The Influence of Service Quality on Satisfaction Level and Company Image Using Smart Electricity Based on Household Segment

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Abstract

Electricity is one of the important needs that people use to complete a job or daily activity. Prepaid electricity is one of the innovations in improving the quality of service for customers so that customers are satisfied and maintain the company's image. However, the problem in the field is that not all electricity customers use prepaid electricity innovation. The purpose of this study is to analyze whether service quality has an effect on customer satisfaction and corporate image.The research was conducted at PLN UP3 Kotabumi with 300 customers as respondents. The data analysis method used is pThis research is path analysis. The results showed that simultaneously service quality had a significant effect on customer satisfaction and corporate image. Service quality which includes tangibles, responsiveness, assurance variables have a direct significant effect on customer satisfaction while reliability and empathy have no significant effect on customer satisfaction. Service quality on the assurance variable has a direct significant effect oncompany image.

I. Introduction

The increasing development of technology in the era of globalization makes it easier for people to meet their needs. Electricity is one of the important needs that people use to complete a job or daily activity. Apart from being a source of lighting energy, electricity can also be converted into other energy sources that are useful for people's lives, such as sources of heat energy, motion energy, and sound energy. The need for electricity is increasing along with population growth and technological developments. The need for electrical energy sources can be obtained through supplies from the State Electricity Company PT PLN (Persero). Development is a systematic and continuous effort made to realize something that is aspired. Development is a change towards improvement. Changes towards improvement require the mobilization of all human resources and reason to realize what is aspired. In addition, development is also very dependent on the availability of natural resource wealth. The availability of natural resources is one of the keys to economic growth in an area. (Shah, M. et al. 2020)

PT PLN (Persero) is a State-Owned Enterprise (BUMN) as the holder of the power business authority, which is in charge of providing electricity for the public interest in sufficient quantity and quality throughout Indonesia. PT. PLN Persero realizes that the electricity needs of the community are increasing and become a dependency for the community, hence the emergence of improving the quality of service by recommending various service programs aimed at progress and development in providing services to the community as customers.

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Lampung Province is one of Indonesia's regions which has also experienced an increase in the number of electricity customers. The increase in electricity customers every month in Lampung Province can be seen in Figure 1.
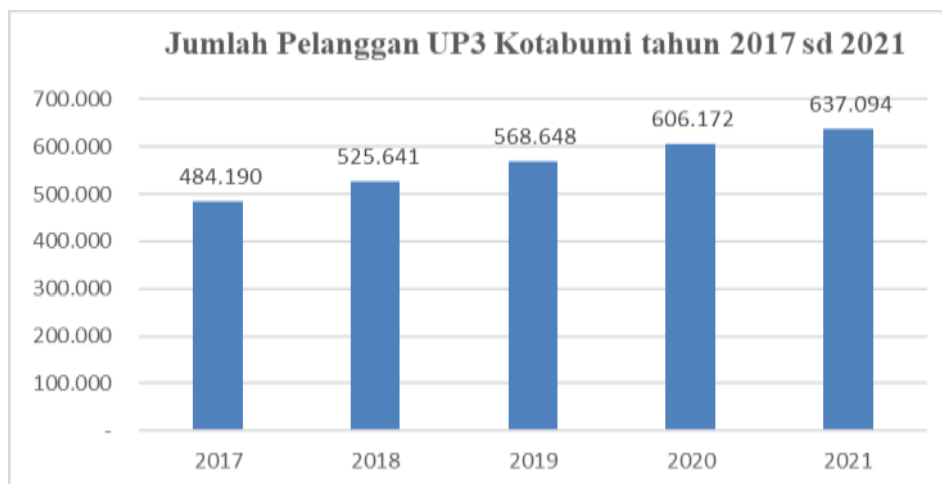

Source: AP2T (Centralized Customer Service Application) PLN 2021
Figure 1. *Lampung electricity customer data for 2017-2021*

Figure 1 can be seen that from 2017 to 2021 there has been an increase in electricity customers in Lampung Province from year to year. This increase proves that the need for electricity is a major need for people's lives. The increase in the number of electricity customers is caused by the increasing number of residents and the development of the city (Anove, 2013). One of the work area units that contributes to the increase in electricity customers in Lampung Province is PLN UP3 Kotabumi.

PLN UP3 Kotabumi is one of the working area units of PT PLN (Persero) which is located in North Lampung Regency. The working area of the PLN UP3 Kotabumi district consists of several working areas, namely ULP Bumi Abung, Menggala, Pulung Kencana, Bukit Kemuning, Blambangan Umpu, and Liwa. The increase in electricity customers at PLN UP3 Kotabumi can be seen in Figure 2.

Source: AP2T (Centralized Customer Service Application) PLN 2021
Figure 2. *PLN UP3 Kotabumi electricity customer data for 2017-2021*

Figure 2 shows that the number of PLN UP3 Kotabumi electricity customers from 2017 to 2021 continues to increase. The increase in the number of customers from 2017 to 2021 reached 31.58 percent. From the increase in customers to the use of electricity, PT PLN (Persero) strives to satisfy the needs of its customers by providing the best service. So far, PT PLN (Persero) has provided electricity services to the public with a postpaid system, where customers can first use and enjoy electrical energy and then pay bills in cash according to the KWh meter (Kilo Watt Hour) numbers that have been used and become the basis for payment at next month. Electricity with a postpaid system has advantages and disadvantages that have been felt by customers. The advantage of electricity with a postpaid system is that customers can first enjoy electricity then pay for usage and customers don't have to worry if the electricity goes out because the KWh meter is not enough, while the weakness of electricity with the postpaid system is that meter recording errors often occur, electricity theft often occurs, electricity bills don't work. according to usage, and often in arrears in payments. This is often the weakness of some customers. Seeing some complaints from the public about postpaid electricity, then PT PLN (Persero) developed a new innovation program that aims to improve service quality in providing customer satisfaction to optimize electricity consumption by using the smart electricity program launched in 2016 through government policies. The form of innovation created by PT. PLN Persero is to present a prepaid electricity program or also known as Smart Electricity.

Smart electricity is an electrical service that provides services for customers by providing vouchers filled with a nominal amount of energy or electrical power as needed. The token is a voucher code that is unique and is entered into a smart electricity meter so that it can distribute a certain amount of electricity (KWh) to the customer installation, the image can be seen in the attachment. Smart electricity programs provide many advantages. The advantages of using a smart electricity program are that customers can control electricity consumption at any time, customers can discipline themselves to use electricity according to their budget, there will be no meter recording errors, change energy-saving behavior, and customer privacy is not disturbed (no need meter recording every month).

PLN UP3 Kotabumi is one area that has implemented smart electricity services. The development of increasing smart electricity service customers at PLN UP3 Kotabumi continues to increase. The data on the development of smart electricity service customers at PLN UP3 Kotabumi can be seen in Figure 3.

Source: AP2T (Centralized Customer Service Application) PLN 2021
Figure 3. *Smart electricity service customer data at PLN UP3 Kotabumi monthly in 2021*

Figure 3 explains that the number of smart electricity service customers at PLN UP3 Kotabumi from 2017 to 2021 has increased. This proves that the service innovations carried out by PLN UP3 Kotabumi have had an impact on customers. The smart electricity program service innovation is one of the innovations in improving the quality of service for customers. Service quality is the customer's perception of the service product it receives. According to Kotler (2000) service quality is the totality of the characteristics of goods and services that show their ability to satisfy customer needs which is an absolute thing that must be done if the company wants to achieve success. The quality of service carried out by the company is carried out to maintain customer satisfaction with the performance of PT PLN. Parasuraman (2005) states that the existence of satisfaction in consumers, the company's products can obtain a good image from consumers. Customer satisfaction is an important factor in improving the company's image at PT. PLN Persero, although currently PT. PLN Persero can be said as a company that does not yet have a competitor in electricity supply or in other words it can be called the only electricity supply company in Indonesia, but customer satisfaction needs to be prioritized because customer satisfaction is an important factor in the welfare of many people's lives, this is reinforced by the sound of the Law. The constitution stipulates that the welfare of the people is prioritized, especially to meet basic needs which other companies cannot facilitate. So that satisfaction becomes an important thing that must be created, maintained and improved so that customers and consumers feel satisfied. From this satisfaction, it will form a good perception for customers of smart electricity so that it has implications for the company's image.

However, the current problem is that although the number of smart electricity service customers at PLN UP3 Kotabumi from 2017 to 2021 has increased, there are still many postpaid electricity customers who have not moved to smart electricity. The comparison of the number of postpaid subscribers to smart electricity from 2017 to 2021 can be seen in Figure 4.

Source: AP2T (Centralized Customer Service Application) PLN
Figure 4. *Data on the comparison of the number of postpaid service subscribers to smart electricity at PLN UP3 Kotabumi in 2017-2021*

Figure 4 shows that from 2017 to 2018 the portion of the number of postpaid electricity customers is more in demand by the public compared to the number of smart electricity customers, but after 2019 the portion of the number of smart electricity customers is the largest choice compared to postpaid electricity. The absorption portion of the number of smart electricity customers is divided into several segments, which can be seen in Figure 5.
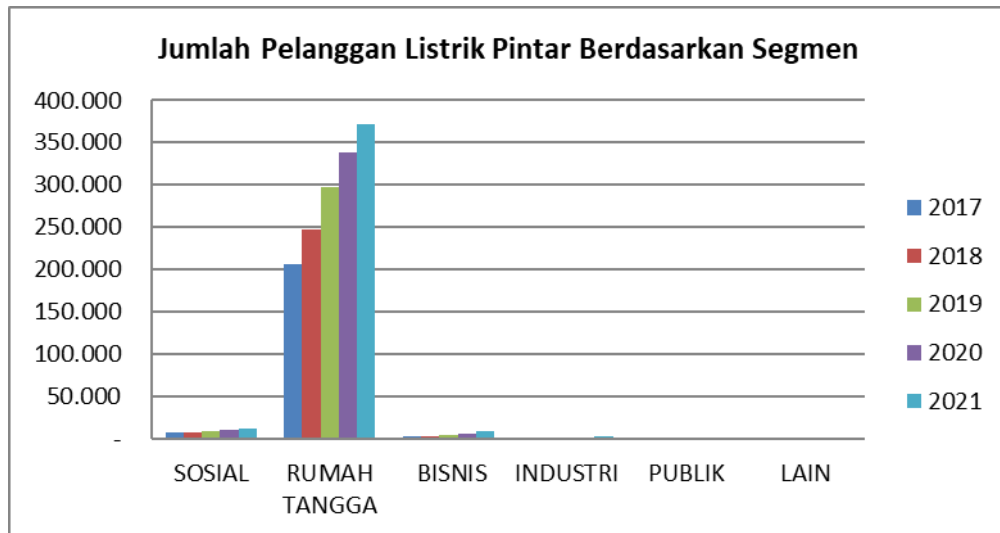
Figure 5. Number of Smart Electricity Customers by Segment at PLN UP3 Kotabumi in 2017-2021

Figure 5 shows that the largest portion of smart electricity customers is in the household segment, with the total number of customers until 2021 reaching 371,900 customers or as many as 93.79 percent of the total smart electricity customers. In addition, the household customer segment has a consistent increase in the number of smart electricity customers from 2017 to 2021. The trend of smart electricity from year to year continues to increase to 31.58 percent, this reflects that people prefer this type of smart electricity.

The public's preference for smart electricity services is due to the quality of service that has more benefits and is more profitable for customers which is allegedly will provide satisfaction and create a good corporate image. According to Kotler and Keller (2009) the level of satisfaction is measured by how much product performance provides greater benefits than expected. Kotler (2010) explains that building an image is important for the survival of an organization or company in the future, this is reinforced by previous research from Bloemer et al. (2010) which suggests that the image or image can affect satisfaction.

II. Research Method

The research method used is a survey method. Data was collected using interview techniques and assisted by the use of questionnaires to obtain primary data, while secondary data were obtained from literature studies, reports, publications, and other literature related to this research. The research location is at PLN UP3 Kotabumi. The selection of this research location was determined purposively with the consideration that the PLN UP3 Kotabumi office is one of the areas where there are low numbers of prepaid

electricity customers. The research implementation time is from October to December 2021. The respondents of this research are prepaid electricity customers with a total of 300 respondents. The analytical method used in this research is descriptive inferential method.

III. Result and Discussion

3.1 The Effect of Service Quality on Customer Satisfaction

The quality of service in this study includes the variables *Tangibles* (X1), *Reliability* (X2), *Responsiveness* (X3), *Assurance* (X4), and *Empathy* (X5). The magnitude of the effect of simultaneous service quality on customer satisfaction can be seen from the value of Rsquare (R2) obtained through the results of calculations using SPSS 23. The results of the analysis of the effect of simultaneous service quality on customer satisfaction can be seen in Table 1.

Table 1. The results of the analysis of the influence of service quality simultaneously on customer satisfaction

R square (R2)	F count	F-table	Sig
0.849	330,548	1,662	0.000

Based on the results of the analysis, the R2 value of 0.849 is obtained, which means the quality of service which includes the variable *Tangibles* (X1), *Reliability* (X2), *Responsiveness* (X3), *Assurance* (X4), and *Empathy* (X5) together affect customer satisfaction by 84.90 percent. The remaining 15.10 percent is influenced by other factors not examined in this study. The results of the analysis also show that the f-count (330,548) > f-table (1,662), meaning that the quality of service simultaneously has a significant effect on customer satisfaction. In addition, based on the results of the analysis also obtained a significance value of 0.000 < 0.10, meaning that the test of each service quality variable can be explained. The following is an explanation of the influence of each service quality variable in detail on customer satisfaction, which can be seen in Table 2.

Table 2. The results of the analysis of the influence of service quality in detail on customer satisfaction

Variable	B	Std. Error	Beta	t-count	t-table	Sig
X1	,562	,063	,424	8,943	1,662	,000
X2	-,095	,071	-,070	-1,337	1,662	,182
X3	,500	,083	,365	6,001	1,662	,000
X4	,306	,093	,215	3,291	1,662	,001
X5	0.056	,074	.041	,756	1,662	,450

Hypothesis testing is done by looking at the significance value obtained and comparing the t-count value with the t-table obtained. If the significance value is < 0.1 or t-count > t-table, it can be concluded that there is a direct influence between these variables. Based on the test results obtained that the quality of service which includes the variable *Tangibles* (X1), Responsiveness (X3), and Assurance (X4) significant effect on customer satisfaction (Y) with a confidence level of more than 90 percent. This shows that the variable *Tangibles* (X1), Responsiveness (X3), and Assurance (X4) has a direct effect on customer satisfaction (Y), while Reliability (X2) and Empathy (X5) does not directly affect customer satisfaction (Y) because the level of trust is less than 90 percent.

3.2 The Influence of Service Quality and Customer Satisfaction on Company Image

The amount of service quality which includes variables *Tangibles* (X1), *Reliability* (X2), *Responsiveness* (X3), *Assurance* (X4), *Empathy* (X5) and customer satisfaction (Y) on the company's image (Z) can be seen from the R2 value obtained. The results of the analysis of the influence of service quality and customer satisfaction on the company's image can be seen in Table 3.

Table 3. The results of the analysis of the influence of service quality and customer satisfaction on the company's image

R square (R2)	F-count	F-table	Sig
0.824	229,289	1,662	0.000

Based on the results of the analysis, the R2 value of 0.824 is obtained, which means the quality of service which includes the variable *Tangibles* (X1), *Reliability* (X2), *Responsiveness* (X3), *Assurance* (X4), *Empathy* (X5) and customer satisfaction (Y) together affect the company's image by 82.40 percent and the remaining 17.60 percent is influenced by other factors not examined in this study. The results of the analysis also show that the f-count (229,289) > f-table (1,662), meaning that the quality of service and customer satisfaction together have a significant effect on the company's image. In addition, based on the results of the analysis also obtained a significance value of 0.000 < 0.10, meaning that the test of each variable of service quality and customer satisfaction can be explained. The following is the effect of each variable of service quality and customer satisfaction on the company's image can be seen in Table 4.

Table 4. The results of the analysis of service quality and customer satisfaction on the company's image

Variable	B	Std. Error	Beta	t-count	t-table	Sig
X1	,061	0.045	,077	1.342	1,662	,181
X2	-,078	0.046	-,097	-1,702	1,662	0.090
X3	-,029	0.056	-,036	-,522	1,662	,602
X4	,184	0.060	,219	3,050	1,662	,002
X5	,005	0.047	,006	,107	1,662	,915
Y	,442	,037	,750	11,899	1,662	,000

Testing the quality of service which includes variables*Tangibles*(X1), Reliability (X2), Responsiveness (X3), Assurance (X4), Empathy (X5)and customer satisfaction (Y) on the company's image (Z) is done by looking at the significance value obtained and comparing the t-count value with the t-table obtained. If the significance value is < 0.1 or t-count > t-table, it can be concluded that there is a direct influence between these variables. Based on the test results there is a direct effect between*Assurance*(X4)and customer satisfaction (Y) on the company's image because the significance value < 0.1 or t-count > t-table, it can be concluded that there is a direct influence between these variables, while the*Tangibles*(X1), Reliability (X2), Responsiveness (X3), and Empathy (X5)does not directly affect the company's image.

3.3. Discussion

Based on the description above, the results of direct and indirect effects on each substructure model are obtained. Direct effect is an effect that can be seen from the path coefficient from one variable to another. Indirect influence is a sequence of paths through one or more intermediate variables (Irianto, 2004). The following are the direct and indirect effects of each variable.

a. Substructure Model 1. The Effect of Service Quality on Customer Satisfaction

Based on the results of data analysis through path analysis techniques, it is known thatservice quality which includes variables *Tangibles* (X1), *Reliability* (X2), *Responsiveness* (X3), *Assurance* (X4), and *Empathy* (X5) jointly affect customer satisfaction by 84.90 percent while the remaining 15.10 percent is influenced by other factors not examined in this study.

Based on the results of the analysis, not all the variables in theservice qualityhas a significant effect on customer satisfaction. The results of the analysis show thatvariable*Tangibles*(X1),*Responsiveness*(X3),*and Assurance*(X4) significant direct effect on customer satisfaction (Y), while*Reliability*(X2), and*Empathy*(X5) does not have a direct significant effect on customer satisfaction (Y). Completely each service quality variable that has a significant influence on customer satisfaction can be seen in Figure 6.
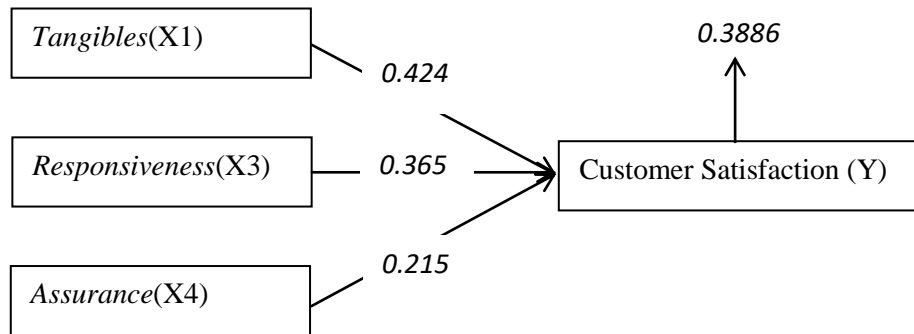
Figure 6. *Path diagram of the influence of service quality on customer satisfaction*

Based on the picture above, the equation of the substructure 1 path diagram model is obtained as follows:

$$Y= 0.424X1 + 0.365X3 + 0.215 X4 + €1$$

The results of the analysis show that the quality of service which includes variable *Tangibles* (X1), *Responsiveness* (X3), *and Assurance*(X4) significant direct effect on customer satisfaction. The results of this study are in line with Panjaitan's research (2016) that service quality (X) which consists of reliability, certainty, reality, empathy, and responsiveness, has a significant influence on customer satisfaction with a value (p value) of 0.003 < 0.05. In addition, according to Yusuf and Ismail (2021), the results of their research show that there is a partial effect of service quality (X) on customer satisfaction (Y) which has an influence of 67.3 percent on customer satisfaction (Y) while the other 32.7 percent is influenced by by other factors. Based on this, to increase customer satisfaction, it is necessary to improve the quality of service. The following is a description of each effect of service quality on customer satisfaction.

1. Influence *Tangibles*to Customer Satisfaction

*Tangibles*is the ability of a company to show its existence to external parties. The appearance and ability of the company's physical facilities and infrastructure and the state of the surrounding environment are tangible evidence of the services provided by the service provider. The results of the analysis carried out explain that tangibles have a significant direct effect on customer satisfaction. This can be seen fromthe significance value obtained is 0.000 which is smaller than 0.1 and the t-count is 8.943 which is greater than the t-table of1,662. In addition, from the results of the analysisThe path coefficient value YX1 is 0.424, which means that tangibles have a significant positive effect on customer satisfaction. This means that the more tangibles service quality increases, the customer satisfaction will increase. The magnitude of the effect of tangibles on customer satisfaction is equal to (0.424 X 100%) = 42.40%.

**2. Influence Responsiveness to Customer Satisfaction**

Based on the results of statistical tests that have been carried out, it is explained that responsiveness has a significant direct effect on customer satisfaction. This can be seen fromthe significance value obtained is 0.000 which is smaller than 0.1 and the t-count is 6.001 which is greater than the t-table of1,662. In addition, from the results of the analysisThe path coefficient value YX3 is 0.365, which means that responsiveness has a significant positive effect on customer satisfaction. This means that if the quality of service responsiveness increases, customer satisfaction will increase. The magnitude of the effect of responsiveness on customer satisfaction is equal to (0.365 X 100%) = 36.50%.

3. Influence Assurance on Customer Satisfaction

Based on the results of statistical tests that have been carried out, it is clear that assurance has a significant direct effect on customer satisfaction. This can be seen fromthe significance value obtained is 0.000 which is smaller than 0.1 and the t-count is 3.291 which is greater than the t-table of1,662. In addition, from the results of the analysisThe path coefficient value YX4 is 0.215, which means that assurance has a significant positive effect on customer satisfaction. This means that if the quality of assurance services increases, customer satisfaction will increase. The magnitude of the influence of assurance on customer satisfaction is equal to (0.215 X 100%) = 21.50%.

a. Substructure Model 2. The Influence of Service Quality and Consumer Satisfaction on Company Image

Based on the results of data analysis through path analysis techniques, it is known that service quality which includes variables *Tangibles* (X1), *Reliability* (X2), *Responsiveness* (X3), *Assurance* (X4), *Empathy* (X5) and customer satisfaction (Y) together affect the company's image by 82.40 percent and the remaining 17.60 percent is influenced by other factors not examined in this study.Based on the results of the analysis, not all of the variables in theservice qualityhas a significant influence on the company's image. The results of the analysis show thatassurancesignificant direct effect on the company's image. In full, the variables that have a direct significant influence on the company's image can be seen in Figure 7.

0.4195

Assurance (X4) — 0.219 → Company Image (Z)
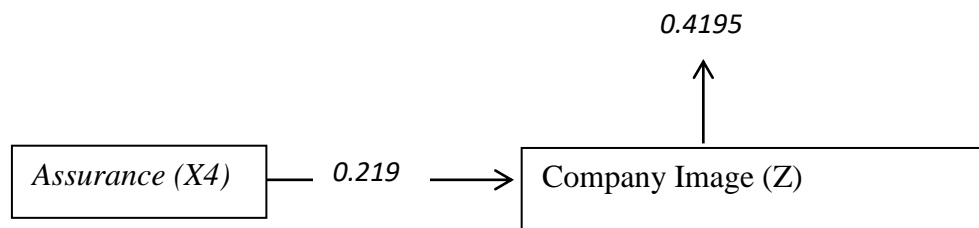
Figure 7.Substructure model 2 research path diagram

Figure 7 explains that*assurance*have a direct real effect on*corporate image*. The higher it is*assurance*so*the company's image will be better.

b. Substructure model 3 factors that influence directly or indirectly on customer satisfaction and corporate image

The factors that influence directly or indirectly on customer satisfaction and corporate image are*assurance*. The factors that directly or indirectly affect customer satisfaction and company image can be seen in Table 8.

Table 8. The direct and indirect effect of service quality and customer satisfaction on corporate image*.*

Variable	Direct Influence	Indirect Influence	Total Influence
Tangibles (X1) -> Customer Satisfaction (Y)	0.424**	-	0.424**
Reliability (X2) -> Customer Satisfaction (Y)	-0.070	-	-0.070
Responsiveness (X3) -> Customer Satisfaction (Y)	0.365**	-	0.365**
Assurance (X4) -> Customer Satisfaction (Y)	0.215**	-	0.215**
Empathy (X5) -> Customer Satisfaction (Y)	0.041	-	0.041
Tangibles (X1) -> Corporate Image (Z)	0.424**	0.077	0.501
Reliability (X2) -> Company Image (Z)	-0.070	-0.097	-1.040
Responsiveness (X3) -> Company Image (Z)	0.365**	-0.036	0.329
Assurance (X4) -> Corporate Image(Z)	**0.215****	**0.219***	**0.434****
Empathy (X5) -> Corporate Image (Z)	0.041	0.006	0.047
Customer Satisfaction (Y) -> Company Image (Z)	0.750**	-	0.750**

Note: * significant at 0.1 . confidence level

* * significant at the confidence level of 0.05

Based on Table 8 it is known that*variableTangibles*(X1),*Responsiveness*(X3),*and Assurance*(X4) significant direct effect on customer satisfaction (Y), while*Reliability*(X2), and*Empathy*(X5) does not have a direct significant effect on customer satisfaction (Y). Table 8 also shows that there is a direct influence between*Assurance*(X4) and customer satisfaction (Y) on the company's image (Z). In addition, there is an indirect effect, namely:*Assurance*(X4) to corporate image (Z) through customer satisfaction (Y). In full, the variables that have a significant direct or indirect effect on rice production can be seen in Figure 5.
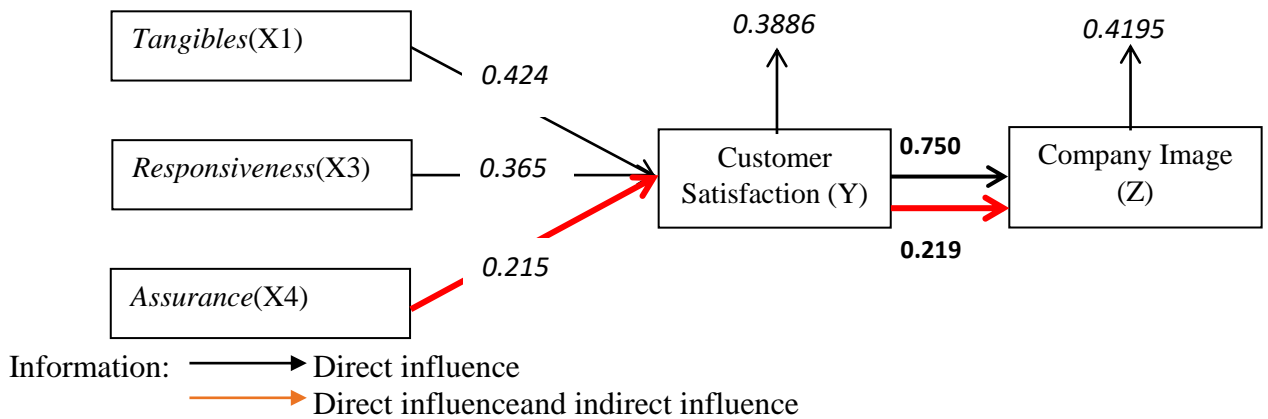
Information: ——→ Direct influence
                ——→ Direct influenceand indirect influence
Figure 7. *Model 3 research path diagram substructure*

Based on Figure 5, the following substructure model 3 path diagram equation is obtained:

$$Z = 0.219X4Z + 0.750Y + €2.$$

Figure 5 also explains that the Assurance variable has a direct influence on customer satisfaction and corporate image, and has an indirect effect on corporate image through customer satisfaction. The total influence of the assurance variable is 0.364, which means that the assurance variable has a stronger influence than other variables.

c. The Influence of Customer Satisfaction on Company Image

Based on the results of the analysis, it is known that there is a direct significant effect of customer satisfaction on the company's image which is indicated by a significance value of 0.000 or has a confidence level of 99.99%. This explains that customer satisfaction has a direct significant influence on the company's image. The better customer satisfaction will affect the company's image. In line with research by Ariyani and Rosinta (2010) that customer satisfaction will have a significant effect on company image. Ishak and Luthfi (2011) add that customer satisfaction has a significant significant effect on company image.

IV. Conclusion

Simultaneously service quality has a significant effect on customer satisfaction and corporate image. Service quality which includes tangibles, responsiveness, assurance variables have a direct significant effect on customer satisfaction while reliability and empathy have no significant effect on customer satisfaction. The quality of service on the assurance variable has a direct significant effect on the company's image.

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