

CHAPTER III

RESEARCH METHODOLOGY

1.1 Type of Study

The purpose of this research was to test the hypotheses, or it is usually called as causal study, which aims to explain the nature of certain relationships. This research attempted to find the correlation and/or relationship between female online retail (e-tail) shoppers and aim to examine the mediators of e-loyalty in the context of online stores: e-satisfaction and e-trust. The results of this research are expected to be helpful to online store managers in increasing their customers' loyalty. Specifically, online retail (e-tail) store managers have to create quick item delivery methods and friendly online shopping web sites that provide all necessary information and are easy to navigate and use so as to increase customers' e-satisfaction. They also need to establish reliable and trustworthy web sites by letting their customers easily perceive the web sites' privacy and security features to enhance customers' e-trust. As e-satisfaction and e-trust increase, e-loyalty is fostered. The approach used in this research was quantitative approach, conducted by spreading questionnaire as the research instrument and used Likert scale as the itemized rating scale to assess data from 255 respondents who had an account and had experienced purchasing on e-tail stores.

1.2 Population and Sample Research

Population is the scope or magnitude characteristic of the whole object. This research basically was conducted in Yogyakarta. However, during the collecting of data, there is a possibility that the data were not only gathered in Yogyakarta. The data could be gathered from all people in Indonesia because Google form is used.

The sampling was confined to specific types of people who can provide the desired information, and who conform to some criteria set by the researcher. The sample is the amount of certain characteristics of the part of the population that has the same characteristics of the population. The research population was people in all parts of Indonesia who ever bought something (no specific brand of: fashion, electronics, books, food, medicine, etc) through online from e-tail "Shopee". Survey of this research was conducted from December 2017-February 2018. The sample in this research focused on e-tail *Shopee* shoppers and consisted of randomly selected 262 respondents.

1.3 Types and Data Collections Techniques

The research data used in this research was primary data. In this research, the data was obtained by using online questionnaire distributed to 262 respondents. All questions in the questionnaire were translated to Indonesian language to help the respondents understand the questions better. The types of questions that will be used in this research were closed questionnaire. Questionnaires were distributed directly by using online (Google forms) to the respondents.

The questionnaire was measured by using Likert scale. The underlying reason why the researcher choose 6-point Likert scale is to avoid neutral answer. The options consist of:

1: Strongly Disagree (DS)

2: Disagree (D)

3: Rather Disagree (RD)

4: Rather Agree (RA)

5: Agree (A)

6: Strongly Agree (SA)

1.4 Instrumentation

Primary data was collected by distributing questionnaire. The questionnaire used 6 variables and 30 questions items and was designed to measure the correlation among e-loyalty, e-satisfaction, e-trust, perceived delivery time, web site design, perceived online security, and perceived online privacy. All items were measured within a six-Likert scale ranging from strongly disagree (1) to strongly agree (6). In addition, demographic variables such as age and educational background were included in the model as control variables.

1.5 Definition of Operational and Measurement of Research Variable

There were three kinds of variables that were analyzed in this research, which were independent, mediating, and dependent variables. All the indicators were taken by Chou et al (2015).

1.5.1 Perceived Delivery Time

Liu (2000) stated that Customers always trust the E-commerce site that they have previously purchased from and got their goods on time or know a relative or a friend who has a good experience with this E-commerce site. Nowadays, most e-commerce sites provide accurate delivery information upon accepting orders for customer satisfaction. One technique that is called system quality has been used to determine how important the transaction process control is to the customer. The technique tested some aspects that are associated with transaction process control such as tracking the status of the order, the ease of use of the website, the privacy and the confidence (Alotaibi & Bach, 2013).

This variable is measured by the following indicators:

- a. On the whole, I can receive the ordered item quickly;
- b. Overall, I feel that the online store process my order quickly; and
- c. Generally speaking, I would be able to know my order status at any time

1.5.2 Web Site Design

According to Ha et al (2014), website design quality refers to the overall excellence or effectiveness of a website in terms of its delivery of intended messages to its audiences. Website design provided an empirical analysis and proposed that consists of six dimensions: information accuracy, completeness, relevancy, clarity, ease of use, and navigation quality. Website quality can be

analyzed using two major constructs: functionality and usability. Functionality is related to the content of websites, and usability, to their web design. More specifically, functionality is related to the richness of a website's information, and usability refers to the degree of ease with which users can use a website.

This variable was measured by the following indicators:

- a. The online store provides in depth information;
- b. The online store does not waste time;
- c. It is easy to complete a transaction at this online store;
- d. This online store offers appropriate personalized services; and
- e. This online store has good selection.

1.5.3 Perceived Online Security

According to Kalakota & Whinston (1997), perceived security is defined as a threat that creates a circumstance, condition, or event with the potential to cause economic hardship to data or network resources in the form of destruction, disclosures, and modification of data, denial of service, and/or fraud, waste and abuse. After all, customers are often required to provide essential data, such as credit card information and personal profiles, while shopping online. Perhaps, financial and personal security of information has been determined as measure of online customer's satisfaction (Muhammad et al., 2014).

This variable was measured by the following indicators:

- a. I believe that the online store implements security measures to protect internet shoppers;

- b. I believe that the online store usually ensures that transactional information is protected from accidentally altered or destroyed during transmission on the internet;
- c. I believe that the online store has a very safe online paying mechanism;
- d. I believe that the online store has the superior ability to handle online hijackings; and
- e. I believe that transactions are protected by the state-of-the-art security technique at this online store.

1.5.4 Perceived Online Privacy

Internet users reasonably expect that online companies and marketers will be abided by privacy laws to safeguard their disclosed personal data. From a social contract perspective, when parties involve in a contractual relationship, one party must assume that the other will act responsibly to fulfill its promises (Yang, 2013).

This variable was measured by the following indicators:

- a. I was informed what information the company would collect about me;
- b. The online store explained how they would use the information collected about me;
- c. The online store has a clear mechanism/policy to review and change incorrect personal information;

- d. I feel that the online store is making effort to keep my personal information out of hands of unauthorized individuals; and
- e. I feel that the online store will not release my personal information about me without my express permission.

1.5.5 E-Satisfaction

According to Chinomona et al (2014) satisfaction described as a person's feeling of pleasure or disappointment resulting from comparing a product's perceived performance or outcome in relation to their expectations. E-satisfaction defined as the content of the customer with respect to their prior purchasing experience with a given electronic commerce firm. A customer might experience various degrees of satisfaction. If the product or service performance falls short of expectation, the customer is dissatisfied. If performance matches expectations, the customer is satisfied. If the performance exceeds expectations, the customer is highly satisfied or delighted. Satisfaction is a post-activity measuring index that measures the interior state of the customer's feelings about past purchases and experiences of shopping. Measuring the degree of satisfaction of customers is rather critical since satisfaction with the distribution service influences the customer's decision whether to continue using the channel (Grace & Chia, 2009).

This variable was measured by the following indicators:

- a. I like to purchase products from the online store;

- b. I am pleased with the experience of purchasing products from the online store;
- c. I think purchasing products from the online store is a good idea; and
- d. Overall, I am satisfied with the experience of purchasing products from the online store.

1.5.6 E-Trust

According to Chu and Yuan (2013), trust in e-commerce is defined here as the belief that allows consumers to willingly become vulnerable to a website after having taken its characteristics into consideration. In e-commerce, trust is the confidence in the quality and credibility of the goods and services provided by the online store. Trust is very important in many business relationships, especially in e-commerce relationships, since there will be more obstacles to establish trust with customers, such as customers cannot see real products but only some pictures, and customers will be charged before they receive their products. E-trust in online transactions are created from the interaction between customers and service providers, so that e-trust is the basis for the creation of a desire to buy online (Mousaveian et al, 2014)

As a variable, e-trust was measured by the following indicators:

- a. I believe that this online store honestly provides correct information;
- b. I believe that there is no misrepresentation at this online store;
- c. I believe that this online store makes recommendations to consumers on the basis of mutual benefit; and

- d. I believe that this online store would not take adverse actions against its consumers.

1.5.7 E-Loyalty

According to Sahin et al. (2011), in marketing literature the term loyalty has often been used interchangeably with its operational (measurement) definition to refer to; repeat purchase, preference, commitment and allegiance. In online marketing (e-commerce), the loyalty referred as electronic loyalty (e-loyalty) is defined as a virtual consumer willingness to visit the website continuously or consider purchasing something from the relevant websites (Mousaveian et al., 2016).

This variable was measured by the following indicators:

- a. If the online store continues maintaining current service performance, I will not switch to other online stores;
- b. As far as the product types sold at this online store are concerned, I do not quite consider purchasing at other online stores;
- c. I like to utilize this online store; and
- d. To me, this online store is the best web site to shop clothing.

1.6 Validity and Reliability Test of the Instrument (Pilot Test)

According to Fan (2013) in education research, reliability and validity are important and fundamental concepts and almost all education research involves some form of assessment or measurement. Some researchers may describe a test or instrument used in a study using statements such as “the test is reliable” and/or “the

test is valid.” These similar descriptions are common. Such descriptions and statements, unfortunately, may incorrectly assume and incorrectly convey the audience that reliability and validity are inherent characteristics of a test. As a result, these test characteristics would be true and applicable in other research situations.

In this research, the function of validity test is an indicator to measure and analyze whether each item of instrument could explain the variable observed or not. The effectiveness of the questionnaire as a measurement tool is the most important factor in determining the quality of the research result. Validity test indicates the extent to which an indicator could explain the variables observed. The indicator can be said as valid, if the corrected item total correlation is greater than critical value for validity coefficient (0.30) or equal to 0.30 (≥ 0.30). If the validity coefficient of one item is less than the critical value for validity coefficient (0.30), the item is considered invalid or failed (Zikmund, 2003).

Moreover, reliability test is designed to find out the consistency of the measurement tools. It could give the result that it is relatively consistent if there is re-measurement in the same subject. The reliability of a measure indicates the extent to which the measure is without bias or error free, and hence, offers consistent measurement across time and across the various items in the instrument. A reliable measurement tool will provide a reliable result that is also relevant to the variable used, and if the data is relevant to the reality condition, the result of any measurement conducted in the next period will always be the same. Reliability test is conducted with SPSS by putting all questions in SPSS to be analyzed. It uses alpha coefficient from Cronbach to find the value of alpha Cronbach (α) which is ≥ 0.6 (greater than

0.6). Thus, the measurement tool of the research is claimed reliable to be used (Sekaran, 2000).

Researcher spread 35 respondents for checking each validity and reliability test, as a pilot test. The number of the statements that were written in the questionnaire was evaluated as follow:

This research referred to indicators explained by Chou et al. (2015). The indicators were as follow:

1. Perceived delivery time (PDT) had three indicators.
2. Web site design (WSD) had five indicators.
3. Perceived online privacy (POP) had five indicators.
4. Perceived online security (POS) had five indicators.
5. E-Satisfaction had four indicators.
6. E-Trust had four indicators.
7. E-Loyalty had four indicators.

Table 3.1 Validity and Reliability Test I

Constructs/Indicator	Corrected Item-Total Correlation	Cronbach Alpha	Minimal Score	Status
Perceived delivery time (PDT)		0.792	0.6	Reliable
Overall, I can receive the ordered item quickly;	0.573		0.3	Valid
Overall, I feel that the online store process my order quickly;	0.663		0.3	Valid
Generally, I would be able to know my order status at any time	0.706		0.3	Valid
Web site design (WSD)		0.743	0.6	Reliable
The online store provides depth information;	0.471		0.3	Valid
The online store does not waste time;	0.550		0.3	Valid

It is easy to complete a transaction at this online store;	0.439		0.3	Valid
This online store offers appropriate personalized services;	0.559		0.3	Valid
This online store has good selection.	0.543		0.3	Valid
Perceived online privacy (POP)		0.764	0.6	Reliable
I was informed about the information of the company that would be collected on me;	0.623		0.3	Valid
The online store explained how they would use the information collected n me;	0.511		0.3	Valid
The online store has a clear mechanism/policy to review and change incorrect personal information;	0.608		0.3	Valid
I feel that the online store is making effort to keep my personal information out of hands of unauthorized individuals;	0.515		0.3	Valid
I feel that the online store will not release my personal information about me without my express permission.	0.415		0.3	Valid
Perceived online security (POS)		0.785	0.6	Reliable
I believe that the online store implements security measures to protect internet shoppers;	0.529		0.3	Valid
I believe that the online store usually ensures that transactional information is protected from accidentally altered or destroyed during transmission on the internet;	0.619		0.3	Valid
I believe that the online store has a very safe online paying mechanism;	0.572		0.3	Valid

I believe that the online store has the superior ability to handle online hijackings;	0.512		0.3	Valid
I believe that transactions are protected by the state-of-the-art security technique at this online store.	0.617		0.3	Valid
E-Satisfaction		0.919	0.6	Reliable
I like to purchase products from the online store;	0.745		0.3	Valid
I am pleased with the experience of purchasing products from the online store;	0.927		0.3	Valid
I think purchasing products from the online store is a good idea; and	0.816		0.3	Valid
Overall, I am satisfied with the experience of purchasing products from the online store.	0.819		0.3	Valid
E-Trust		0.763	0.6	Reliable
I believe that this online store honestly provides correct information;		0.855	0.3	Valid
I believe that there is no misrepresentation at this online store;		0.561	0.3	Valid
I believe this online store makes recommendations to consumers on the basis of mutual benefit; and		0.279	0.3	Invalid/failed
I believe that this online store would not take adverse actions against its consumers.		0.661	0.3	Valid
E-Loyalty		0.905	0.6	Reliable
If the online store continues maintaining current service performance, I will not switch to other online stores;	0.764		0.3	Valid
As far as the product types sold at this online store are concerned, I do not quite consider purchasing at other online stores;	0.862		0.3	Valid

I like to utilize this online store;	0.701		0.3	Valid
To me, this online store is the best web site to shop	0.834		0.3	Valid

Source: SEM Processing Result, 2018 (APPENDIX B)

In Table 3.1 above, there was one indicator that was below the predetermined value to meet the elements of the validity of an indicator (because the result was less than 0.3). The indicator was from E-Trust variable. Because of that result, this indicator was invalid. Thus, the researcher deleted one indicator and tested the validity and reliability of E-Trust variable. The results of the retest were as follows:

Table 3.2 Validity and Reliability Test II

Constructs/Indicator	Corrected Item-Total Correlation	Cronbach Alpha	Minimal Score	Status
Perceived delivery time (PDT)		0.792	0.6	Reliable
Overall, I can receive the ordered item quickly;	0.573		0.3	Valid
Overall, I feel that the online store process my order quickly;	0.663		0.3	Valid
Generally, I would be able to know my order status at any time	0.706		0.3	Valid
Web site design (WSD)		0.743	0.6	Reliable
The online store provides depth information;	0.471		0.3	Valid
The online store does not waste time;	0.550		0.3	Valid
It is easy to complete a transaction at this online store;	0.439		0.3	Valid
This online store offers appropriate personalized services;	0.559		0.3	Valid
This online store has good selection.	0.543		0.3	Valid

Perceived online privacy (POP)		0.764	0.6	Reliable
I was informed about the information of the company that would be collected on me;	0.623		0.3	Valid
The online store explained how they would use the information collected on me;	0.511		0.3	Valid
The online store has a clear mechanism/policy to review and change incorrect personal information;	0.608		0.3	Valid
I feel that the online store is making effort to keep my personal information out of hands of unauthorized individuals;	0.515		0.3	Valid
I feel that the online store will not release my personal information about me without my express permission.	0.415		0.3	Valid
Perceived online security (POS)		0.785	0.6	Reliable
I believe that the online store implements security measures to protect internet shoppers;	0.529		0.3	Valid
I believe that the online store usually ensures that transactional information is protected from accidentally altered or destroyed during transmission on the internet;	0.619		0.3	Valid
I believe that the online store has a very safe online paying mechanism;	0.572		0.3	Valid
I believe that the online store has the superior ability to handle online hijackings; and	0.512		0.3	Valid
I believe that transactions are protected by the state-of-the-art security technique at this online store.	0.617		0.3	Valid
E-Satisfaction		0.919	0.6	Reliable
I like to purchase products from the online store;	0.745		0.3	Valid
I am pleased with the experience of purchasing products from the online store;	0.927		0.3	Valid

I think purchasing products from the online store is a good idea; and	0.816		0.3	Valid
Overall, I am satisfied with the experience of purchasing products from the online store.	0.819		0.3	Valid
E-Trust		0.824	0.6	Reliable
I believe that this online store honestly provides correct information;		0.859	0.3	Valid
I believe that there is no misrepresentation at this online store;		0.640	0.3	Valid
I believe that this online store would not take adverse actions against its consumers.		0.623	0.3	Valid
E-Loyalty		0.905	0.6	Reliable
If the online store continues maintaining current service performance, I will not switch to other online stores;	0.764		0.3	Valid
As far as the product types sold at this online store are concerned, I do not quite consider purchasing at other online stores;	0.862		0.3	Valid
I like to utilize this online store; and	0.701		0.3	Valid
To me, this online store is the best web site to shop.	0.834		0.3	Valid

Source: SEM Processing Result, 2018 (APPENDIX B)

1.7 Analysis Technique

In order to conduct data analysis, this research mainly used SPSS 16.0 and LISREL 8.80. This research consisted of two steps of data analysis. The first step of analysis was by conducting the pilot test. Pilot test was conducted to test the validity and reliability of the indicators used in the questionnaire. Pilot test was conducted by spreading questionnaire for 35 respondents, and the result was analyzed by using

SPSS. Once the pilot test completed, the next step was measuring the error, testing the structural model as well as research hypotheses, and analyzing the model fitness by using LISREL (Ghozali & Fuad, 2008).

SEM (Structural Equation Modeling) analysis was used to analyze the primary data (quantitative research analysis) for the hypothesis testing and generate the result from the data. SEM allows researchers to test and estimate more complicated framework simultaneously between multiple exogenous and endogenous with many indicators (Haryono & Wardoyo, 2012).

This model cannot be analyzed using multiple regression analysis. Therefore, this research used LISREL, which was one of the programs of SEM. It is an analysis technique that allows the researcher to analyze the influence of several variables against other variables simultaneously (Ghozali & Fuad, 2008).

This technique was conducted to analyze the relationship among e-loyalty, e-satisfaction, e-trust, female online shoppers, perceived online privacy, and perceived online security.

1.7.1 Respondents Characteristic

In this part, this research described the demographic characteristic of the respondents. The demographic characteristics that will be explained were age, latest educational background, and respondents' frequency of time spending on web surfing online activity per week.

1.7.2 Descriptive Analysis

Descriptive content analysis is a systematically review that aims to identify and describe the general trends and research results in a particular research discipline (Çalık et al., 2008). In other words, descriptive analysis is used for describing the average of respondents responds toward each item in the questioner.

1.7.3 Model Development on Theory

According to Cliff (1983) marketing researchers often construct theoretical cause and statements involving networks of latent variables and evaluate the networks using cross-sectional data in structural equation models. In fact, in its earlier days, researchers often referred to SEM as causal modeling, and the path-analytic structures of structural equation models clearly imply causal flows from exogenous to endogenous constructs. However, deriving causal inferences from cross-sectional data can be fraught with risk, especially when there is an implicit (non-explicated) assumption that changes in one construct cause changes in another construct.

Doing so requires the assumption that the causal relationship is instantaneous, that homeostasis has occurred, or, in the case of self-report data, that study participants can reasonably be asked to simultaneously provide information on previous, present, or future behaviors. Such an assumption would appear unwarranted in most cross-sectional SEM applications. Indeed, researchers using SEM techniques should keep in mind

that causality can never be conclusively established from correlation (including longitudinal) data (Chin et al., 2008).

1.7.3.1 Path Diagram and Structural Equations

SEM extends the possibility of relationships among the latent variables and encompasses two components: (a) a measurement model (essentially the CFA) and (b) a structural model. In addition to the above terms (measurement and structural model), two other terms are associated with SEM: *exogenous* which is similar to independent variables and *endogenous* which is similar to dependent or outcome variables. Exogenous and endogenous variables can be observed or unobserved depend on the model being tested. Within the context of structural modeling, exogenous variables represent those constructs that exert an influence on other constructs under research and are not influenced by other factors in the quantitative model. Those constructs identified as endogenous are affected by exogenous and other endogenous variables in the model (Schreiber et al., 2006).

In the SEM calculation model, there are two types of models, which are structural model and measurement model. Structural model is a set of relationships between latent variables and this relationship can be considered linear, although further development enables non-linear equations to be incorporated. Meanwhile, measurement model is a model, which is part of SEM model which is normally associated with latent variables and their indicators. The relationship in this model is done through confirmatory factor

analysis model or confirmatory factor analysis (CFA) in which unmeasured covariates between each pair of variables is possible (Kasanah, 2015).

1.7.3.2 Choosing Input Matrix and Estimation Model

Structural Equation Modeling (SEM) using input data which only use matrix variance or covariance or correlation matrix for the overall estimation is done. Covariance matrix is used because the SEM has the advantage of presenting a valid comparison between different populations or different samples, which cannot be served by the correlation. According to Hair et al. (1998) that variance or covariance matrix at the time of testing the theory better meet the assumptions methodology where the standard errors indicate the numbers more accurate than using the correlation matrix.

1.7.3.3 Structural Equation Model Identification

Structural Equation Modeling (SEM) techniques are a second-generation multivariate technique (Fornell, 1982) and have gained increasing popularity in management sciences, notably marketing and organizational behavior, in the last decade. Bagozzi (1980) suggested that causal models developed following the structural equation modeling (SEM) approach had a number of advantages: (1) they make the assumptions, constructs, and hypothesized relationships in a researcher's theory explicit; (2) they add a degree of precision to a researcher's theory, since they require clear definitions of

constructs, operationalization's, and the functional relationships between constructs; (3) they permit a more complete representation of complex theories; and (4) they provide a formal framework for constructing and testing both theories and measures (Chin et al., 2008).

There are three categories of identification in SEM (Wijanto, 2008):

1. *Unidentified model*: A model, in which the value of estimated parameter is greater than the value of known data.
2. *Just Identified*: A model, in which the value of estimated parameter is equal to the value of known data. Thus it can be concluded that the model has zero degree of freedom.
3. *Over Identified*: A model, in which the estimated parameter value is smaller than the value of known data.

Identification problems can arise due to the inability of the developed model to produce estimates that are unique. Some identification problems that may arise:

- a. Big standard error for one or several coefficients.
- b. The program is not able to produce a matrix of the information that should be presented
- c. The emergence of odd numbers such as the existence of negative error variance
- d. The emergence of a very high correlation between the estimates coefficients obtained (e.g ≥ 0.9)

1.7.3.4 Goodness of Fit Criteria

a. Chi-Square (χ^2) and Normed χ^2

Chi-square value identifies deviations between the sample covariance matrix and fitted model covariance matrix (Joreskog & Sorbom, 1993).

The model has a perfect fit if the model's value of Chi-square is valued at 0. Otherwise, normed χ^2 Tests is the ratio of χ^2 divided by its degree of freedom. A good model has normed χ^2 between 1 and 2. However, the ratio of 2 to 3 indicates that it meets the criteria for a good model. Probability (P value) is a function, which is used to get large deviation indicated by the value of chi-square. When the chi-square value is significant (0.05) it shows that there are differences between the empirical data that obtained in this research and the previous theory. Thus, the probability of insignificant chi square value is expected, which indicates that the empirical data is in accordance with the model.

1) If H_0 : Empirical data is identic to theory/model, means hypothesis will be accepted if p 0.05.

2) H_a : Empirical data is not identic to theory/model, means hypothesis accepted if p 0.05.

b. Root Mean Square Error of Approximation (RMSEA)

RMSEA is a measurement of approximate fit in the population and is therefore concerned with the discrepancy due to approximation.

RMSEA is estimated by the square root of the estimated discrepancy

due to approximation per degree of freedom. RMSEA is regarded as relatively independent of sample size, and additionally favors parsimonious models.

According to Browne & Cudeck (cited in Ghazali & Fuad, 2008), stated that RMSEA able to quantify deviations parameter values in a model with a covariance matrix of the population. The standards of RMSEA as follow:

- 1) If $RMSEA \leq 0.5$, it indicates a model fit (Byrne, 1998).
- 2) If $RMSEA = 0.8 - 1.0$, it indicates that the model has a fit that is mediocre (enough).
- 3) If $RMSEA \geq 1$, it indicates a poor model fit.

c. Goodness of Fit Indices (GFI)

According to Diamantopoulus and Siguaw (cited in Ghazali & Fuad, 2008) GFI is the accuracy measurement of the model in generating observed covariance matrix. GFI value should range between 0 and 1. If the value of $GFI \geq 0.9$, then it shows a model of a good fit. Joreskog & Sorbom theory (cited in Ghazali & Fuad, 2008) also proved that GFI has the possibility to have a negative value, but it is not supposed to happen. If a model has a negative GFI, it indicates the worst model.

d. Adjusted Goodness of Fit Index (AGFI)

The main function of AGFI is to adjust bias as a result of model complexity. The AGFI adjust the models degrees of freedom relative to the number of observed variables and therefore rewards the less

complex models with fewer parameters. The AGFI approaches the GFI. A rule for this index is that 0.90 will be an indicator of good fit relative to the baseline model, while the value which is greater than 0.85 may be considered as an acceptable fit (Schermelleh, et al., 2003).

e. Comparative Fit Index (CFI)

CFI value is ranging from 0 to 1. If the value of CFI is ≥ 0.90 , it indicates a good fit. Meanwhile, if value of CFI is in between $0.80 \leq CFI \leq 0.90$, often referred to as marginal fit (Kasanah, 2015).

Bentler (cited in Ghozali & Fuad, 2008) stated that the CFI is highly recommended as a tool to measure the fit of a model.

f. Normed Fit Index (NFI)

As mentioned by Ghozali & Fuad (2008), that NFI is a comparison between the proposed model and the null models. If the value of NFI > 0.90 , the model is considered as a good model.

Table 3.3 Goodness of Fit Index Summary

Name	Acceptable Value
X ² (Chi-Square)	P > 0.05
The Normed X ²	$1.00 \leq (X^2/df) \leq 3.00$
GFI (Goodness of Fit Index)	> 0.95 (values between 0.90 – 0.95 may also indicate satisfactory fit)
RMSEA (Root Mean Square Error of Approximation)	< 0.05 (values between 0.05 – 0.08 may also indicate satisfactory fit)
CFI (Comparative Fit Index)	≥ 0.95 (values between 0.90 – 0.95 may also indicate satisfactory fit. Values close to 0 indicate poor fit, CFI = 1 indicates perfect fit)

1.7.3.5 Interpretation and Modification Model

A model is acceptable when it is able to make a modification index to recover theoretical justification of goodness of fit (GFI). Thus, the modification model must have a consideration. The modification model must be cross validated (estimated with separated data) before the modification model is accepted or it shows the value of absolute fit model from the default model with a relatively acceptable value of Chi-square. It is shown by the significant probability level. Therefore, it requires a modification (Ghozali & Fuad, 2008).

Once the model is tested with the goodness of fit index, it will indicate whether the model needs modification or not. If the hypothesized model has not reached the model fit, the next step would be modifying the model to achieve the good fit. According to Khasanah (2015), in modifying the model through SIMPLIS. The following are several ways to modify the model:

1. Delete the observed variables that does not qualify good validity and reliability;
2. Utilize the information contained in the modification indices, namely:
 - a. Adding a new path between the variable observed with latent variables and between latent variables;
 - b. Add an error covariance between the two error variances.