

## **The Effect Of Service Quality And Relationships On Customer Satisfaction Has An Impact On Customer Loyalty Of Self-Service Petrol Stations In Bekasi During The Covid-19 Pandemic**

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### **ABSTRACT**

This study aims to analyze the effect of tangible, reliability, assurance, responsiveness, empathy on customer satisfaction as well as the effect of relationship and customer satisfaction on customer loyalty of gas stations self-service during the covid 19 pandemic. The method used in this study uses quantitative methods. Data were collected through questionnaires distributed online. Respondents from this study were customers of gas stations self-service in Bekasi, amounting to 150 samples. The analysis technique uses the Structural Equation Model (SEM) with SPSS v13 and AMOS v20 tools. The results showed that the variables of reliability, assurance and responsiveness influenced customer satisfaction with gas stations and self-service but variables had tangible and empathy no effect on customer satisfaction, while the variables of customer satisfaction and relationship had an effect on customer loyalty with a system self-service.

**Keywords:** *tangible, reliability, assurance, responsiveness, empathy, relationship, customer satisfaction, customer loyalty, self-service*

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### **INTRODUCTION**

Our society is on the verge of a fourth industrial revolution that is growing at an exponential pace, marked by a technological revolution with breakthroughs in the fields of robotics, artificial intelligence, the internet and more. Service providers introduce mechanisms that provide convenient services to their customers in achieving better productivity and satisfaction. Over the past decade, the adoption of Self-Service Technology (SST) is a business phenomenon that has emerged from the service sector industry (Iqbal et al., 2018). Furthermore, SST can be more beneficial to businesses, helping them to serve more customers with fewer resources thereby reducing costs as employees can be replaced by SSTs. SST also helps businesses to reduce the cost of staff training, equipment, and communication (Leung & Matanda, 2013)

Previous studies have focused on the importance of service quality on customer satisfaction, and loyalty through a recognized measurement scale, namely SERVQUAL (Parasuraman, 1990) with conventional gas station objects. However, a small number of research efforts have been made to examine the impact of the service quality dimension and relationship on customer satisfaction and loyalty with the object of self-service petrol stations. This study attempts to examine the role of SST and relationships in the service delivery process and to investigate and understand their impact on customer satisfaction and loyalty of today's growing self-service petrol stations.

Many innovations have been made by petrol stations in attracting customers to buy motor vehicle fuel, such as improving the quality of each filling terminal, improving the operational standards of each branch and also starting to open branches with self-service technology (SST) or self-service. Self-service technology (SST) is a good breakthrough that although in some

countries, such as Australia, it has been implemented since 1988. With this concept, it is hoped that efficiency will be created from the reduction of employees that are usually present at each filling terminal. PT Pertamina Retail is one of the petrol station owner companies that uses a self-service system to increase customer satisfaction. PT Pertamina Retail has started the digitalization process since 2017, in accordance with the direction of the Parent Company of Pertamina which expects all business processes to be fully integrated in the future (Annual Report, 2019). The digitization of petrol stations has been carried out through the implementation of Pertamina's PSO (Public Service Obligation) at COCO (Corporate Owner Corporate Operate) petrol stations, Digital Rankas, EDC Android to make payments, Payment Console to make non-cash transactions at petrol stations through Link Aja and the establishment of petrol stations that implement a self-service system. Self-service systems are often also called self-service.

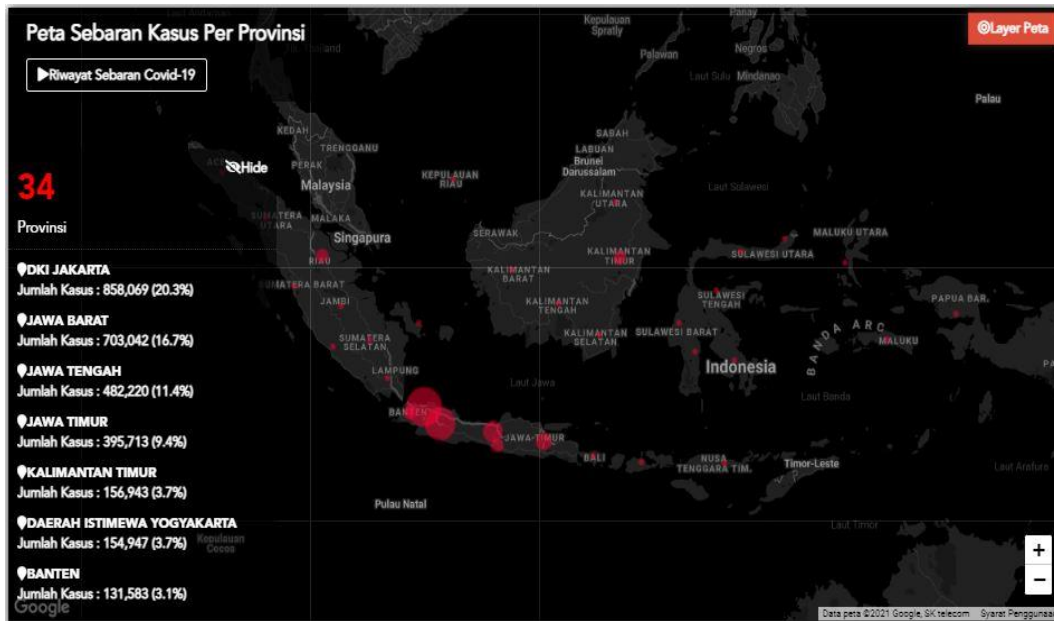
The first self-service petrol station in Indonesia is under the auspices of Pertamina and managed by the government directly, namely the COCO (Company Operation Company Owner) Mini Azalea, Cikarang. Until now, most petrol stations that offer a self-service system are owned by Pertamina. PT. Pertamina Retail has 99 petrol stations with a self-service system and there are 5 petrol stations with a self-service system in Bekasi City. Petrol stations located on Jalan Jenderal Ahmad Yani, Jalan Pahwalan and Summarecon Bekasi provide self-service services only for 2-wheeled motor vehicles. Petrol stations located on Jalan Raya Narogong provide self-service services only for 4-wheeled motor vehicles, while petrol stations located on Jalan Setia Mekar provide self-service services for 2- and 4-wheeled motorized vehicles.

Procedures for refueling at self-service system petrol stations where before refueling at self-service system petrol stations, customers are required to first pay the required fuel nominal. There are 2 ways to make payments, for customers to make payments via credit/debit card or with a link, customers can make transactions through electronic payment machines available at the charging terminal according to the operator's instructions. Customers who make cash payments can make transactions at the operator's section. The operator will enter the type and price of fuel to be purchased into the control system, after which the operator will inform the customer which filling terminal can be used. The position of the operator is in the previous part before the filling terminal (Saputro et al., 2023).

The implementation of the self-service system does reduce the interaction between customers and employees but does not reduce the interaction between customers and customers through the nozzle (funnel). Because customers are required to hold a nozzle (funnel) at the time of filling, the chances of nozzle (funnel) becoming a source of transmission of the Covid-19 virus are getting stronger. Customers have a great chance of contracting if there is a customer who is positive for Covid-19, as well as employees. This will have an impact on the temporary closure of petrol stations if proven to be a source of transmission. Customers who are afraid of contracting it may choose not to refuel at self-service gas stations and switch to filling at conventional gas stations.

The Covid-19 virus has caused a very long pandemic period and has had a major impact on Indonesia's economy and even the world. The government enacted the PSBB (Large-Scale Social Restrictions) policy to prevent the spread of the Covid-19 virus and avoid economic paralysis. The implementation of the PSBB includes the closure of schools, offices, restrictions on religious activities, activities in public places, socio-cultural activities and restrictions on

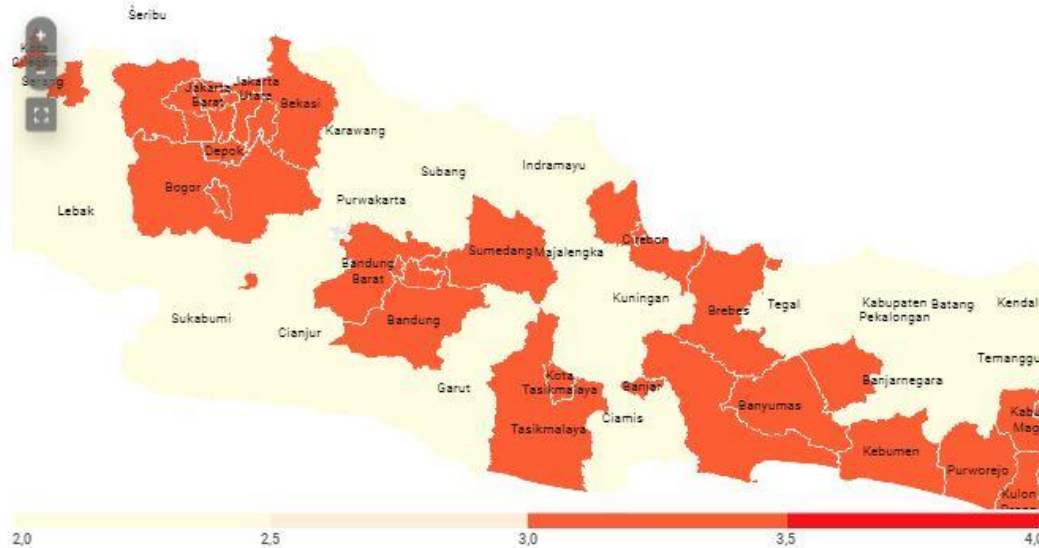
public transportation. The office vacation in question is not to stop office activities but to hire employees from home or often called WFH (Work From Home). The PSBB is considered quite effective in reducing the spread of the Covid-19 virus until after the 2021 Eid holiday, Covid-19 cases surge again. The government has enacted a new policy, namely PPKM (Enforcement of Emergency Community Activity Restrictions). The number of Covid-19 cases in Indonesia can be seen in Figure 1.



**Figure 1. Number of Covid-19 Cases in Indonesia**

Source: Distribution Map, 2021

It can be seen from Figure 1.1 that the island of Java has the most covid-19 cases in Indonesia, so the government enforced the Emergency PPKM. The Emergency PPKM was implemented in 48 Regencies/Cities with a level 4 pandemic situation assessment and 74 Regencies/Cities with a level 3 pandemic situation assessment on the islands of Java and Bali. This assessment level is assessed based on factors such as the rate of transmission and response capacity in an area. Assessment levels 3 and 4 are areas that have high transmission transmission, but the regional response capacity is classified as moderate to low. Activity restrictions for non-essential sectors include 100 percent WFH and all teaching and learning activities are carried out online/online, while for essential sectors a maximum of 50 percent of WFO (Work from Office) staff and for critical sectors 100 percent WFO is allowed. West Java Province has the second highest number of Covid-19 cases in Indonesia and Bekasi City/Regency is included in the area with a level 3 assessment (Ayuningtyas et al., 2021). Areas with level 3 and 4 assessments in West Java can be seen in Figure 2.



**Figure 2. Areas with Levels 3 and 4 in West Java and its surroundings**

*Source: Jahawir Gustav Rizal, 2021*

During the Emergency PPKM period, shopping centers are closed; restaurants and restaurants only accept delivery/take away; places of worship and public areas in Bekasi are closed. It is undeniable that the Emergency PPKM implemented has a bad impact on companies and MSMEs (Micro, Small and Medium Enterprises), not a few companies and MSMEs have lost money and even gone out of business due to the lack of income that reaches the target. The implementation of the Emergency PPKM has exceptions for several offices and agencies that contribute to services related to health, defense and security, public order, food needs, and oil and gas fuel. Gas stations (Public Fuel Filling Stations) are one of the facilities that are included in the exemption because petrol stations are agencies that serve fuel oil needs.

The role of service quality to customers can support the expected achievement of the company based on purchase satisfaction (Bowen & Chen, 2001). Pertamina offers a self-service system with the aim of improving service quality by reducing queue time and increasing company efficiency because it no longer requires an operator at each charging terminal. A self-service system that does not require an operator at each charging terminal can reduce the interaction between operators and customers so that it is expected to reduce the risk of transmission of the Covid-19 virus.

Pertamina improves the quality of service as a form of protection for customers of petrol stations with a self-service system with the aim of providing comfort and safety from exposure to the Covid-19 virus, in an article on Pertamina's official website states that periodic cleaning of nozzle is carried out using disinfectants. Pertamina also provides hand sanitizers at each filling station for customers to use after refueling. The quality improvement above is Pertamina's effort to understand customer needs so that customers are satisfied in the hope of having a positive impact on customer loyalty.

In addition to improving service quality with the implementation of a self-service system, petrol station management develops a special relationship by providing payment facilities with tempo, namely the use of credit cards in payment. Pertamina also seeks to build relationships

by providing special discounts or cashback periodically for customers who make non-cash payments using linkaja or mypertamina. These efforts are expected to create customer loyalty.

Based on the description above, the title proposed is The Influence of Service Quality and Relations on Customer Satisfaction which has an impact on Customer Loyalty of Self-Service Gas Stations in Bekasi during the Pandemic.

This research was conducted with the aim of analyzing and testing the influence of tangible on customer satisfaction at self-service gas stations during the pandemic, analyzing and testing the influence of reliability on customer satisfaction at self-service gas stations during the pandemic, analyzing and testing the influence of assurance on customer satisfaction at self-service gas stations during the pandemic, analyzing and testing the influence of rapid responsiveness to customer satisfaction at self-service petrol stations during the pandemic, analyzing and testing the influence of empathy on customer satisfaction at petrol stations with self-service systems during the pandemic, analyzing and testing the influence of customer satisfaction on customer loyalty at petrol stations with self-service systems during the pandemic, analyzing and testing the influence of relationships on customer loyalty at petrol stations with self-service systems during the pandemic period pandemic.

The benefits of this research are that it can provide information to interested parties and provide and add literature so that it can be used as writing material for the next research, providing input to agencies in developing strategies in increasing income to achieve targets, as a reference for related agencies to further improve service to customers, can be evaluation material to improve the shortcomings and advantages that has been carried out, can find out the response of customers who use the self-service system during the Covid-19 pandemic and this research can provide information and knowledge for the public about risks and solutions at PERTAMINA petrol stations that provide self-service services for customers during the Covid-19 pandemic.

## **METHOD**

The form of research used by researchers is causal. The definition of causality is research that tests cause and effect between independent variables and dependent variables (Sugiyono, 2015). In this study, the selection of respondents is based on criteria relevant to the purpose of the study, namely, to measure the influence of service quality and relationships on customer satisfaction and loyalty. The selected respondents are individuals who have used the company's services on an ongoing basis, because they are considered to have sufficient experience to evaluate the variables studied, namely the dimensions of service quality as well as customer satisfaction and loyalty.

The sample withdrawal method used is purposive sampling, where respondents are selected based on certain criteria that are directly related to this study, namely customers who are active in using the service for a certain period of time. This approach is important because it ensures that the data obtained is relevant and representative to answer the research question.

As for the justification of sample size, an adequate sample size is very important in quantitative research to ensure that the results of the study can be generalized with a high degree of confidence. Based on Slovin's calculations, the sample size is calculated considering the number of service users and the acceptable margin of error. For example, assuming a population of 10,000 customers and an error rate of 5%, the minimum sample size required is

about 385 respondents. This measure is sufficient to provide statistically reliable results and strengthen the external validity of this study.

With a representative sample size, the study also reduced the risk of sampling bias, as well as increased its statistical power, which ultimately made it possible to detect a clearer influence between independent and dependent variables. A sufficiently large sample provides uniformity in data variation, so that the results obtained are more stable and not affected by data fluctuations that may occur in smaller samples.

In addition, a large enough sample size also increases the reliability of the research results, as the variation or heterogeneity of the respondents will better reflect the actual population, ultimately resulting in more accurate and comprehensive findings.

## RESULTS AND DISCUSSION

### 1. Reliability and Validity Tests

**Tabel 1. Regression Weight Full Struktural Model**

		Estimate	S.E.	C.R.	P	Std. Estimate	
SATISFACTION<---	TANGIBLE	8,462	4,585	1,846	,065	1,166	
SATISFACTION<---	RELIABILITY	-5,942	2,825	-2,104	,035	-2,113	
SATISFACTION<---	INSURANCE	8,374	3,246	2,580	,010	2,902	
SATISFACTION<---	RESPONSIVENESS	-2,479	1,207	-2,054	,040	-,805	
SATISFACTION<---	EMPATHY	-1,267	,765	-1,655	,098	-,671	
LOYALTY <---	SATISFACTION	,178	,060	2,982	,003	,246	
LOYALTY <---	RELATIONSHIP	,646	,098	6,571	***	,570	
X1.3	<---	TANGIBLE	1,000			,382	
X1.2	<---	TANGIBLE	2,984	,695	4,291	***	,689
X1.1	<---	TANGIBLE	3,522	,785	4,487	***	,791
X2.3	<---	RELIABILITY	1,000			,743	
X2.2	<---	RELIABILITY	,937	,113	8,279	***	,708
X2.1	<---	RELIABILITY	,805	,105	7,684	***	,666
X3.3	<---	INSURANCE	1,000			,681	
X3.2	<---	INSURANCE	,575	,106	5,411	***	,470
X3.1	<---	INSURANCE	1,025	,122	8,429	***	,756
X4.3	<---	RESPONSIVENESS	1,000			,698	
X4.2	<---	RESPONSIVENESS	1,052	,127	8,300	***	,728
X4.1	<---	RESPONSIVENESS	1,324	,140	9,463	***	,836
X5.3	<---	EMPATHY	1,000			,730	
X5.2	<---	EMPATHY	,498	,075	6,683	***	,584
X5.1	<---	EMPATHY	,710	,090	7,916	***	,688
X6.3	<---	RELATIONSHIP	1,000			,854	
X6.2	<---	RELATIONSHIP	,997	,081	12,358	***	,886
X6.1	<---	RELATIONSHIP	,736	,091	8,109	***	,871
Y1.1	<---	SATISFACTION	1,000			,918	

**Tabel 2. Regression Weight Full Struktural Model**

Y1.2	<---	SATISFACTION	1,050	,077	13,610	***	,923
Y1.3	<---	SATISFACTION	,628	,092	6,816	***	,802
Y2.3	<---	LOYALTY	1,000				,903
Y2.2	<---	LOYALTY	,929	,054	17,333	***	,912
Y2.1	<---	LOYALTY	1,042	,060	17,451	***	,919
X2.4	<---	RELIABILITY	,846	,108	7,826	***	,678

Source: Primary data processed in this study, 2021

In Table 2, the statistical test is carried out by observing the level of significance of the relationship between the variables shown by C.R which is identical to the t-test in regression and its probability value (P). The significance relationship is characterized by a C.R value greater than 2.00 and a P value smaller than 0.05.

### 1) Reliability Test

Reliability is a measure of the internal consistency of the indicators of a construct that indicates the degree to which each indicator indicates a common latent construct/factor (Ferdinand, 2005). Basically, the reliability test shows the extent to which a measuring instrument can provide relatively similar results if measured again on the same subject. In other words, how specific things help each other in explaining a general phenomenon.

The threshold value used to assess an acceptable level of reliability is  $\geq 0.60$  (Ghozali, 2005), although the number is not a "dead" measure. Composite Reliability is obtained through the following formula:

$$\text{Construct-Reliability} = \left( \frac{\sum (\text{Std Loading})^2}{\sum (\text{Std Loading})^2 + \epsilon_j} \right)$$

Information:

Std Loading= standardized loading for each indicator, i.e. lambda value for each indicator.

$\epsilon_j$ = Measurement error of each indicator/ 1- Indicator Reality.

**Table 3. Standard Data Loading Results**

	Lambda Loading Indikator			Sum	
Tangible	0,791	0,689	0,382	1,862	
Reliability	0,666	0,708	0,678	0,743	2,795
Insurance	0,756	0,681	0,470	1,907	
Responsiveness	0,836	0,728	0,698	2,262	
Empathy	0,688	0,584	0,730	2,002	
Relationship	0,871	0,886	0,854	2,611	
Satisfaction	0,802	0,923	0,918	2,643	
Loyalty	0,919	0,912	0,903	2,734	

Source: Primary data processed in this study, 2021

**Tabel 4. Hasil Measurement Error Data**

	Measurement Error Indikator			Sum	
Tangible	0,374	0,525	0,854	1,753	
Reliability	0,556	0,498	0,540	0,447	2,043
Insurance	0,428	0,536	0,779	1,743	
Responsiveness	0,301	0,470	0,512	1,283	

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<i>Empathy</i>	0,526	0,658	0,467	1,652
<i>Relationship</i>	0,241	0,215	0,270	0,727
<i>Satisfaction</i>	0,356	0,148	0,152	0,662
<i>Loyalty</i>	0,155	0,168	0,184	0,508

Source: Primary data processed in this study, 2021

**Table 5. Data Reality Calculation**

	Realism
<i>Tangible</i>	0,664
<i>Reliability</i>	0,792
<i>Insurance</i>	0,675
<i>Responsiveness</i>	0,799
<i>Empathy</i>	0,708
<i>Relationship</i>	0,903
<i>Satisfaction</i>	0,913
<i>Loyalty</i>	0,936

Source: Primary data processed in this study, 2021

Based on the results of data reliability measurement, the data reliability value in this study is above 0.6. Thus this research is acceptable.

## 2) Validity Test

The validity of convergence can be assessed from the measurement model developed in the study by determining whether each estimated indicator shows significant convergence validity if the variable coefficient of the indicator is greater than twice the standard error (SUHARI, 2008) If each indicator shows a critical ratio (CR) value greater than twice its standard error, it indicates that the indicator validly measures what should be measured in the presented model.

Table 4.27 shows that the indicator produces an estimate with a critical ration (CR) that is greater than twice the standard error, so it can be concluded that the variable indicator used is valid.

## 2. Hypothesis Testing

**Table 6. Results of Structural Regression Test (Final)**

	Std.Estimate	C.R.	P	Information
SATISFACTION <-- TANGIBLE	1,166	1,846	,065	No Signifikan
SATISFACTION <-- RELIABILITY	-2,113	-2,104	,035	Signifikan
SATISFACTION <-- INSURANCE	2,902	2,580	,010	Signifikan
SATISFACTION <-- RESPONSIVENESS	-,805	-2,054	,040	Signifikan

SATISFACTION	EMPATHY	-,671	1,655	,098	No Signifikan
LOYALTY	SATISFACTION	,246	2,982	,003	Signifikan
LOYALTY	RELATIONSHIP	,570	6,571	***	Signifikan

shows a very small probability (less than 0.001)  
 Source: Primary data processed in this study, 2021

From the results of the calculation through the analysis of confirmatory factors and the structural equation model, the model in this study can be accepted, as shown in figure 4.5 the measurement results have met the criteria of goodness of fit: chi-square =266.597, significant probability =0.070, RMSEA= 0.031, CMIN/DF= 1.139, GFI=0.871, AGFI=0.821, CFI=0.985, and TLI=0.981. Furthermore, based on this fit model, tests will be carried out on the seven hypotheses proposed in this study.

**a. Hypothesis Testing 1**

H1: The higher the quality of the service form (tangible), the higher the customer satisfaction.

The effect of estimation parameters for testing the quality of service form (tangible) on customer satisfaction shows a CR value of 1.846 with a probability of 0.065. This value does not meet the requirements for hypothesis 1 acceptance, namely the CR value is less than 1.96 and the probability is greater than 0.065. This means that hypothesis 1 is rejected.

The tangible quality in customer service of self-service petrol stations in Bekasi includes the capacity of pumps and noozles (filling hoses) that can speed up service, the availability of hand-sanitizers at each filling terminal and toilets that can be used by customers as a form of prevention of the transmission of the Covid-19 virus and the use of uniforms and masks as one of the health protocols. Based on the respondents' perception index in Table 4.6, the respondents' perception of tangible quality is high with an index value of 89.5. Based on the index value of the highest, tangible indicators can be described as follows: The highest index of tangible quality is the compliance of employees of petrol stations with a self-service system in using uniforms and masks as one of the health protocols with an index of 94.1, followed by the availability of hand sanitizers at each filling terminal and toilet with an index of 87.3 and the capacity of pumps and noozles (filling hoses) to accelerate service with an index of 87,1.

**b. Hypothesis Testing 2**

H2: The higher the quality of reliability (reliability), the higher the customer satisfaction.

The effect of estimation parameters for reliability quality testing on customer satisfaction shows a CR value of 2.104 with a probability of 0.035. This value meets the requirements for hypothesis 2 acceptance, namely a CR value greater than 1.96 and a probability of less than 0.05. Thus, it can be concluded that reliability affects customer satisfaction. This means that hypothesis 2 is accepted.

Reliable quality in customer service of self-service petrol stations in Bekasi includes the ability of self-service petrol station operators to operate the system, the ability of self-service petrol stations to provide quality fuel according to existing standards, the ability of self-service petrol stations to sell fuel in the right amount, and the ability of self-service petrol stations to maintain the cleanliness of petrol stations and their facilities in accordance with health protocols. Based on the respondent's perception index in Table 4.7, the respondent's perception of tangible quality is high with an index value of 90.4. Based on the index value from the highest, tangible indicators can be described as follows: the ability of self-service gas station operators to operate the system with an index of 91.2, followed by the ability of self-service gas stations to sell fuel in the right amount with an index of 90.9, the ability of self-service gas stations to provide fuel with quality according to existing standards with an index of 89.6, and the ability of self-service gas stations to maintain the cleanliness of petrol stations and the facilities are in accordance with health protocols with an index of 89.8.

### **c. Hypothesis Testing 3**

H3: The higher the quality of assurance (assurance), the higher the customer satisfaction.

The effect of the estimation parameter for assurance quality testing on customer satisfaction shows a CR value of 2.580 with a probability of 0.010. This value meets the requirements for hypothesis 3 acceptance, namely a CR value greater than 1.96 and a probability of less than 0.05. Thus, it can be concluded that assurance has an effect on customer satisfaction. This means that hypothesis 3 is accepted.

The quality of assurance in customer service of self-service petrol stations in Bekasi includes the ability of self-service petrol station operators in the ethics of communicating with different customers, filling terminals show zero numbers before filling up fuel, providing print outs/fuel purchase notes along with change properly. Based on the respondents' perception index in Table 4.8, respondents' perception of assurance quality is high with an index value of 89.7. Based on the index value from the highest, the assurance indicators can be described as follows: the filling terminal shows a zero number before filling up fuel with an index of 92.2, followed by providing a print out/note of fuel purchase along with change with an index of 89.0, and the ability of self-service gas station operators in ethics to communicate with different customers with an index of 87.9.

### **d. Hypothesis Testing 4**

H4: The higher the quality responsiveness, the higher the customer satisfaction.

The effect of estimation parameters for responsiveness quality testing on customer satisfaction showed a CR value of 2.054 with a probability of 0.040. This value meets the requirements for hypothesis 4 acceptance, namely a CR value greater than 1.96 and a probability less than 0.05. Thus, it can be concluded that responsiveness has an effect on customer satisfaction. This means that hypothesis 4 is accepted.

The quality of responsiveness in customer service of self-service petrol stations in Bekasi includes the speed of the operator in serving, the willingness of the operator of the self-service petrol station to show the pump in accordance with the customer's intentions, the willingness of the employees of the self-service petrol station to help customers who are facing difficulties (for example, there is a problem with the nozzle (pump hose) so that gasoline does

not come out). Based on the respondent's perception index in Table 4.9, the respondent's perception of the quality of responsiveness is high with an index value of 89.8. Based on the index value from the highest, the responsiveness indicators can be described as follows: the willingness of the operator of the self-service system of the petrol station to show the pump in accordance with the customer's intention with an index of 90.9, followed by the speed of the operator in serving with an index of 89.7 and the willingness of the employees of the self-service system of the petrol station to help customers who are facing difficulties (for example, there is a problem with the nozzle (pump hose) so that gasoline is not exit) with an index of 88.9.

#### **e. Hypothesis Testing 5**

H5: The higher the quality of empathy, the higher the customer satisfaction.

The effect of estimation parameters for empathy quality testing on customer satisfaction shows a CR value of 1.655 with a probability of 0.098. This value does not meet the requirements for hypothesis 5 acceptance, namely the CR value is less than 1.96 and the probability is greater than 0.05. Thus, it can be concluded that empathy has no effect on customer satisfaction. This means that hypothesis 5 is rejected.

The quality of empathy in customer service at self-service petrol stations in Bekasi includes petrol station operators with a self-service system to always serve with smiles, greetings and greetings to customers, petrol station operators with a self-service system to always ask customers what fuel products they will buy and how much fuel they will buy and petrol station operators with a self-service system remind customers to use hand sanitizers after filling up fuel). Based on the respondents' perception index in Table 4.10, the respondents' perception of the quality of empathy is high with an index value of 87.8. Based on the index value from the highest, the empathy indicators can be described as follows: petrol station operators with a self-service system to always ask customers what fuel products they will buy and how much with an index of 90.8, followed by petrol station operators with a self-service system to always serve with a smile, greeting and greeting to customers with an index of 88.2 and petrol station operators with a self-service system remind customers to use hand sanitizer after refueling with an index of 84.3.

#### **f. Hypothesis Testing 6**

H6: The higher the customer satisfaction, the higher the customer loyalty.

The effect of the estimation parameter for customer satisfaction testing on customer loyalty shows a CR value of 2.982 with a probability of 0.003. This value meets the requirements for hypothesis 6 acceptance, namely a CR value greater than 1.96 and a probability of less than 0.05. Thus, it can be concluded that customer satisfaction has an effect on customer loyalty. This means that hypothesis 6 is accepted.

Customer satisfaction at self-service petrol stations in Bekasi includes no negative words of mouth from customers about self-service petrol stations, customer complaints to self-service petrol stations, and the frequency of customer fuel repurchases at self-service petrol stations. Based on the respondent's perception index in Table 4.12, the respondent's perception of customer satisfaction is high with an index value of 71.4. Based on the index value of the highest, the indicators of customer satisfaction can be described as follows: the frequency of

customer repurchases with an index of 80.7, followed by the indicator of no bad statements from the customer's mouth with an index value of 68.3, and the indicator of customer complaint behavior with an index of 65.3

**g. Hypothesis Testing 7**

H7: The higher the relationship, the higher the customer loyalty.

The effect of the estimation parameter for relationship testing on customer loyalty shows a CR value of 6.571 with a probability of 0.000. This value meets the requirements for hypothesis acceptance 7, namely a CR value greater than 1.96 and a probability of less than 0.05. Thus, it can be concluded that relationships affect customer loyalty. This means that hypothesis 7 is accepted.

The relationship between self-service petrol stations in Bekasi includes the trust of self-service petrol stations to customers to make payments with non-cash payment methods (credit/debit or link/digital money), recommendations from someone to customers to buy fuel from petrol stations with a self-service system and good relations between customers and owners of petrol stations with a self-service system. Based on the respondents' perception index in Table 4.11, the respondents' perception of the relationship is high with an index value of 82.8. Based on the index value from the highest, the relationship indicators can be described as follows: trust in self-service gas stations to customers to make payments with non-cash payment methods (credit/debit or aja link/digital money) with an index of 88.3, followed by recommendations from a person to customers to buy fuel from self-service gas stations with an index of 81.0 and good relationships between customers and owners of self-service gas stations with an index of 79.1.

The full results of the research hypothesis testing can be seen in table 7. the following:

**Table 7. Hypothesis Results**

	<b>Hypothesis</b>	<b>Test Results [CR and P Index]</b>
H1	The higher the quality of the service form ( <i>tangible</i> ), the higher the customer satisfaction.	Rejected CR = 1,846 P = 0.065
H2	The higher the quality, the higher the <i>reliability</i> , the higher the customer satisfaction.	Accepted CR = -2,104 P = 0.035

**Table 8. Hypothesis Results**

	<b>Hypothesis</b>	<b>Test Results [CR and P Index]</b>
H3	The higher the quality of assurance ( <i>assurance</i> ), the higher customer satisfaction.	Accepted CR = 2,580 P = 0.010
H4	The higher the quality, responsiveness, the higher the customer satisfaction.	Accepted CR = -2,054 P = 0.040

H5	The higher the quality of empathy, the higher the customer satisfaction.	Rejected CR = -1,655 P = 0.098
H6	The higher the customer satisfaction, the higher the customer loyalty.	Accepted CR = 2,982 P = 0.003
H7	The higher the <i>relationship</i> , the higher the customer loyalty.	Accepted CR = 6,571 P = ***

Shows a very small probability (less than 0.001)

Source: Primary data processed in this study, 2021

From Table 8. It can be concluded that of the 5 dimensions of service quality, only 3 have an effect on customer satisfaction of self-service petrol stations, namely reliability, assurance and responsiveness. The results of this study support the research of Zain, (Ramadhan et al., 2023) and (Susanto et al., 2016) who stated that reliability, assurance and responsiveness affect customer satisfaction. Research conducted by (Gong & Yi, 2018), (Kasiri et al., 2017) and (Pamungkas, G., & Barata, 2016) proved that customer satisfaction affects customer loyalty. The results of this study also support research conducted by Polimpung (2020) and Octafilia and Oktavia (2018) which prove that relationship marketing has a positive and significant effect on customer loyalty.

## CONCLUSION

Based on the results of hypothesis testing in this study, it can be concluded that there is no significant influence of the form of service (tangible) on customer satisfaction. This shows that physical aspects, such as facilities and service appearance, have not been able to have a significant impact on customer satisfaction at petrol stations. Therefore, petrol station managers can focus more on other, more important aspects, such as reliability and guarantee, although improvements to the physical elements of the service could still be an additional attraction in the future. In addition, this study found that reliability has a significant influence on customer satisfaction. The higher the quality-of-service reliability, the higher the customer satisfaction. Petrol station managers need to strengthen operational systems that can increase reliability, such as service speed, product availability, and accuracy of the information provided.

Furthermore, there is a significant influence of assurance on customer satisfaction, which shows that safety assurance and office competence play an important role in increasing customer satisfaction. Gas station managers need to increase customer trust by ensuring optimal staff training and skills and ensuring safety in every aspect of the services provided. In addition, responsiveness has also been shown to have a significant influence on customer satisfaction. The higher the quality of responsiveness, the higher the customer satisfaction. Therefore, petrol stations need to improve the speed of response to customer needs, both in direct service and in handling customer complaints and questions.

On the other hand, no significant influence of empathy was found on customer satisfaction. Although empathy is important, in the context of petrol stations, this factor has not

been the main determinant in creating satisfaction. Managers can consider training staff to better understand customer needs on a personal basis, although the main focus should still be reliability and assurance. This research also shows that customer satisfaction has a significant influence on customer loyalty, whereas the higher the satisfaction, the higher the loyalty is formed. Therefore, to maintain and increase customer loyalty, petrol station managers must continue to prioritize improving service quality that is directly related to customer satisfaction.

Finally, there is a significant influence of relationship variables on customer loyalty. The better the relationship established between customers and petrol stations, the higher the loyalty that is formed. Gas station managers need to build long-term relationships with customers through loyalty programs, effective communication, and consistent service to foster customer loyalty in a sustainable manner. Thus, the strategic recommendations resulting from this study can be applied by petrol station managers to more effectively increase customer satisfaction and loyalty.

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