CHAPTER III

RESEARCH DEVELOPMENT

Introduction

The purpose of this chapter is to elaborate the methods used to analyze the data in this research. The processes involved in conducting the research will be discussed. All of data collections were gathered through questionnaires. The respondents have to answer the question items that are contain of three variables, e-service quality (personal needs, user-friendliness, site organization, and efficiency of website), e-customer satisfaction and e-customer loyalty.

3.1 Data Collection Method

3.1.1 Population, Method and Sampling

This study is using quantitative method. The source of data to be used in this research is the primary data. This research use primary data, which means the data obtained directly from the respondent through questionnaire. In distributing the questionnaire, the author will use purposive sampling, which means that the author has criteria of the respondent to fulfill the purpose of this research. In this research, the criteria of the sample are Indonesian consumer that have use the Mandiri mobile banking application named Mandiri Online, this criteria is needed to make sure the

respondent could answer the questions properly and suitable with the research target. Hair *et al.,* (2014) said that the optimal number of samples are 5 until 10 times of the indicator that already prepared.

$$n = 5 \text{ x } i = 5 \text{ x } 25 = 125$$

Information:

n = Number of sample

i = Number of research question

So that, the minimal number of samples are 125. The researcher will distribute the questionnaire for more than 125, to anticipate it from invalid data. The questionnaire will be distributed online. There are 25 questions in the questionnaire. The questionnaire consists of three sections, which are:

1) **Section I**

It contains a question about the respondent's demographic information such as age, occupation, and gender.

2) **Section II**

It contains a question related to respondent's experience in using the application.

3) **Section III**

It contains 25 questions related to the 3 factors that clearly interpretable as e-service quality, e-customer satisfaction, and e-customer loyalty.

Questionnaires will be use online technique to the customer of Mandiri Bank. Structured questionnaire with questions related to the topic of the research, which will be compiled and processed according to the researcher needs. The researcher will use a Likert Scale form:

Strongly Disagree	= 1
Disagree	= 2
Neither agree nor disagree	= 3
Agree	= 4
Strongly Agree	= 5
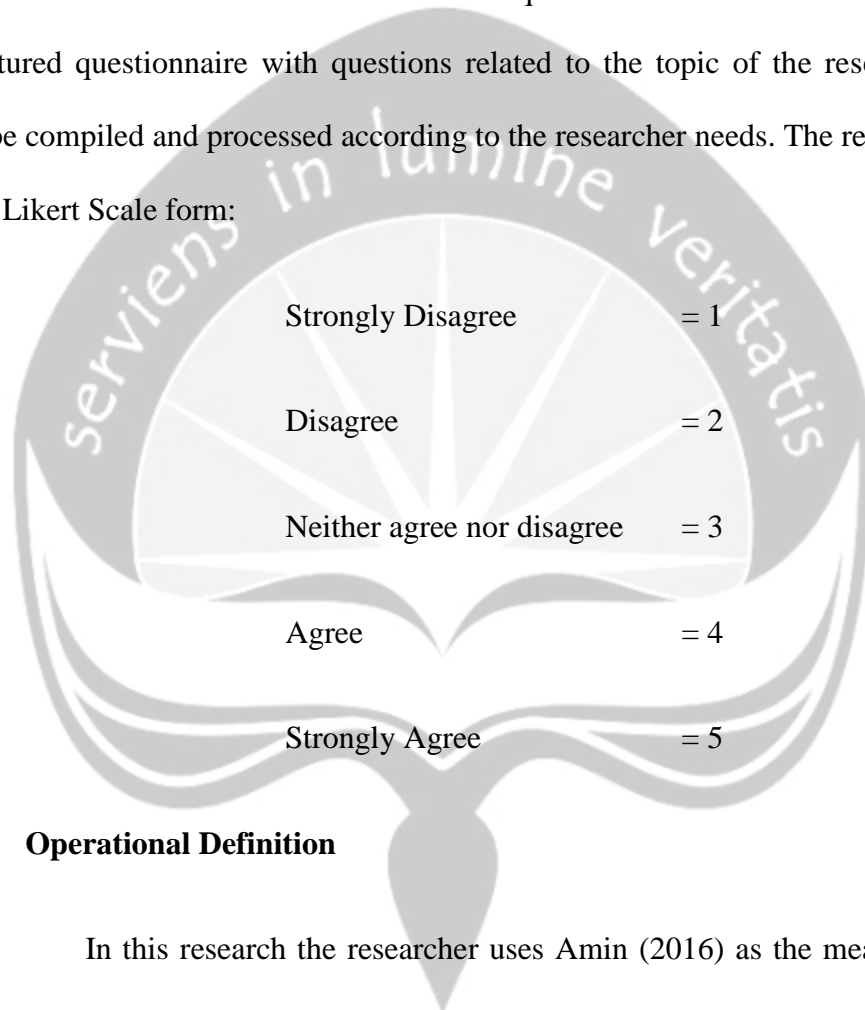
3.2 Operational Definition

In this research the researcher uses Amin (2016) as the measurement of the research. E-service quality as the independent variable of this research, e-customer loyalty as the dependent variable and the last is e-customer satisfaction as the dependent and mediator variable.

Table 3.1
Operational Definition

Variable		Definition	Items	Source
E-service quality	Personal Needs	The need for security of personal banking details.	1. I feel completely safe when making transactions on the Mandiri Online Application. 2. I feel that my personal needs have been met when using the Mandiri Online Application 3. Mandiri Online Application gives me a clear information. 4. Mandiri Online gives me services according to y preferences.	Herrinton and Weaven et al. (2009)
	Site Organization	Factors that concerning the ease of access to the web site due to good web site organization.	1. Mandiri Online is simple to use. 2. Mandiri Online is well organized. 3. I can get on to the Mandiri Online quickly. 4. Design of Mandiri Online is user friendly	
	User Frienliness	Factors that pertain to the ease with which users can navigate within the site.	1. Mandiri Online application is user-friendly 2. Navigation on the Mandiri Online is easy. 3. Mandiri Online application launches and runs right away. 4. Pages at Mandiri Online application is seldom to have problem.	
	Efficiency	Factors that relate to web site efficiency when customers interact and transact on the site.	1. It is easy to find what i need on the Mandiri Online. 2. It is easy to get anywhere on the Mandiri Online.	

			3. I can complete a transaction quickly on the Mandiri Online.	
E-Customer Satisfaction		The contentment of the customer with respect to his or her prior purchasing experience with a given e-commerce firm. (Anderson & Srinivasan, 2003)	1. I feel pleased with this bank's online services from Mandiri Online. 2. I am very satisfied with this online bank services from Mandiri Online. 3. I am happy with this Mandiri Online. 4. Mandiri Online application is simple to use. 5. I am satisfied with overall online bank's products and services from Mandiri Online.	Herrinton and Weaven et al. (2009)
E- Customer Loyalty		The tendency of customers to continue using specific web site, frequently visit it, and show high detention time. (Anderson & Srinivasan, 2003)	1. I will recommend the Mandiri online to other people. 2. I prefer the Mandiri Online above others. 3. I would like to say positive things about Mandiri Online to other people. 4. I would recommend Mandiri Online to someone who seeks advice. 5. I intend to continue using the Mandiri Online.	Amin et al., (2013); Zeithaml et al., (1996)

3.4   Descriptive Analysis

In this research the demographic data in this survey is needed because the demographic data could help to understand the respondent's perceptions toward e-service quality, e-customer satisfaction, and e-customer loyalty. Gender, age and occupation would be analyzed. The descriptive data also can be an additional data for

discussing the conclusion in the next chapter. The descriptive statistics analysis is also performed using index analysis techniques, to describe the perception of respondents on each item in the questionnaire. In this study, the part of descriptive analysis shows by average, standard deviation, variance, maximum, minimum, and the profile of respondents (this study use gender and music video watching frequency). In this descriptive statistics analysis, the mean value of the data from the questionnaire is important. With the minimum and maximum value so the analysis can be decided using this interval calculation:

Minimum score   : 1

Maximum Score   : 5

$$\text{Interval} = \frac{maximum - minimum}{scale\ number} = \frac{5-1}{5} = 0,80$$

Table 3.2

Interval Scale

Mean	Value
1,00 – 1,80	Very Low
1,81 – 2,60	Low
2,61 – 3,40	Moderate
3,41 – 4,20	High
4,21 – 5,00	Very High

Source: Sekaran and Bougie (2013)

3.5   Measuring Instruments

Field (2009) described both validity and reliability as "one way to try to ensure that measurement error is kept to a minimum is to determine properties of the measure that give us confidence that it is doing its job properly. The first property is validity, which is whether an instrument actually measures what it sets out to measure. The second is reliability, which is whether an instrument can be interpreted consistently across different situations." This research utilises SPSS as the software to measure both validity and reliability.

3.5.1   Validity Test

The purpose of validity test is to classify whether the question is valid or not trough comparing the corrected item-total correlation that will be generating by SPSS with the value from r-table. With the significance $\alpha = 5\%$, the question will be classified as valid if the corrected item-total correlation value is greater than the r-table. Validity test was conducted with 30 respondents to get the amount of R-table, so the value of Df will be $df = n - 2 = 30 - 2 = 28$. Therefore, R-table was found 0,361. All validity can be got from this table.

Table 3.3
Validity Test Result

Variable	No	Corrected Items	R-Table (df=30)	Status
Personal Needs	1	0.710	0.361	Valid
	2	0.891	0.361	Valid
	3	0.866	0.361	Valid
	4	0.883	0.361	Valid
Site Organization	5	0.605	0.361	Valid
	6	0.710	0.361	Valid
	7	0.794	0.361	Valid
	8	0.778	0.361	Valid
User-Friendliness	9	0.751	0.361	Valid
	10	0.752	0.361	Valid
	11	0.666	0.361	Valid
	12	0.518	0.361	Valid
Efficiency	13	0.907	0.361	Valid
	14	0.852	0.361	Valid
	15	0.787	0.361	Valid
E-Customer Satisfaction	16	0.932	0.361	Valid
	17	0.899	0.361	Valid
	18	0.875	0.361	Valid
	19	0.609	0.361	Valid
	20	0.832	0.361	Valid
E-Customer Loyalty	21	0.815	0.361	Valid
	22	0.874	0.361	Valid
	23	0.877	0.361	Valid
	24	0.866	0.361	Valid
	25	0.820	0.361	Valid

According to table 3.1, 25 items from 3 variables are significant, because those items have correlation value greater than r-table. Therefore, all of questions above are valid and can be used in this research.

3.5.2   Reliability Test

Reliability test is conducted and the data would be considered reliable if the item has the value of Cronbach's Alpha closer to one. Cronbach's alpha value will range from 0 to 1, while the closer the value to 1, the more reliable the measurement instrument is. Ghozali (2016) stated that to be considered as acceptable reliable, the Cronbach's alpha value should have scored higher than 0,7. The author will use SPSS to determine whether an item is reliable or not.

Table 3.4
Reliability Test Result

Variable	Cronbach's Alpha	Cronbach's Alpha Standard	Status
Personal Needs	0.860	0.70	Reliable
Site Organization	0.837	0.70	Reliable
User-Friendliness	0.844	0.70	Reliable
Efficiency	0.806	0.70	Reliable
E-Customer Satisfaction	0.899	0.70	Reliable
E-Customer Loyalty	0.902	0.70	Reliable

3.6   Analysis Tool

Analysis is a processing the data into information that can be useful and answer the research question. Methods that we use for this research is:

3.6.1   Simple Regression Analysis

In this study, simple linear regression analysis is used to is used to test hypotheses 1 and 2 (H1 & H2). Simple linear regression analysis method is a

statistical method that serves to test the impact between independent variables (X) to the dependent variable (Y).

Here is the equation of simple linear regression:

$$Y = a + bX + e$$

Information:

Y = dependent variable

a = constanta

b = determinant coefficient

X = independent variable

e = standard error

3.6.2 Multiple Regression Analysis

In this research, all of hypothesis will be tested using multiple regression analysis. The purpose of this model is to predict how much the value of dependent variable using the independent variable data (Ghozali, 2016). Multiple regression analysis is a linear connection between two or more dependent variable and the independent variable. This analysis conduct to know the relationship between independent variable with dependent variable, and the independent variable could be positive or negative to predict the dependent variable whether it's going to increase or decrease.

Here is the equation of multiple linear regressions according to Ghozali (2016):

$$Y' = a + b_1X_1 + b_2X_2 + \ldots + b_nX_n$$

Information:

Y' = dependent variable

X_1 and X_2 = independent variable

A = constanta (value Y ' if X_1, X_2, ..., X_n = 0)

B = coefficient regression (in case of an increase or decrease)

3.6.3 F-statistic Test

Based on Gujarati (2012), F-statistic is used to evaluate the effect of all independent variable to the dependent variable. To test the hypothesis, there are some criteria to take the decision, which are:

- Ho = There is no significant effect from independent variable to the dependent variable
- Ha = There is a significant effect from independent variable to the dependent variable.

3.6.4 Adjusted R-square (R^2)

R^2 is a statistic that will give some information about the goodness of fit of a model. In regression, the R^2 coefficient of determination is a statistical measure of how well the regression predictions approximate the real data points. The use of an

adjusted R^2 is an attempt to take account of the phenomenon of the R^2 automatically and spuriously increasing when extra explanatory variables are added to the model. If R^2 equal to 0, so there is no effect that independent variable give to dependent variable, in other word, variation determine of independent variable does not explain the dependent variable at all. Otherwise if R^2 equal to 1, the data indicates that the regression predictions perfectly fit the data.

3.6.5 t-statistic Test

According to Gujarati (2012) t-statistic test used to test the partial effect of independent variables toward the dependent variable. This test done to test the regression coefficient partially which is to see the effect of independent variable and decision making toward dependent variable. This test done with comparing t-statistic with t-table with certain level of confidence. The formula is (Gujarati, 2012):

$$t = \frac{(\beta i - 0)}{Se\ \beta i}$$

Information:

βi = Regression coefficient in i period

Se (βi) = Coefficient standard error in i period

3.7 Mediation

Researcher use mediation analysis to examine mediation effect from E-customer satisfaction in a relationship between E-service quality and E-customer loyalty or the purpose is to examine H4.

According to Baron and Kenny (1998) cited in Zhao *et al.,* (2010), there are some criterias to examine whether it's affecting a variable or not, such as:

1. First equation is, independent variable must have any effect to the mediation variable significantly.
2. Second equation is, mediator must have any effect to the dependent variable significantly.
3. Third equation is, independent variable must have any effect to the dependent variable significantly.
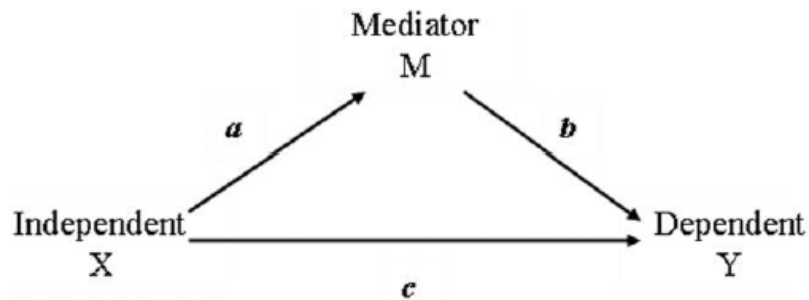
Figure 3.1

Relationship between Independent, Dependent, and Mediator

(Zhao *et al.,* 2010)

Theoritical framework above explain a relationship between all variables (Independent, Dependent, and Mediator), the regression result from X to M will be (a), the regression result from M to Y will be (b), the regression result from X to Y will be (c) (Zhao, *et al.,* 2010).

According Zhao *et al.,* (2010), there are 5 mediation type that he elaborates, Such as:

1. Complementary mediation: Mediated effect (a x b) and direct effect (c) both exist and point at the same direction.

2. Competitive mediation: Mediated effect (a x b) and direct effect (c) both exist and point in opposite directions.

3. Indirect-only mediation: Mediated effect (a x b) exists, but no direct effect.

4. Direct-only nonmediation: Direct effect (c) exists, but no indirect effect.

5. No-effect nonmediation: Neither direct effect nor indirect effect exists.