

CHAPTER V

RESULT AND DISCUSSION

A. Descriptive Statistics Analysis

Based on the results of research conducted by researchers, the following descriptive statistic of variables in this research can be seen in detail in Table 5.1:

Table 5.1

Descriptive Statistic of Variables

	N	Minimum	Maximum	Mean
WTP (Willingness to pay)	308	,00	1,00	,8766
INC (Income)	308	500000,00	7500000,00	1750746,7532
EDU (Education)	308	6,00	16,00	12,0812
OWN (House Ownership)	308	,00	1,00	,8701
FAM (The family members)	308	,00	7,00	2,3669
WQ (Water quality)	308	,00	1,00	,6818
SCUST (Satisfied Customer)	308	,00	1,00	,6526
Valid N (listwise)	308			

Source: primary data processed (Appendix 2)

Based on Table 5.1 it can be seen from 308 respondents, the highest value of willingness to pay customer PDAM Tirtamarta to quality improvement is 1 and the lowest value of willingness to pay is 0. From the results also showed that the results of research dominated

by respondents who are willing to pay for the quality improvement of IDR6,000.

The lowest value of income variable or (INC) is IDR500,000 while the highest value is IDR7,500,000 with the average value of the variable from the income variable is IDR17,507,467,532. The lowest value of the variable the last level of education or (EDU) taken by the respondents are 6 years or Elementary School, in this research the researcher measure based on the length of formal education pursued stated in the year. While the highest value of the educational variable are 16 years or Bachelor Degree. Based on the data above, the average value of the last educational variables are 12.0812 years it means that from 308 respondents dominated by the last education or from Senior High School.

House ownership variable (OWN) in Table 5.1 shows that the lowest value is 0, while the highest value of this variable is 1. The average value of the variable of house ownership shows that most of the houses owned by the residents are self-owned. Based on the research results can also be seen that the lowest value of the family members (FAM) is 0, while the highest value is 7 people. The average value of the dependent variable is 2.3669. It states that in this research dominated by the respondents who have the family members as much as 2 people.

Water quality variable or (WQ), with the minimum value is 0 and the maximum value is 1. The average value of the WQ or water quality variable is 0.6818 which indicates that the respondent is dominated by respondents who want to pay for quality improvement of PDAM Tirtamarta. The last variable is customer satisfaction (SCUST) of the service with a minimum value of 0 and a maximum value of 1, the result of the average value of the SCUST variable is 0.6526 which means the respondent is dominated by the household customer who wants to pay for the quality improvement of PDAM Tirtamarta.

B. Binary Logistic Regression Results

The data analysis in this research is using binary logistic regression. Logistic regression is an analytical tool that can connect between independent variables and dependent variables, which is where the dependent variable is in dummy form. The following will explain the results and techniques of binary logistic regression analysis:

1. Classification Accuracy Test

The classification accuracy test in this research is used to determine the accuracy of a model so that it can be known the opportunity of willingness to pay for quality improvement of PDAM Tirtamarta.

Table 5.2
Classification Table

Observed			Predicted		
			WTP (Rp 6.000,-)		Percentage Correct
			Not Willing	Willing to Pay	
Step 1	Willing ness to pay	Not Willing	1	37	2,6
		Willing to Pay	0	270	100,0
	Overall Percentage				88,0

Source: primary data processed (Appendix 2)

In the Table 5.2 of prediction column, it can be seen that respondents who are willing to pay on the predicted are 307 people, while from the observed respondents are actually willing to pay are 270 respondents. Respondents who are unwilling to pay on the predicted are 1, while from the observed respondents are actually unwilling to pay are 38 respondents. From the results the percentage of model accuracy in order to classificate the observation as overall is as much as 88%.

2. Feasibility Model Test

a. Negelkerke Model Test

Negelkerke Model is the testing that conducted to find out how big the independent variable able to explain and influence

the dependent variables. The value of the Nagelkerke R Square varies between 1(one) to 0(zero).

Table 5.3
Nagelkerke R Square Test

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	205,982 ^a	,075	,143

Source: primary data processed (Appendix 2)

From the Table 5.3 above can be seen that the value Nagelkerke R Square is equal to 0,143 or by 14,3%, The results indicate that the independent variable can explain the dependent variable of 0,143 or 14,3%, while the rest of 0,857 or 85.7% described outside the model of this research.

b. Hosmer Lemeshow Test (H-L Test)

Hosmer and Lemeshow test on binary logistic regression show the feasibility of the regression model. If the Hosmer and Lemeshow statistic values are greater $\alpha = 0.10$ (10%) indicates that the model is able to predict the observed value, it means the model is acceptable because it corresponds to the observation data.

Table 5.4
Hosmer and Lemeshow Test

Step	Chi-square	Df	Sig.
1	8,454	8	,390

Source: primary data processed (Appendix 2)

From the result of Hosmer and Lemeshow test in Table 5.4 it can be seen that the value of Chi-Square is 8,454 with significance value 0,390 which shows that income variable, education, house ownership, the family members, water quality and customer satisfaction in this research able to predict variable of willingness to pay so that the research model is feasible for use in research.

3. Signification Model Test

a. Partial Test

In the partial test was conducted to determine the effect of independent variables and dependent variables. Criteria pass of the significance test is when the significance value $<0,01$, $<0,05$ and $<0,10$ indicating that the independent variable affects the dependent variable. Conversely when the significance value $<0,01$, $<0,05$ and $<0,10$, it means the independent variable does not affect the dependent variable.

The results of significance tests in this research are as follows:

Table 5.5
Partial Test

		B	Wald	Exp (B)
Step 1 ^a	INC	,000** (,000)	6,920	1,000
	EDU	,200** (,074)	7,355	1,221
	OWN(1)	,-798 (,531)	2,261	,450
	FAM	,121 (,153)	,625	1,129
	WQ(1)	1,069** (,542)	3,893	2,912
	SCUST(1)	,954** (,479)	3,960	2,595
	Constant	-,174 (,883)	,039	,841

Notes: Dependent Variable: dummy WTP; () Shows the coefficient of Standard Error; * Signification in level 1% ($\alpha = 0,01\%$) ; ** Signification in level 5% ($\alpha = 0,05\%$) ;*** Signification in level 10% ($\alpha = 0,10\%$)

The results from the above estimation can be written with the following formula:

$$\text{WTP} = 6.000 + 0,000 \text{ INC} + 0,200 \text{ EDU} - 0,798 \text{ OWN} + 0,121 \text{ FAM} + 1,069 \text{ WQ} + 0,954 \text{ SCUST} + e$$

From the Table 5.5 using significance level in 1% , 5%, and 10% shows a variable is said to have a significant influence if it has a significance value of $<0,01$, $< 0,05$ and $<0,10$. In the table above are known that the variable income, education, water quality, and customer satisfaction

has an influence on the variable willingness to pay which are has an influence on the significance level of $< 5\%$.

1) Income Variable

The significance level of income variable is 0,009 that is smaller than 0,05. It shows that income variable has a positive and significant influence on the willingness to pay variable. The value of odds ratio of income variable is 1,000 which means higher income level influence willingness to pay of respondents one time bigger compared to respondent in lower income. The higher their income will increase the willingness to pay for the quality improvement of the PDAM Tirtamarta.

2) Education Variable

Based on Table 5.5 it can be seen that the level of education variable have a positive and significant relationship at level 5% it means the significance value of the variable is $< 0,05$ is 0,007. Regression coefficient on education variable is 0,200 shows there is positive influence between education variable and variable of willingness to pay. The higher education level of respondents, make the willingness to pay for quality improvements is also higher, with an odds ratio of 1,189

indicates that when the higher education is taken will increase the willingness of respondents to pay for quality improvement of PDAM Tirtamarta one times bigger than respondents with lower levels of education.

3) House Ownership Variable

The significance level in the variable of house ownership in table 5.5 shows that the significance is greater than 0,05 meaning that the variable of house ownership has no influence on willingness to pay variable. Or is not enough evidence that the house ownership variable affects the probability of respondents to pay for quality improvement of PDAM Tirtamarta.

4) The Family Members Variable

In the binary logistic result, the dependent variable has a significance value $>0,05$ which means the independent variable does not affect the willingness to pay variable. So there is insufficient evidence that the dependent variable has an influence on a person's tendency to pay for quality improvement, or there is insufficient evidence that the number of dependents has the influence of a person to pay for the quality improvement of PDAM Tirtamarta.

5) Water Quality Variable

From the Table 5.5 of regression results obtained that the quality of water has a significant and positive impact on willingness to pay. The significant value of water quality variables is 0,048 or significant at 5% level. The odd ratio value in this research was 2,912 which showed that better water quality would affect a person of willingness to pay for water quality improvement 2 times greater than bad water quality. This variable is in a high level of significance so that it can be interpreted that the water quality variables affect the willingness to pay a person for quality improvements from the PDAM Tirtamarta.

6) Customer Satisfaction Variable

The value of customer satisfaction variables has a positive and significant relationship at the 5% level or 0,047. Regression coefficient of customer satisfaction is positive between customer satisfaction variable and willingness to pay variable, it means that there is influence on customer satisfaction variable with willingness to pay variable, increasing customer satisfaction about service from PDAM will make willingness to pay quality improvement also increase,

with an odds ratio of 2,595 indicates when higher satisfaction level on service will affect a person to pay for quality improvement of PDAM 2 times greater than someone with low satisfaction level about service of PDAM Tirtamarta.

b. Simultaneously Test

In the overall test is to determine the influence of independent variables simultaneously to the dependent variable. The results of the test overall test are as follows:

Table 5.6

Simultaneously Test

		Chi-square	Df	Sig.
Step	Step	24.155	6	.000
1	Block	24.155	6	.000
	Model	24.155	6	.000

Source: primary data processed (Appendix 2)

In the Table 5.6 it can be seen that the Chi-Square value was 24,155 with a significance value of $0,000 < 0,10$ (alpha level 10%). In this case, we can conclude that income, education, home ownership, the family members, water quality, and customer satisfaction

simultaneously affect the dependent variable or at least one independent variable affecting the variable bound.

C. Discussion

1. The Effect of Income toward Willingness to pay

From the results of this research indicate that the income variable has a significant influence on the willingness to pay for quality improvement of PDAM Tirtamarta, the value of the variable coefficient of income has a positive sign which means when the income increase then will also increase the willingness to pay for quality improvement.

This result is supported by other similar studies by (Nugraheni, 2013, Irawan, 2009; Ladiyance and Yuliana, 2014; Maskey and Singh, 2017; Saptutyningsih, 2007; Genius et.al, 2008; Kayaga et.al, 2003; Prasetyo and Saptutyningsih, 2013; Ayanshola et.al, 2013) that the income variable affects the willingness to pay variable. The higher revenue will also increase the customer's willingness to pay for the quality improvement of the PDAM. If the respondent has a high income then will make the respondent to more loyal and willing to pay for quality improvements from PDAM.

2. The Effect of Education toward Willingness to pay

Based on the results of this research, the variables of education have a positive and significant influence on the

willingness to pay which means that the higher level of education pursued by the respondents will also increase the willingness to pay for quality improvement. This is because the higher level of education respondents will make respondents increased the willingness to pay because respondent considers quality improvement is important.

The relationship between education variable and willingness to pay for quality improvement also supported by (Kuna et.al, 2015, Irawan 2009; Afifah et.al, 2013; Sandhyavitri et.al, 2016; Maskey and Singh, 2017; Sabri and Amelia,2016; Kayaga et.al, 2003; Prasetyo and Saptutyningsih, 2013; Ayanshola et.al, 2013) states that education variables have influence on willingness to pay, someone with a higher level of education has a willingness to pay for quality improvement of PDAM Tirtamarta higher as well. This is coupled with household customers who have a higher formal education will be more rational in making decisions to consume a commodity.

3. The Effect of House Ownership toward Willingness to pay

From binary logistic regression result indicate that house ownership variable has no influence on the willingness to pay and coefficient value show a negative sign, H0 is accepted and H1 is rejected. The inaccurate research was done by (Ladiyance and Yuliana, 2014; Saptono, Heru, 2007; Kayaga et.al, 2003)

that house ownership has an influence on willingness to pay. The evidence of research that is in line with the results of this research conducted by (Kayaga et.al, 2003; Maskey and Singh, 2017) that the ownership of the house has no effect on the willingness to pay and if see the real condition of the field respondents turns ownership of own property/lease indeed is not a major factor in the willingness of citizens to pay for the quality improvement of PDAM Tirtamarta. According to the results of interviews in this research, the variable house ownership does not affect the willingness to pay because respondents usually have their own homes that use PDAM and used only at certain times.

4. The Effect of The Family Members toward Willingness to pay

Results from the research that the dependent variable does not affect the willingness to pay. Theoretically it can be said that the value of WTP depends on individual perception, not on the market behavior, therefore the absence of influence of variable of dependent amount to willingness to pay in this research indicates that household customer in willingness to pay for quality improvement PDAM does not consider amount of dependent in his family, from here it appears that the customer in providing an

economic assessment of the various benefits to be received does not depend on how many members.

A significant and contradictory research with the results of this research is from (Sandhyavitri et.al, 2016; Nugraheni, 2013; Saptono, Heru, 2007) that the number of dependents will have an impact on the willingness to pay for quality improvement. The insignificantly finding is consistent with other similar studies by (Afifah et.al, 2013; Irawan, 2009; Tussupova et.al, 2015) that results the family members has no influence on the willingness to pay, in which case respondents in answer about willingness to pay do not consider the number of people in his family, Here it appears that the willingness to pay for quality improvement is not related to the small or bigger number of the family members. The family members have insignificantly effect as well also because they have cost factors that have been allocated to the family for other needs so that the family members are not one of the factors of willingness to pay for quality improvement.

5. The Effect of Water Quality toward Willingness to pay

From the results of the research indicate that there is a positive and significant relationship between water quality variables to the willingness to pay which shows when the improvement of water quality will increase the tendency to pay for quality improvement of PDAM Tirtamarta. Research that is

in line with this research also done by (Tussupova et.al, 2015, Nugraheni, 2013; Sabri and Amelia, 2016; Sistyanto and Pramono, 2015; Ayanshola et.al, 2013) stated that the improvement of water quality will increase the willingness to pay.

The smoother and better of water quality from PDAM production will increase the consumer's tendency to pay for water quality improvements. The better quality of water offered by the PDAM will increase the willingness to pay for quality improvement. Here it appears that the willingness to pay for quality improvements related to good or bad water quality.

6. The Effect of Customer Satisfaction toward Willingness to pay

The result of binary logistic regression test shows that there is a positive and significant correlation between customer satisfaction variable to the willingness to pay which indicate when the increase of customer satisfaction to the service will increase the willingness of the household customer to pay for the quality improvement of PDAM Tirtamarta. The research conducted by (Sistyanto and Pramono, 2015; Getzner et.al, 2017; Jayaramu et.al, 2014; Kahsay et.al, 2014; Han et.al, 2015), shows that when customer satisfaction on service increases, it will also increase the tendency of willingness to pay.

This shows that household customers who have satisfaction with the service of PDAM will be more loyal in their willingness to pay for the quality improvement because by participating in quality improvement that is the turn of leaking pipe into new pipe will increase customer satisfaction on the performance of PDAM. This displays that the more respondents are satisfied with the quality of the existing water source the more they are willing to pay. This will certainly improve customer satisfaction on PDAM performance because of the credibility and quick response to quality improvement that is with the turn of the leaking pipe into a new pipe.