CHAPTER III

RESEARCH METHODOLOGY

3.1. Research Design

The research method that is applied in this research is quantitative method, the reason is because this research aimed to have more projectable and statistical results instead of narrative results. Research design defines ways and plans to collect necessary data and turn the data into decent information that can help researchers to get the results of a study. According to Sentosa (2023), quantitative research methods can be interpreted as research methods based on the philosophy of positivism, used to examine populations or specific samples, sampling techniques are generally carried out randomly, data collection using research instruments.

This research also use descriptive research to observe and describe the research subject or problem without affecting or manipulating the variables in any way. According to Sentosa (2023), Descriptive research is a study that seeks to answer the problems that exist based on the data. Process analysis in research descriptive, present, analyze, and interpret.

In this research use causal research is used to prove the relationship between cause and effect of several variables. This type of research is causal research. According to Sentosa (2023), causal research is research that aims to find out whether or not there is an influence or relationship between independent variables on the dependent variable and if there is how closely the influence or relationship and the meaning or influence of that relationship.

3.2. Population and Sample

3.2.1. Research Location and Time

The location of the research will be conducted at INAmikro, Jakarta which is located at Tempo Scan Tower, Jl. H. R. Rasuna Said No.Kav. 3-4 32nd Floor, Kuningan Tim., Kecamatan Setiabudi, Kota Jakarta Selatan. Data used in this research is collected from questionnaires given to use Application at INAmikro, Jakarta. The research period is from December 2024 – May 2025.

3.2.1. Population

According to Sugiyono (2022), population is a generalization area consisting of a subject or object that has character and quality specified by the researcher and is examined afterwards to draw a conclusion. The population on the research is all customers/clients in Jakarta who have installed and activated the INAmikro application on their devices. The size of this population (2023) is 8,658 customers/clients. Given the limit of time left to complete the research, this size is deemed to large and thus the random sampling technique is no longer feasible. Sample is part of the number and characteristics possessed by population (Sugiyono, 2022). Nonprobability sampling is a sampling technique that does not provide equal opportunities for each element or respondents (Anwar, 2020).

3.2.2. Sample

Sample is part of the number and characteristics possessed by population (Sugiyono, 2022). Non-probability sampling is a sampling technique that does not

provide equal opportunities for each element or respondents (Anwar, 2020). The sampling technique used in this research is convenience sampling. Based on the size, simple random sampling was planned to be used in collecting the data. However, the sample size calculation through Slovin formula resulted in approximately 383 customers/clients. Due to that constraint, convenience sampling technique was then implemented, with the size of sample was determined with the main reference to theory proposed by Hair, et al. (1998) as cited in Sugiyono (2022), in which the sample size should be 100 or more greater. As a general rule, the minimum number of samples is at least ten times more of the number of indicators to be analyzed. In this study, 12 item indicators, then the required sample size of at least a number of 12 x 10 = 120 respondents. The respondents in this research must have activated their accounts at INAmikro application. In this research, the sample size is 120 respondent.

3.3. Data Collection Method

Data, collection of facts that are used as a foundation for analysis, are the center of market research. Data collection method is the strategic sequence in research methodology, as the main focus in doing research is to obtain data. Data sources according to Sentosa (2023) are:

a. Primary Data

Primary data is data obtained from respondents through questionnaires, focus groups and panels or also data from researchers' interviews with resource persons. In this study, data collection related to the problems

studied by researchers was carried out by:

1) Questionnaire

   According to Sujarweni (2023), questionnaire is a data collection technique that is done by giving a set of questions or written statements to the respondents to be answer. questionnaire is an efficient data collection instrument if the researcher knows with certainty the variables to be measur and knows what is expect of the respondents. In this case the questionnaire will be distributed to use application at INAmikro, Jakarta.

2) Interview

   According to Sujarweni (2023), Interviews are one of the instruments used to collect data orally. This must be done in depth so that get valid and detailed data. Interviews were conducted with director and several use application at INAmikro, Jakarta.

3) Observation

   Observation carried out at INAmikro, Jakarta is to directly observe and record the behaviour, phenomena, or conditions of the object of research in the actual situation.

b. Secondary Data

   Secondary data is data obtained by records, books and magazines in the form of financial statements of corporate publications, government reports, articles, books (as a theory), magazines and so on. Study documentation obtained from books, delay and absence data obtained and journals and the internet can be a reference for this research.

3.4. Operational Definition and Variable Measurement

Based on the research model formulated on previous chapter, the identification of research variables is grouped as follows:

a. Independent Variable (X)

Independent variables are variables that influence or are the cause of changes or the emergence of dependent variables. The independent variables in this study are Reliability and Digital Literacy.

b. Dependent Variable dependent variable is the variable that is affected or due to the independent variables The dependent variable in this study is Intention to Use Application (Y).

c. Intervening Variable

Intervening variable is a variable that handles the change in the dependent variable due to the change in the independent variable. The Intervening variable in this study is Ease of Use (Z).

Table 3. 1 Operational Variable - Reliability (X1)

Variable	Indicator	Questionnaire Statement
Reliability (X₁) Reliability according to Setiabudi (2020) is the ability of service providers to provide accurate, precise and reliable service	Suitability of promised services	I trust the service features of microApps.
		The features of microApps are as explained by INAmikro.
	Handling customer issues	INAmikro staff always stand by to resolve any complaints about the microApps.
		I feel that INAmikro staff address any issues quickly.
	Have a clear standard of service	I feel that microApps is as useful as the qualities listed in the description by InaMikro.
		INAmikro always gives effective standardized responses whenever there are complaints from application users.

Source: Prepared by the writer (2025)

Table 3 2 Operational Variable - Digital Literacy (X2)

Variable	Indicator	Questionnaire Statement
Digital Literacy (X_2) According to Ichwan (2020), Digital literacy are all the skills needed for reading and writing. Literacy skills include listening, speaking, reading and writing.	Combination of awareness	I am well equipped to use microApps effectively.
		I am prepared to operate the application offered by INAmikro.
	Attitude	I know how to operate the application offered by INAmikro
		I have enough skills to use microApps and all its features.
	Ability to use proper digital tools	I am used to use any digital applications
		I know how to use smartphones, internet, and any digital features.

Source: Prepared by the writer (2025)

Table 3 3 Operational Variable - Intention to Use Application (Y)

Variable	Indicator	Questionnaire Statement
Intention to Use Application (Y) Intention to use refers to the willingness or inclination of individuals to use a particular product or service. It is an important factor in understanding customer behavior and predicting their future actions. Several factors influence intention to use, such as perceived usefulness, perceived (Wijaya,et al 2022).	Will use	I intend to effectively use INAmikro application for my business activities.
		I plan to actively use INAmikro application.
	Will often use	I am going to continuously utilize the application offered by INAmikro
		I will keep exploring and using the features inside microApps.
	Will give recommendation	I am willing to recommend the application offered by INAmikro to other people in need.
		I would suggest INAmikro's application to anyone for assisting business activities.

Source: Prepared by the writer (2025)

Table 3 4 Operational Variable - Ease of Use (Z)

Variable	Indicator	Questionnaire Statement
Ease of Use (Z) Ease of use can be defined as the extent to which a person believes that by using the latest information systems and technologies, they will feel free from effort (Davis, 2021)	Easy to learn	I easily learn the application and features on it.
		INAmikro's application has clear and easy features to operate.
	Easy to understand	I have mastered the features on INAmikro's application
		I understand the function of each feature on microApps.
	Effortless	I am able to learn any new features on microApps in short period of time.
		It would only take short time to learn the functions inside microApps.

Source: Prepared by the writer (2025)

The measurement scale used in this questionnaire is a Likert scale. According to Fadila, et al (2022), Likert scale is use to measure the attitudes, opinions and perceptions of a person or group of people about social phenomena. With a Likert scale the variables to be measured are translated into indicator variables. Then the indicator is use as a benchmark for compiling the question points. The answers to each item using the 5-level Likert scale as follows:

Table 3. 5 Likert Scale

Description	Score
Strongly Agree (SA)	5
Agree (A)	4
Neutral (N)	3
Disagree (D)	2
Strongly Disagree (SD)	1

Sources: Fadila, et al (2022)

3.5. Data Analysis Method

3.5.1 Research Instrument Test

3.5.1.1 Validity Test

According to Ghozali (2023), a validity test is used to measure the validity or validity of a questionnaire.

a. If the value of r count is greater than r table and has a positive correlation then the item or question is valid. Or in other words the question item is said to be valid if the question item score has a positive and significant correlation with the total score of the variable.

b. If the value of r count is smaller than r table then the item or question is invalid.

The method of validity is shown as follow:

$$rxy = \frac{\sum xy}{\sqrt{(\sum x^2)(\sum y^2)}}$$

Where,

rxy = coefficient correlation between variable x and y

$\sum xy$ = total computation between variable x and y

x^2 = quadrate from x

y^2 = quadrate from y

3.5.1.2 Reliability Test

According to Ghozali (2023), reliability is a measure of the stability and consistency of respondents in answering matters relating to the construction of questions which are dimensions of a variable and arranged in a questionnaire. The reliability test can be done together with all questions.

a. Cronbach alpha value > 0.70, then reliable.

b. Cronbach alpha value < 0.70, it is unreliable.

The method of reliability is shown as follow: Cronbach Alpha

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

3.5.2 Descriptive Statistics

According to Ghozali (2023), descriptive statistics is statistics used to analyze data by describing or describing data that has been collected as it is without

intending to make generally accepted conclusions or generalizations. The explanations included in the descriptive statistics include:

a. Mean is a value obtained by means of divides the total value of observations by the number of observations.

b. Median refers to the positional average, which divides the data into two equal proportions, below median and above median.

c. Mode is the value with the most appear in a data set. A data set may have one mode (unimodal), two modes (bimodal), and multiple modes (multimodal). It is also possible, however, for a data to have no mode."

d. Variance measures variability from the average or mean.

e. Standard deviations from the data that has been compiled in the frequency distribution table or classified data.

3.5.3 Classical Assumption Test

The classical assumption test is a statistical test used to determine the relation between variables, including: normality, multicollinearity and, heteroscedasticity test.

3.5.3.1 Normality Test

According to Sahir & Koryadi (2021), normality test used to determine whether the population distribution data is normal or not. This test is usually used to measure the data ordinal scale, interval, or ratio.

a.   Histogram Graph

One of the easiest ways to see residual normality is to look at a histogram graph that compares between observation data and distributions that are close to the normal distribution.

b.   Normal Probability Plot Graph

A more reliable method is to look at a normal probability plot that compares the cumulative distribution of a normal distribution. The normal distribution will form a diagonal straight line and plotting the residual data will be compare with the diagonal line. If the residual data distribution is normal, then the line describing the actual data will follow the diagonal line.

c.   Kolmogorov-Smirnov test

The criteria to perform the Kolmogorov-Smirnov test are: If the significance < 0.05, then H_0 rejected, If the significance > 0.05, then H_0 accepted.

3.5.3.2 Multicollinearity Test

According to Sahir & Koryadi (2021), the multicollinearity test is used to test whether the regression model finds a high correlation between the independent variables. A good regression model should not have a high correlation between the independent variables. The test method commonly used is by looking at the Inflation Factor (VIF) and Tolerance values in the regression model.

a.   If the VIF value > 10 and tolerance $< 0,1$ multicollinearity

b.   If the VIF value < 10 and tolerance $> 0,1$ multicollinearity does not occur

3.5.3.2 Heteroscedasticity Test

According to Sahir & Koryadi (2021), heteroscedasticity refers to situations where the variance of the residuals is unequal over a range of measured values. When running a regression analysis, heteroscedasticity results in an unequal scatter of the residuals (also known as the error term). A good regression model is homoscedasticity or heteroscedasticity does not occur. There are several ways to detect the presence or absence of heteroscedasticity as follows:

a.   Scatterplot graph Scatterplot analysis is:

1) If there are certain patterns, such as dots that form a regular pattern (wavy, widened and then narrowed), then it indicates that heteroscedasticity has occurred.

2) If there is no clear pattern and the points spread above and below the number 0 at source Y, then heteroscedasticity does not occur.

b.   Glejser Test Glejser criteria are:

1) Sig > 0.05, heteroscedasticity does not occur

2) Sig < 0.05, heteroscedasticity occurs

3.5.4. Multiple Linear Regression Analysis

The writer uses multiple linear regression because in this research there are two independent variables. According to Sahir & Koryadi (2021), Regression Analysis is one of the tools which can be used to predict demand in the future based on the past data, or to know the influence of more one independent variable towards one dependent variable. The general formula used for multiple linear regression is:

$$Z = a + b_1X_1 + b_2X_2 + e$$

$$Y = a + b_3X_1 + b_4X_2 + B_5 Z + e$$

Description:

Y   : Intention to Use Application

Z   : Ease of Use

a   : Constant

$b_{1,2}$: Coefficient regression

X_1 : Reliability

X_2 : Ease of Use

e   : Standard Error

3.5.5. Determination Test

According to Sahir & Koryadi (2021), the coefficient of determination essentially measures how far the model's ability to explain the variation of the dependent variable. The coefficient of determination is between zero and one. The small value of the coefficient of determination means that the ability of independent variables to explain variations in the dependent variable is very limited. The fundamental weakness of using the coefficient of determination is the bias towards the number of independent variables entered into the model. Every additional one independent variable, then the coefficient of determination must increase no matter whether the variable has a significant impact on the dependent variable. It can be calculated by using this formula:

$$KD = r^2 \times 100\%$$

Description:

KD   = Determination Coefficient

r^2 = R Square.

3.5.6. Hypothesis Test

3.5.6.1. T-Test

According to Sahir & Koryadi (2021), t-test test function is to estimate the average interval, test hypotheses about the mean of a sample, know the acceptance limits of a hypothesis and test whether a statement is reliable or not. In this study the value of t_{count} will be compared with the value of t_{table}, with the decision-making criteria being:

a.   Hypothesis is rejected if $-t_{table} < t_{count} < +t_{table}$ for significant level $\alpha < 5\%$

b.   Hypothesis is accepted if $t_{count} > +t_{table}$ or $t_{count} < -t_{table}$ for significant level $\alpha < 5\%$

3.5.6.2. Indirect Effect Test (Sobel Test)

Indirect effect can be done using sobel test. This test was first developed by Baron & Kenny (2023), who stated that a variable is called intervening if the variable is involved in influencing the relationship between the independent variable and the dependent variable.

Sobel test is done by testing the strength of the indirect influence of independent variables to dependent variables through intervening variables. As an illustration, the indirect influence is calculated by multiplying the direct influence of the independent variable on the intervening variable

In statistics, the Sobel test is a method of testing the significance of a mediation effect. In mediation, the relationship between the independent variable and the dependent variable is hypothesized to be an indirect effect that exists due to the influence of a third variable (the mediator). As a result when the mediator is included in a regression analysis model with the independent variable, the effect of the independent variable is reduced and the effect of the mediator remains significant. The Sobel test is basically a specialized t test that provides a method to determine whether the reduction in the effect of the independent variable, after including the mediator in the model, is a significant reduction and therefore whether the mediation effect is statistically significant. According to Irawati (2022), when the value of $p < 0.05$ and has a statistical value-T > 1.96, the hypothesis is accepted. However, if the value of $p > 0.05$ and has a statistical value-T < 1.96 then the hypothesis is rejected.