid

Table 3: Validity Testing Results

All indicators have an outside loading greater than 0.5. An indicator is considered legitimate if its value is larger than 0.5, however it is eliminated from the model if its outer loading is less than 0.5.

> *Discriminant Validity Testing*

Examining the results of the Heterotrait-Monotrait Ratio (HTMT) matrix in PLS to assess discriminant validity. Where it is advised that the measurement value be less than 0.85, and even if it is greater than 0.85 up to a maximum of 0.90, it is still deemed adequate.

	Persepsi harga	Kualitas Layanan	Keamanan	Kepuasan Pelanggan	Loyalitas Pelanggan
Persepsi harga					
Kualitas Layanan	0.850				
Keamanan	0.597	0.590			
Kepuasan Pelanggan	0.772	0.791	0.676		
Loyalitas Pelanggan	0.784	0.845	0.626	0.806	

Table 4: Discriminant Validity Test (Heterotrait-Monotrait Ratio)

> *Reliability Testing*

If the composite reliability value for all latent variable values is greater than 0.70 and Cronbach's alpha is greater than 0.70, this indicates that the concept has strong reliability or that the questionnaire employed in this study is reliable or consistent.

Variabel	Composite Reliability	Keterangan
Persepsi harga	0.939	*Reliable*
Kualitas Layanan	0.941	*Reliable*
Keamanan	0.911	*Reliable*
Kepuasan Pelanggan	0.917	*Reliable*
Loyalitas Pelanggan	0.936	*Reliable*

Table 5: Discriminant Validity Test (Fornell-Larcker Criterion)

➢ *R Square (R2)*

R2 values of 0.67, 0.33, and 0.19 for endogenous latent variables in the structural model are indicative of a "strong" model.

	R Square	R Square Adjusted
Kepuasan Pelanggan	0.589	0.582
Loyalitas Pelanggan	0.673	0.666

Table 6: R2 Value of Each Variable

According to table 4.12, the R2 value for customer satisfaction is 0.589, indicating that it falls within the moderate group. The perception of price, service quality, and security has a substantial effect on customer happiness.

➢ *Effect Size (F2)*

The f2 values of 0.02, 0.15, and 0.35 indicate whether the latent variable predicator has a modest, moderate, or substantial effect on the structural level, respectively.

	Kepuasan Pelanggan	Loyalitas Pelanggan
Persepsi harga	0.064	0.030
Kualitas Layanan	0.124	**0.172**
Keamanan	0.101	0.021
Kepuasan Pelanggan		0.077

Table 7: Effect Size Value (F2)

➢ *Predictive Relevance Value (Q2)*

The predictive value for Q2 is 0.002 (weak), 0.15 (moderate), and 0.35 (high) (strong). If the value of predictive relevance (Q2) is more than zero, it shows that the exogenous latent variable serves as an explanatory variable capable of predicting the endogenous variable; conversely, if the value is less than zero, it indicates that the model lacks predictive relevance.

	SSO	SSE	Q² (=1-SSE/SSO)
Persepsi harga	760.000	760.000	
Kualitas Layanan	950.000	950.000	
Keamanan	570.000	570.000	
Kepuasan Pelanggan	570.000	323.194	**0.433**
Loyalitas Pelanggan	760.000	386.684	**0.491**

Table 8: Results of Construct Cross-Validation Redundancy Testing

D. Hypothesis test

The t-statistic coefficient is used to test the research hypothesis. Where the command bootstrapping generates t-statistics. Significant indicators have a t-statistic greater than 1.96
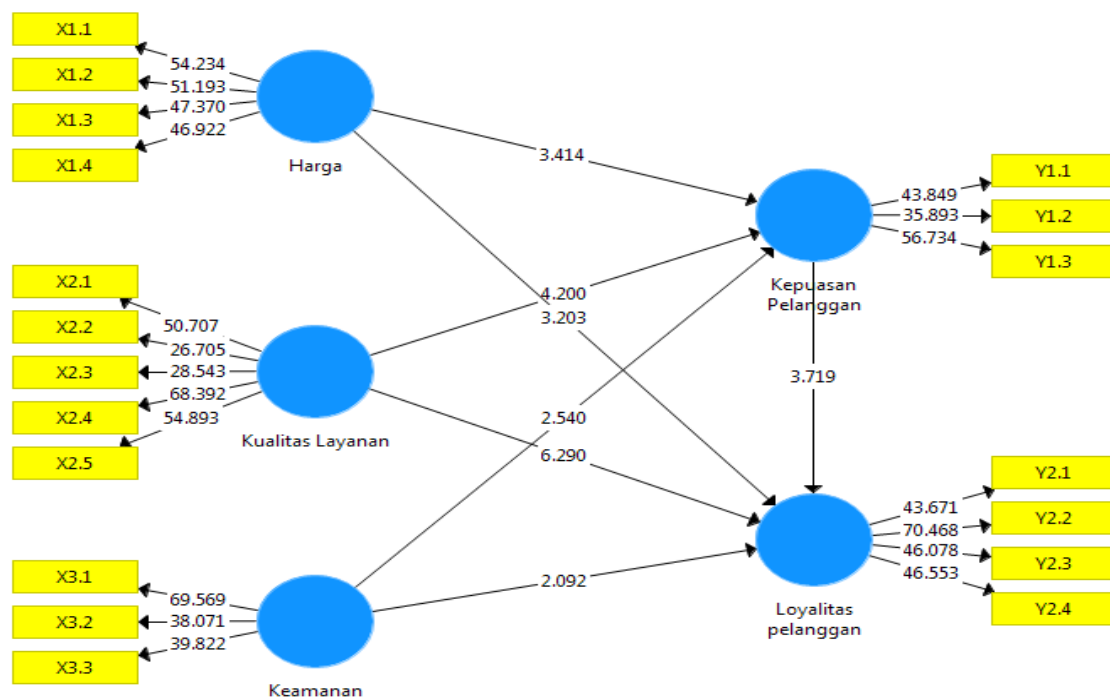

Fig. 3: Bootstrapping Models

The outcomes of evaluating the direct influence hypothesis can be summarized as follows. It can be concluded that the results of testing the direct influence hypothesis are as follows:

➢ *Hypothesis 2 Perceived price on customer satisfaction*

Perceived price has a t-statistic value of 3,414 > 1.96, a p-value of 0.001 <0.05 and the original sample is 0.267, so H2 is accepted, meaning that price perception has a positive and significant effect on customer satisfaction in the PGN Jakarta Area.

➢ *Hypothesis 2 Service Quality on Customer Satisfaction*

Service quality has a t-statistic value of 4,200 > 1.96, a p-value of 0,000 <0.05 and the original sample is 0,370, so H2 is accepted, meaning that service quality has a positive and significant effect on customer satisfaction in the PGN Jakarta area.

➢ *Hypothesis 3 Security Against Customer Satisfaction*

Security has a t-statistic value of 2,540 > 1.96, a p-value of 0.011 <0.05 and the original sample is 0.246, so H3 is accepted, meaning that security has a positive and significant effect on customer satisfaction in the PGN Jakarta area.

➢ *Hypothesis 4 Perceived price on customer loyalty*

Perceived price has a t-statistic value of 3,203 > 1.96, a p-value of 0.001 <0.05 and the original sample is 0.169, so H4 is accepted, meaning that price perception has a positive and significant effect on customer loyalty in the PGN Jakarta area.

➢ *Hypothesis 5 Service Quality Against Customer Loyalty*

Service quality has a t-statistic value of 6,290 > 1.96, a p-value of 0,000 <0.05 and an original sample of 0.412, so H5 is accepted, meaning that service quality has a positive and significant effect on customer loyalty in the PGN Jakarta area.

➢ *Hypothesis 6 Security Against Customer Loyalty*

Security has a t-statistic value of 2,092 > 1.96, a p-value of 0.037 <0.05 and the original sample is 0.104, so H6 is accepted, meaning that security has a positive and significant effect on customer loyalty in the PGN Jakarta area.

➢ *Hypothesis 7 Customer Satisfaction Against Customer Loyalty*

Customer satisfaction has a t-statistic value of 3,719 > 1.96, a p-value of 0.000 <0.05 and the original sample is 0.247, so H7 is accepted, meaning that customer satisfaction has a positive and significant effect on customer loyalty in the PGN Jakarta area..

V. CONCLUSIONS AND SUGESSTION

This study explores and evaluates the effect of perceived pricing, service quality, and safety on customer loyalty in the PGN Jakarta region, as mediated by customer satisfaction. In this work, the Structural Equation Modeling (SEM) analysis technique using SmartPLS version 3.0 statistical software was employed to analyze the data.

A. Conclusions

On the basis of the findings of a study of 190 PGN Customers in the Greater Jakarta Area about the influence of pricing perception, service quality, and safety on customer loyalty as mediated by customer satisfaction, the following can be concluded:

- Perceived price has a positive and statistically significant effect on customer satisfaction, meaning that changes in the value of price perceptions have a one-way effect on changes in customer satisfaction or, in other words, if price perception increases, customer satisfaction will also increase and has a statistically significant effect. In the PGN Jakarta Area, perceived prices that align with customer expectations would have a favorable effect on customer satisfaction.

- Service quality has a positive and statistically significant influence on customer satisfaction, meaning that changes in the value of service quality have a one-way effect on changes in customer satisfaction or, in other words, if the quality of service increases, the level of customer satisfaction will also increase and has a statistically significant effect.

- Security has a positive and statistically significant effect on customer satisfaction, meaning that changes in the value of Security have a unidirectional effect on changes in customer satisfaction or, in other words, if security increases, the level of customer satisfaction will increase and security has a statistically significant effect.

- Perceived price has a positive and statistically significant effect on customer loyalty, meaning that changes in the value of perceived price have a one-way effect on changes in customer loyalty or, in other words, if price perception increases, there will be an increase in the level of customer loyalty.

- Service quality has a positive and statistically significant effect on customer loyalty, indicating that if service quality improves, customer loyalty will grow and has a statistically significant effect.

- Security has a positive and statistically significant effect on customer loyalty, indicating that changes in the value of security have a direct effect on changes in customer loyalty, or in other words, if security increases, there will be an increase in the degree of customer loyalty.

- Customer satisfaction has a positive and statistically significant effect on customer loyalty, meaning that changes in the value of customer satisfaction have a one-way effect on changes in customer loyalty, or in other words, if customer satisfaction rises, there will be an increase in the level of customer loyalty.

B. Suggestion

- Customers respond positively to the company's high level of service quality. This represents the employee's skill, friendliness, attitude, and professionalism, all of which can boost customer satisfaction in relation to good service. PGN Jakarta Area would do well to maintain the quality of its services for the purpose of consumer confidence, as this will have a beneficial impact on customer loyalty. Preparing a careline concept is one of the measures that organizations must do in order to increase consumer trust by enhancing the current level of service. With this

careline concept, it is envisaged that consumers will feel more at ease if they choose to make inquiries/complaints/complaints about difficulties with their PGN Gas Products, which may be done exclusively via telephone careline. The second phase is to conduct interviews with consumers about what they want/criticise and make comments regarding the quality of existing Gas Products at PGN, which can then be used as a reference for future improvement/development of Gas Products at PGN.

- To promote client loyalty in the PGN Jakarta Area by boosting customer satisfaction. Companies in the gas industry, in particular, require a high level of customer satisfaction in order to foster client loyalty. Customers that are loyal to a company are more likely to make repeat purchases and look to the company for their needs. To achieve customer happiness, the first step is to thoroughly comprehend the customer. This is so that companies can successfully engage with customers and provide them with the appropriate gas goods. Each customer must be able to be accurately profiled by businesses.

- Consideration can be given to this study's limitations for future research. The number of respondents in this survey is insufficient to describe the actual conditions. This study's sample size was only 190 individuals, which did not represent all PGN consumers in the Jakarta region. This study utilizes a questionnaire as a measuring instrument to save time and effort. However, the questionnaire has limitations, such as the possibility of respondent bias. There is a chance that the respondents did not answer the questionnaire accurately or that they filled out the questionnaire based on their ideal expectations rather than the real conditions. This can result in measurements that do not accurately characterize the variables.

- It is also recommended that additional research be conducted to develop other dimensions of the indicators of price perception, quality of work services, security, customer satisfaction, and customer loyalty, so that a more in-depth analysis can be conducted to determine the level of customer loyalty in the PGN Jakarta region..

REFERENCES

[1.] Abdillah, Willy dan Jogiyanto, 2014. Konsep & Aplikasi PLS (Partial Least. Square) untuk Penelitian Empiris. Yogyakarta: BPFE

[2.] Ghozali, Imam, Hengky Latan, 2015. Konsep, Teknik, Aplikasi Menggunakan Smart PLS 3.0 Untuk Penelitian Empiris. BP Undip.

[3.] Kotler, P., and Keller, K.L. 2012. *Marketing Management* 13. New Jersey: Pearson Prentice Hall, Inc.

[4.] Kotler, P., Keller, K.L., (2016). *Marketing Management, 15e édition*. New Jersy: Pearson Education.

[5.] Kotler, P., Armstrong, G., (2018). *Principles of Marketing 17th Global Edition*, Pearson Education Limited.

[6.] Malhotra, N., 2019. Marketing Research: An applied orientation, Marketing Research. Pearson.

[7.] N, D.E., 2019. Outlook Energi Indonesia (OEI) 2019, Journal of Chemical Information and Modeling. Dewan Energi Nasional

[8.] Oliver, R.L., 2014. Satisfaction: A behavioral perspective on the consumer, Second edition, Satisfaction: A Behavioral Perspective on the Consumer, Second Edition. Taylor and Francis. doi:10.4324/9781315700892

[9.] Parasuraman., 2014., *The Behaviorial Consequenses of Service Quality*. New Jersey : Prentince Hall.

[10.] Riseetyawan, A., Sularto, Sari, A. E., & Badrunsyah. (2022). THE EFFECT OF FACILITIES AND SERVICE QUALITY ON CUSTOMER SATISFACTION OF GAS STATION IN SETU BEKASI, WEST JAVA. MARGINAL : JOURNAL OF MANAGEMENT, ACCOUNTING, GENERAL FINANCE AND INTERNATIONAL ECONOMIC ISSUES, 1(2), 27–36. https://doi.org/10.55047/marginal.v1i2.130

[11.] The American Society of Mechanical Engineers, (2018). *Guide for Gas Transmission and Distribution Piping Systems,* ASME B31.8-2019. ASME, New York, NY,.

[12.] Wirtz, J., Lovelock, C., 2021. Services Marketing, Services Marketing. WORLD SCIENTIFIC (US). doi:10.1142/y0024