

CHAPTER III

RESEARCH METHODS

A. Types of Research

Types of research which used in this research was *Explanatory* research with quantitative method. This research is to analyze the relationship between *product quality* on *customer satisfaction* and *customer loyalty*. Explanatory definition according to Warwick and Lininger (1975) as quoted by Singarimbun and Effendi (1995:5) is a research which give a prime importance to the causals relationship within the research variables through hyphotesis testing. The research conduct to figure out the relationship and effect of independent variable towards some of dependent variables. Technique of data collection in this study is using questionnaires. The study aims to determine the relationship between the quality of product towards consumer satisfaction and loyalty. Explanatory research is needed to explain and elaborate on the relationship itself to fit the purpose of research. Questionnaire in this study is needed in terms of data collection, and quantitative methods will be used in the processing of these data in order to find the relationships.

B. Data Gathering

1. Source of Data

a) Primary Data

This type of data is obtained directly from the object of research. It could be done through the questionnaire. Researcher distributed questionnaires to the respondents with a question containing a certain scale..

b) Secondary Data

This type of data is the data which collected from outside the object and already published by corporate. Secondary data here is the data that already

exists and provided by the relevant agencies. In this case, the data is the data provided by the Department of Industry and Commerce in the form of the number of SMEs that manufacture and sell batik jonegoroan..

2. Data Collecting Method

a) Questionnaires is a list of questions which has been formulated in a clear definition of alternatives. Questionnaire is a efficient collecting data mechanism if only the researcher knows what he/she need and how to measure the research variables.

b) Questionnaires Guidance

Questionnaire guidance is a list of structurized questions which will be filled by respondent. Later, the answers will be use as a processing data.

C. Variables and Measurement

1. The Variables

a. *Product Quality*,

The quality of products is the ability, features, characteristics of products that affect the product's ability to fulfill its function and as a competitive advantage of a company or producer, the items are :

- 1) *Performance* is a product function fullfilment
- 2) *Features* is a product characteristics and looks.
- 3) *Reliabilty* is a product failure within a period of time.
- 4) *Conformance* is a degree of goods or services meet the standards.
- 5) *Durability* is a product lasting period

- 6) *Service Ability* is the speed and ease of rectification.
- 7) *Aesthetich* is the product's appearance.
- 8) *Perceived Quality* is a quality which taken from a reputable seller.

b. *Customer Satisfaction,*

Customer satisfaction is the feeling of satisfaction that comes after the customer's use of a product. The feeling of satisfaction came after customers compare between real conditions and expectations of the product, customer satisfaction items are :

- 1) *Value* is a comparison between the effort of the customer to get the product and what customer felt after use the product.
- 2) *Expectation* is a customer feeling after purchase the product.
- 3) *Experience* is a customer experience towards the product.

c. *Customer Loyalty,*

Customer loyalty is a feeling of loyal comes from the customers to specific products that arise in the absence of coercion, but arises from the consciousness of his own in the past and the behavior of re-purchase the product. Its items are :

- 1) *Recommend Others* , tell and recommend other over the product.
- 2) *Continue Purchasing*, is a customer repurchase behaviour.
- 3) *Say Positive Thing*, is a customer positive thoughts.
- 4) *Remember the Brand*, Consumer memory towards brand.

To make it understandable, below are the variables and items in form of table

Tabel 3.1 Variabels and items

No	Variable	Item
1.	Quality of Product	Performance
		Feature
		Reliability
		Conformance
		Durability
		Service Ability
		Aesthetics
		Perceived Quality
2.	Customer Satisfaction	Expectation
		Experience
		Value
3.	Customer Loyalty	Recommend
		Continue Purchasing
		Say Positive Thing
		Remember the Brand

2. Measurement Scale

Measurement scale in this research is using Semantic Differential scale. According to Nazir (2011:344), Semantic Differential used to see how one's perspective on a concept or object. Object or concept can cover a lot of issues, including political issues, school, someone, and so on. There are three-dimensional in nature or scale of the semantic differential, ie

Table 3.2 Example of Dimensional of Semantic Differential

Evaluation	Potential	Activities
Good-Bad	Big-Small	Fast-Slow
Clean-Dirty	Strong-Weak	Sharp-Dull

Source: Natzir (2011)

Differential semantics using seven-or five-point intervals to measure ::



Source : Natzir (2011)

D. Population and Sampling

1. Population

Population is the entire number of research subject. According to Indriantoro and Supomo (1999:115), population is a group of people, event or any aspects which has certain characteristics. Population in this research are taken from the average amount of customers who purchased the product within past three months, the average customer within three months period of purchased is 42 customers.

2. Sample

Arikunto (2006) stated that sample is a representative of population, by conduct a research in some part of population, hopefully, the result will describe the nature of the population. According to Nazir (2011:271) sample is a collection of sampling units drawn

from a draft. Sampling unit is a collection of elements of the population that do not overlap. Frame here means a list or sequence of sampling units available, so it can be seen that the sample is a procedure in which only part of the population are taken and used to determine the nature and desired characteristics of the population. All 42 customers are already bought the batik product more than once. Determination of the number of samples taken in this study is using Yamane formula,

$$n = \frac{N}{N(d)^2 + 1}$$

$$n = \frac{42}{42(0.05)^2 + 1} = 38,009 \quad \text{rounded to } (38)$$

Source: Riduwan (2007:65)

n = number of samples sought

N = Total Population

d = precision value (5% or 0.05)

3. Sampling Technique

Sampling technique use in this research is Purposive Sampling. The selection of a group of subjects in a purposive sampling based on certain characteristics that are considered to have a close relation with the previously known population. In other words, the sample unit which contacted have to fullfill the certain criteria applied in thie research and based on the purpose of the research (Zuriah, 2007:124).

E. Validity and Realibility Test

1. The Validity Test

Validity indicates the degree to which the accuracy of the use of measurement tools. According Arikunto (2006:168), validity is a measurement that shows the levels of

validity or the validity of an instrument. A valid or legitimate instrument has high validity. Less valid instruments means it has low validity. The formula that is used in this test is correlation technique:

$$r_{xy} = \frac{n \sum x_i y_i - (\sum x_i)(\sum y_i)}{\sqrt{\{n \sum x_i^2 - (\sum x_i)^2\}} \sqrt{\{n \sum y_i^2 - (\sum y_i)^2\}}}$$

With a significant level of 0.05 when r count probability (p) ≤ 0.05 means that the item is valid.

2. The Reliability Test

An instrument said to be reliable if it can be used to measure a phenomenon at different times and always showed the same results. Cronbach's alpha is an index of adequate inter-item consistency. This coefficient varies from 0 to 1 and a value of 0.6 or less generally indicates that the internal consistency reliability was not satisfactory (Malhotra, 2005:310).

Cronbach Alpha formula:

$$r_{11} = \left[\frac{k}{k-1} \right] \left[1 - \frac{\sum \sigma_b^2}{\sigma_t^2} \right],$$

α	: Measuring instrument reliability
k	: number of indicator
$\sum \sigma_b^2$: the number of varian grain
σ_t^2	: total varian

With a significant level of 0.60 when r count probability (p) ≤ 0.60 means that the item is valid.

F. Analysis Method

1. Descriptive Analysis

According Arikunto (2006:239), descriptive analysis is a quantitative data which collected in a correlational study, comparative, or experimental processed with statistical formula that has been provided, either manually or by using a computer. The purpose of descriptive studies is to provide researchers a history or describe relevant aspects of the phenomenon of concern from the perspective of a person, organization, or other industrial orientation.

2. Generalized Structured Component Analysis (GSCA)

According to Hwang (2008:4) Generalized structured component analysis represents a component-based approach to structural equation modeling. Thus, this approach defines latent variables as components or weighted composites of observed variables as follows:

$$\gamma_i = Wz_i$$

Where z_i denotes a vector of observed variables for a respondent i ($i = 1, \dots, N$), γ_i is a vector of latent variables for a respondent i , and W is a matrix consisting of component weights assigned to observed variables. Moreover, generalized structured component analysis involves two additional equations for model specifications: One is for the measurement or outer model which specifies the relationships between observed and latent variables; and the other is for the structural or inner model which expresses the relationships among latent variables. Specifically, in generalized structured component analysis, the measurement model is given by:

$$Z_i = C\gamma_i + \varepsilon_i$$

where C is a matrix of loadings relating latent variables to observed variables and ε_i is a vector of residuals for z_i . The structural model is defined by:

$$\gamma_i = B\gamma + \xi_i$$

where \mathbf{B} is a matrix of path coefficients connecting latent variables among themselves and ξ_i is a vector of residuals for γ_i . Then, the generalized structured component analysis model is derived from combining these three equations into a single equation as follows :

$$\begin{bmatrix} Z_i \\ \gamma_i \end{bmatrix} = \begin{bmatrix} C \\ B \end{bmatrix} \gamma_i + \begin{bmatrix} \varepsilon_i \\ \zeta_i \end{bmatrix}$$

$$\begin{bmatrix} I \\ W \end{bmatrix} Z_i = \begin{bmatrix} C \\ B \end{bmatrix} W Z_i + \begin{bmatrix} \varepsilon_i \\ \zeta_i \end{bmatrix}$$

$$V Z_i = A W Z_i + e_i$$

Generalized structured component analysis estimates model parameters by consistently minimizing the global optimization criterion. This enables the provision of measures of overall model fit. Specifically, generalized structured component analysis offers an overall measure of fit, called FIT, which is the proportion of the total variance of all endogenous variables explained by a given particular model specification. It is given by :

$$FIT = 1 - [\sum_{i=1}^N (V Z_i - A W Z_i)' (V Z_i - A W Z_i)] / [\sum_{i=1}^N Z_i' V' V Z_i]$$

Thus, another index of fit was developed which takes this contingency into account. It is referred to as Adjusted FIT or AFIT (Hwang et al. 2008), given by :

$$AFIT = 1 - (1 - FIT) \frac{d_0}{d_1}$$

where $d_0 = NJ$ is the degrees of freedom for the null model ($\mathbf{W} = \mathbf{0}$ and $\mathbf{A} = \mathbf{0}$) and $d_1 = NJ - G$ is the degrees of freedom for the model being tested, where J is the number of observed variables and G is the number of free parameters. The model that maximizes AFIT is regarded as the most appropriate among competing models.