

## **CHAPTER III**

### **RESEARCH METHOD**

#### **3.1. Research Method**

The research method used in this research is descriptive analysis and quantitative analysis. The descriptive analysis illustrates the data analysis in form of opinion and information of the characteristics of the research object analyzed. The quantitative analysis is used to quantify the data and, typically, applies some form of statistical analysis.

#### **3.2. Research Subject**

##### **1. Subject**

The subject of this research is the analysis of the health care service performance toward customer satisfaction at PKU Muhammadiyah Hospital in Yogyakarta.

##### **2. Population**

Population is the whole or individual unit becoming the suggestion or the research subject, which the characteristics will be supposed. The research population in this research thesis is all patients of PKU Muhammadiyah Hospital.

##### **3. Sample**

The representation of sample depends on these following factors, which are: (1) the desired '*confidence level*'; (2) tolerated '*standard of error*';

and (3) the number of 'dispersion' within generally estimated population (Polumbo, 1977: 279). Subject to this judgment, the application of 5% standard of error is considered feasible. Then the number of research sample is determined by the formula as follows (Lind and Mason, 1999: 356):

$$n = \left( \frac{z \cdot s}{E} \right)^2$$

Which:

n = Number of sample

z = Level of hypothesis validity

s = Deviation standard

E = Standard of error (5%)

The level of hypothesis is 95%. Thus, the z value from the normal distribution table is determined 1.96. The deviation standard is the variance of characteristic value as 0.25. This value is derived as the result from the hypothesis and the tolerated mistakes on research is 5% (0.05). The calculation is as follows:

$$n = \left( \frac{1.96 \cdot 0.25}{0.05} \right)^2$$

$$n = 96.04 \approx 100$$

From the calculation, it is stated that the sample size is 96 respondents.

For a practical reason, the sample size is considered 100 respondents.

#### 4. Sampling Method

In achieving the desired objective, the research sample to gather the data will use '*convenience sampling*'. It is a sampling method that is more effective and efficient to gather well-available information (Cooper and Emory, 1996: 212). It is the least expensive and least time consuming compared to other than sampling techniques.

#### 3.3. Research Setting

This research study took place at PKU Muhammadiyah Hospital, which located on K.H. Ahmad Dahlan no. 20, Yogyakarta. The respondents this research observed were 100 patients of PKU Muhammadiyah Hospital.

#### 3.4. Research Instruments

Questionnaire is the instrument used in this research to gather the information from the selected respondents. However, the design and the distribution of questionnaire should be well prepared in order to guarantee its objectivity. Subject to this requirement, a number of questionnaires need to be tested in purpose of knowing their validity and reliability. These validity test and reliability test are directed to ensure that these questionnaires are valid and reliable enough to be distributed to respondents. There were 25 questionnaires to be validity-tested and reliability-tested.

These validity test and reliability test are applied in three sections, according to the questionnaire construction, which are:

- Section I (Quality): about the quality expected by the patients of PKU Muhammadiyah Hospital;
- Section II (Performance): about the performance perceived by the patients of PKU Muhammadiyah Hospital; and
- Section III (Satisfaction): about the condition of satisfaction toward the health care service provided by PKU Muhammadiyah Hospital.

#### 3.4.1. Validity

Validity is defined as the ability of an instrument to express what becomes the main target of a measurement (Sutrisno Hadi, 1990: 1). The validity test uses '*item analysis technique*', which correlates the item score (X) with the instrument total score (Y). The formula that could be used to support this technique is '*Pearson's Product Moment*' correlation formula as follows:

$$r_{xy} = \frac{N \sum xy - (\sum x)(\sum y)}{\sqrt{[N \sum x^2 - (\sum x)^2][N \sum y^2 - (\sum y)^2]}}$$

Which:

$r_{xy}$  = correlation coefficient (product moment)

N = sample size

$\sum x$  = total item score

$\Sigma y$  = total instrument score

$\Sigma xy$  = total multiplication of item score and instrument score

$\Sigma x^2$  = total squared item score

$\Sigma y^2$  = total squared instrument score

The decision is taken by consulting the  $r_{count}$  with the  $r_{table}$ . If found the  $r_{count} < r_{table}$ , the item is considered '*invalid*'. In contrast, if the  $r_{count} > r_{table}$ , the item is considered '*valid*'. The  $r_{table}$  is calculated as follows:

$$df = n - 1$$

which:

$df$  = degree of freedom;

$n$  = number of items.

$$df = 25 - 1$$

$$df = 24$$

$$r_{table} = (5\%; 24) = 0.2598$$

Another could be applied by comparing the probability of those items correlation. If the probability (*p value*) is less than 0.05, the item is considered valid and *vice versa*. As an under liner, the correlation between item score and instrument total score should be positive and the probability is relatively small (less than 5%).

Following tables represent the results of validity test on Section I, II, and III:

**Table 3.1:**

**Result of Validity Test on Questionnaire's Section I (Quality)**

Item No.	Product Moment Correlations	r-table	Status
1	0.660	0.2598	<i>Valid</i>
2	0.878	0.2598	<i>Valid</i>
3	0.757	0.2598	<i>Valid</i>
4	0.832	0.2598	<i>Valid</i>
5	0.671	0.2598	<i>Valid</i>
6	0.713	0.2598	<i>Valid</i>
7	0.642	0.2598	<i>Valid</i>
8	0.807	0.2598	<i>Valid</i>
9	0.642	0.2598	<i>Valid</i>
10	0.720	0.2598	<i>Valid</i>
11	0.868	0.2598	<i>Valid</i>
12	0.868	0.2598	<i>Valid</i>
13	0.876	0.2598	<i>Valid</i>
14	0.762	0.2598	<i>Valid</i>
15	0.713	0.2598	<i>Valid</i>
16	0.884	0.2598	<i>Valid</i>
17	0.568	0.2598	<i>Valid</i>
18	0.772	0.2598	<i>Valid</i>
19	0.794	0.2598	<i>Valid</i>
20	0.558	0.2598	<i>Valid</i>
21	0.679	0.2598	<i>Valid</i>
22	0.726	0.2598	<i>Valid</i>
23	0.603	0.2598	<i>Valid</i>
24	0.615	0.2598	<i>Valid</i>
25	0.603	0.2598	<i>Valid</i>

Source: Data Processed

From those 25 question items that represent five service quality dimensions, all of them are 'valid'. It means that none of them is disqualified of invalidity. As the consequence, all question items in Section I (Quality) can be used in this research to gather the information from the selected respondents.

**Table 3.2:**  
**Result of Validity Test on Questionnaire's Section II (Performance)**

Item No.	Product Moment Correlations	r-table	Status
1	0.645	0.2598	<i>Valid</i>
2	0.884	0.2598	<i>Valid</i>
3	0.725	0.2598	<i>Valid</i>
4	0.766	0.2598	<i>Valid</i>
5	0.719	0.2598	<i>Valid</i>
6	0.787	0.2598	<i>Valid</i>
7	0.636	0.2598	<i>Valid</i>
8	0.887	0.2598	<i>Valid</i>
9	0.636	0.2598	<i>Valid</i>
10	0.737	0.2598	<i>Valid</i>
11	0.791	0.2598	<i>Valid</i>
12	0.804	0.2598	<i>Valid</i>
13	0.804	0.2598	<i>Valid</i>
14	0.652	0.2598	<i>Valid</i>
15	0.847	0.2598	<i>Valid</i>
16	0.733	0.2598	<i>Valid</i>
17	0.831	0.2598	<i>Valid</i>
18	0.827	0.2598	<i>Valid</i>
19	0.673	0.2598	<i>Valid</i>
20	0.622	0.2598	<i>Valid</i>
21	0.856	0.2598	<i>Valid</i>
22	0.693	0.2598	<i>Valid</i>
23	0.840	0.2598	<i>Valid</i>
24	0.792	0.2598	<i>Valid</i>
25	0.803	0.2598	<i>Valid</i>

Source: Data Processed

From those 25 question items that represent five service quality dimensions, all of them are 'valid'. It means that none of them is disqualified of invalidity. As the consequence, all question items in Section II (Performance) can be used in this research to gather the information from the selected respondents.

**Table 3.3:**

**Result of Validity Test on Questionnaire's Section III (Satisfaction)**

Item No.	Product Moment Correlations	r-table	Status
1	0.841	0.2598	Valid
2	0.839	0.2598	Valid
3	0.913	0.2598	Valid
4	0.628	0.2598	Valid
5	0.730	0.2598	Valid

Source: Data Processed

From those 5 question items that represent five service quality dimensions, all of them are 'valid'. It means that none of them is disqualified of invalidity. As the consequence, all question items in Section III (Satisfaction) can be used in this research to gather the information from the selected respondents.

### 3.4.2. Reliability

Reliability is the index value, which explains how reliable a measurement tool. The formula used to test the reliability is 'Alpha Technique' (Masri Singarimbun and Sofyan Effendi, 1987: 142):

$$r_{11} = \left[ \frac{k}{(k-1)} \right] \left[ 1 - \frac{\sum \sigma_b^2}{\sigma_1^2} \right]$$

Which:

$r_{11}$  = Instrument Reliability

$k$  = Number of item

$\sum \sigma_b^2$  = Number of item variance

$\sigma_1^2$  = Total variance



In this reliability test, a question item is considered reliable if cronbach alpha exceeds 0.60 (Hadi, 1990: 60). Following tables represent the results of reliability test on Section I, II, and III:

**Table 3.4:**

**Result of Reliability Test on Questionnaire's Section I (Quality):**

Variables	<i>Cronbach Alpha</i>	r-table	Status
Tangible	0.8194	0.60	<i>Reliable</i>
Reliability	0.7497	0.60	<i>Reliable</i>
Responsiveness	0.8733	0.60	<i>Reliable</i>
Assurance	0.7700	0.60	<i>Reliable</i>
Empathy	0.6502	0.60	<i>Reliable</i>

**Table 3.5:**

**Result of Reliability Test on Questionnaire's Section II (Performance):**

Variables	<i>Cronbach Alpha</i>	r-table	Status
Tangible	0.8068	0.60	<i>Reliable</i>
Reliability	0.7802	0.60	<i>Reliable</i>
Responsiveness	0.8309	0.60	<i>Reliable</i>
Assurance	0.7887	0.60	<i>Reliable</i>
Empathy	0.8545	0.60	<i>Reliable</i>

**Table 3.6:**

**Result of Reliability Test on Questionnaire's Section III (Satisfaction):**

Variable	<i>Cronbach Alpha</i>	r-table	Status
Cust. Satisfaction	0.8461	0.60	<i>Reliable</i>

After the reliability test is made, it is stated that all question items are 'reliable' as shown on the tables above. It means that all question items asked in Section I, II, and III can be used in this research to gather the information from the selected respondents.

### **3.5. Research Variables**

This research study uses variables as follows:

#### **1. Independent Variables (X)**

- Tangible
- Reliability
- Responsiveness
- Assurance
- Empathy

#### **2. Dependent Variable (Y)**

- Customer Satisfaction

### **3.6. Research Procedures**

Systematically, the procedures applied in this research are:

#### **1. Interview**

The researcher asked the hospital director a number of questions about the company profile and the actual progress the hospital makes. The medical facilities condition and other subjects related were also asked.

#### **2. Passing the questionnaires**

The researcher needs to explain the respondents how to fill the questionnaire correctly. It is to avoid technical errors in filling the questionnaires.

### 3. Validity and reliability test

There were 25 questionnaires to be validity and reliability tested before spreading 100 questionnaires to the selected respondents. It was aimed to find out whether or not the answers and questionnaire design valid and reliable enough to be spread to respondents.

### 4. Data analysis

The data were analyzed by using Pearson's Product Moment and Cronbach Alpha.

### 5. Data interpretation

The data were displayed into data interpretation so that easily understood.

## 3.7. Technique of Data Analysis

### 3.7.1. Descriptive Analysis

Basically, descriptive analysis describes or illustrates the data analysis in the form of opinion or information as toward the situation of research objects analyzed. It could be based on the given perspective theory utilized to provide clearer description about the relationship between variables used in this research. In its process, this kind of analysis is applied to enrich the comprehension of quantitative analysis result by using the '*Likert scale*' that is ranging from agree strongly = 5, agree somewhat = 4, neutral = 3, disagree somewhat = 2, and disagree strongly = 1 (Rangkuti, 1997: 66).

### 3.7.2. Quantitative Analysis

Quantitative analysis is an analysis that is presented in the form of numbers or calculation. Therefore, within this analysis, given statistical methods are used to describe the relationship among variables of quantity. The statistical methods to be applied are '*multiple linear regressions*', t-test, and F-test.

#### 1. Multiple Linear Regressions

The general formula of '*multiple linear regressions model*' is as follows:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_i X_i + \text{error}$$

Which:

Y = Customer satisfaction

$\alpha$  = Constant

$\beta_1, \beta_2, \dots, \beta_i$  = Regression coefficient associated with the independent variables

$X_1, X_2, \dots, X_i$  and the error ;  $X_1$  = tangible ;  $X_2$  = reliability ;

$X_3$  = responsiveness ;  $X_4$  = Assurance ;  $X_5$  = Empathy.

#### 2. Partially Test (t-test)

The t-test is done, primarily, to know whether or not there is significant relationship between the dependent variable (Y) and independent variables ( $X_1, X_2, X_3, X_4,$  and  $X_5$ ) partially. If  $t_{\text{count}}$  is larger than  $t_{\text{table}}$ , so the hypothesis is accepted ( $H_0$  is rejected and  $H_a$  is accepted). It means that, partially, there is significant relationship between the dependent variable (Y) and the independent variables ( $X_1, X_2, X_3, X_4,$  and  $X_5$ ). In

contrast, if  $t_{count}$  is smaller than  $t_{table}$ , the hypothesis is rejected ( $H_0$  is accepted and  $H_a$  is rejected). Therefore, partially, there is no significant relationship between the dependent variable (Y) and the independent variables ( $X_1$ ,  $X_2$ ,  $X_3$ ,  $X_4$ , and  $X_5$ ).

The hypothesis test of service quality dimensions toward the customer satisfaction follows these steps as follows:

1. Determining the formulation for  $H_0$  and  $H_a$

$H_0$ : Partially, there is no significant relationship between the dependent variable (customer satisfaction) and each independent variable (tangible, reliability, responsiveness, assurance, and empathy) at PKU Muhammadiyah Hospital in Yogyakarta.

$H_a$ : Partially, there is significant relationship between the dependent variable (customer satisfaction) and each independent variable (tangible, reliability, responsiveness, assurance, and empathy) at PKU Muhammadiyah Hospital in Yogyakarta.

2. Determining level of significance

$$t_{table} = t, \alpha/1; df = n-5-1$$

$$\alpha = 5\% (0.05)$$

3. Test criteria

$H_0$  is accepted, and  $H_a$  is rejected if:  $t_{count} < t_{table}$ ;

$H_0$  is rejected, and  $H_a$  is accepted if:  $t_{count} > t_{table}$ .

4. Determining  $t_{table}$

5. Conclusion:  $H_0$  is rejected or accepted

### 3. Simultaneously Test (F-test)

The F-test is done, primarily, to know whether or not there is significant relationship between the dependent variable (Y) and independent variables ( $X_1$ ,  $X_2$ ,  $X_3$ ,  $X_4$ , and  $X_5$ ) simultaneously. If  $F_{count}$  is larger than  $F_{table}$ , so the hypothesis is accepted ( $H_0$  is rejected and  $H_a$  is accepted). It means, simultaneously, there is significant relationship between the dependent variable (Y) and the independent variables ( $X_1$ ,  $X_2$ ,  $X_3$ ,  $X_4$ , and  $X_5$ ). In contrast, if  $F_{count}$  is smaller than  $F_{table}$ , the hypothesis is rejected ( $H_0$  is accepted and  $H_a$  is rejected). Therefore, simultaneously, there is no significant relationship between the dependent variable (Y) and the independent variables ( $X_1$ ,  $X_2$ ,  $X_3$ ,  $X_4$ , and  $X_5$ ). To know whether or not service quality dimensions simultaneously have significant relationship with customer satisfaction at PKU Muhammadiyah Hospital in Yogyakarta, it uses analysis of variance (ANOVA). The steps are as follows:

#### 1. Determining the formulation for $H_0$ and $H_a$

$H_0$ : Simultaneously, there is no significant relationship between the dependent variable (customer satisfaction) and five independent variables (tangible, reliability, responsiveness,

assurance, and empathy) at PKU Muhammadiyah Hospital in Yogyakarta.

Ha: Simultaneously, there is significant relationship between the dependent variable (customer satisfaction) and five independent variables (tangible, reliability, responsiveness, assurance, and empathy) at PKU Muhammadiyah Hospital in Yogyakarta.

2. Determining level of significance

$$F_{table} = F, \alpha/1; df = n-5-1$$

$$\alpha = 5\% (0.05)$$

3. Determining degrees of freedom (df)

4. Test criteria

$H_0$  is accepted, and  $H_a$  is rejected if:  $F_{count} < F_{table}$ ;

$H_0$  is rejected, and  $H_a$  is accepted if:  $F_{count} > F_{table}$ .

5. Determining  $F_{table}$

Conclusion:  $H_0$  is rejected or accepted