

CHAPTER III

RESEARCH METHOD

The researcher will discuss in detail the methodology of the research used in this study. It is divided into several sub chapters. They are research design, subject of the research, data instrument, data collection, and data analysis.

A. Research Design

This is a quantitative study that used a path analysis design. Path analysis is a theoretical extension of multiple regressions. It extends beyond regression and enables for more complex model analysis. It is a collection of models that show how a set of variables interact with one another. The goal of path analysis is to determine the extent and importance of postulated causal relationships between sets of variables using path diagrams.¹ Cause modeling is another name for this technique. It is based on the fact that route analysis allows the researcher to test theoretical claims about cause and effect relationships without manipulating variable. It signifies that the researcher does not treat a certain variable in his or her measurement. The model's primary premise is that some variables have a very strong association with one another.²

The researcher chose this research strategy because it allowed us to collect both direct and indirect contributions between variables. The route analysis research model employed in this study was recursive, referring to a combination of multiple regression and mediation models. This is due to the fact that there were two sorts of variables: independent and dependent variables.

B. Population and Sample

Population means any group that is subject of research interest.³ In line with this that the population is the set the entire subject. It is large group to which researcher wants to generalize their sample result.⁴ In this research, the researcher chooses all of the eleventh grade students of Senior High School 6 Kediri. It consists of 11 classes, namely 9 science classes and 2 social classes. The total number of students who took science is 315 students and 70 students took social program. So, the total is 385 students.

¹ Frances, K. s., Hasani, C., & Amaury, N. (2004). Path Analysis: An Introduction and Analysis of a Decade Research. *The Journal of Educational Research* , 98 (1).

² Sarwono, J. (2011). Mengenal Path Analysis: Sejarah, Pengertian, dan Aplikasi. *Jurnal Ilmiah Manajemen Bisnis* , 11 (2), 286-296.

³ Goddard, W. & Melville, Stuart. *An introduction: Research methodology. Second Edition.* (Lansdowne: The Berne Convention. 2001) 34.

⁴ Johnson, Burke & Cristensen, Larry. *Education Research, quantitative and qualitative approach.* (United State of America: Allyn and Bacon. 2000). 16.

Table 3.1 Population in Each Class

Class	Students Amount
XI MIPA 1	35
XI MIPA 2	35
XI MIPA 3	35
XI MIPA 4	34
XI MIPA 5	36
XI MIPA 6	35
XI MIPA 7	37
XI MIPA 8	35
XI IPS 1	36
XI IPS 2	34
Total	385

According to Goddard and Melville, sample is defined as a subset of population. Sample must be representative of the population being studied.⁵ According to Johnson & Larry Cristensen, told that sample is a set of subjects taken from large population based on certain rules. In the similar way, the formula for determining sample size of the population has virtually no effect on how well the sample is likely to describe the population and as Fowler argues, it is most unusual for it (the population fraction) to be an important consideration when deciding in sample size.⁶

To decide the sample, this research uses probability sampling. Probability sampling is defined as the kind of sampling in which every element. In selecting the research participant,

⁵ Goddard, W. & Melville, Stuart. *An Introduction: Research Methodology, Second Edition*. (Lansdowne: The Berne Convention. 2001). 34.

⁶Fowler, F.J. 2002. *Survey research methods*, Newbury Park, CA, SAGE. 65

the researcher applies simple random sampling. For a path analysis, the minimum sample size is 100, and the ideal sample size is 400 to 1000.⁷

In selecting the sample, the researcher decided to randomly selected the participants of each class. From the process, the accessible sample for the current study was 143 students.

C. Research Instrument

In order to do the research, the researcher requires a tool. An instrument is the name for the tool. Questionnaires, checklists, interview guidelines, and other types of instruments are examples of instruments. In this research, the researcher uses test and non-test as the techniques to collect the data, the instrument for personality traits and self-efficacy will use questionnaire. The instrument for listening test will use standardized test TOEFL. The instruments of collecting data are:

1. Questionnaire

There are two kinds of questionnaires instrument in this research they are: Personality questionnaire, Self-Efficacy questionnaire and Listening test.

a. Personality Type Questionnaire

To measure the degree of students’ introversion-extraversion personality type, the researcher used a questionnaire. The questionnaire used by the researcher was adopted from questionnaire developed by Carter (2005). This personality questionnaire was also used to determine the introvert and extrovert students. This questionnaire is closed-ended questionnaire which provided options to be chosen. There were three scales which were categorized into highly, average, and poorly introvert. The options in the questionnaire were constructed based on the scale. There were three options of statements that represented each scale in the questionnaire. The participants were asked to choose the statement that was most appropriate with their own personality type.

The questionnaire adopted from Carter (2005) was measured based on the measured components the complete blue print is in bellow:

Table 3.2

The specification of Personality Types (Extraversion-Introversion) Questionnaire

No	Aspects	Indicator	Questionnaire Items
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⁷J. Sarwono, “Mengenal Path Analysis: Sejarah, Pengertian Dan Aplikasi,” *Jurnal Ilmiah Manajemen Bisnis Ukrida*, 2011, 289.

1	Sociability	Reserved and distant except to intimate friends	1,4,6,9,21
2	Excitements	Do not like excitement, distrust the impulse of the moment/event	2,3,11,17,23
3	Expenditure of energies	Reliable, take matters of everyday life with proper seriousness, pessimistic, quiet, retiring sort of person, and introspective	5,12,14,18,22
4	Risk-taking/planning	Plans ahead, look before they leap, like a well-ordered mode of life	7,8,15,19,25
5	Interests in internal events	Fond of books rather than people and reading/writing rather than speaking	10,13,16,20,24

There were 25 questions items from the questionnaire which covered five different aspects of introversion-extraversion personality. Nevertheless, the researchers needed to modify several items in order to adjust to the Indonesian and students of Senior High School as the respondents. The data of the questionnaire are calculated by summing up the scores, in which each participant's choice on option a was scored 1, option b was scored 0, and the last option c would be scored 2.

Since the instrument was adopted, a face validity had been done with the step of expert judgment (See appendix). The face validity or tryout was also used by researcher to evaluate the appearance of the questionnaire in the context of feasibility, readability, consistency of format and style, and the clarity of language used. After the tryout, there were five items invalid (Number 9, 21, 26, 35, 40). Therefore, those items were not taken into account to be measured anymore.

Then, the data is collected by using the following formula:

Table 3.3
Scoring of Introversion-Extroversion Test

Score	Indicator	Categorization
40-50	Extroversion	Extroversion
25-39	Quiet Extrovert	

Less than 25	Introvert	Introversion
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The data is collected using questionnaire from Carter (2005). Since the researcher adopted the questionnaire, before calculating the data, the researcher checks the reliability of the questionnaire. The result of the reliability is presented in the table below.

Table 3.4
Reliability of Extraversion-Introversion

Cronbach's Alpha	N of Items
0,896	25

The result showed that the Cronbach Alpha value of the instrument is .896, this indicated that the reliability of the instruments is very good and reliable. If the degree of reliability is lower than 0.6, the test items are not reliable, while more than 0.7 is acceptable, and greater than 0.8 is good and reliable.

b. Self-Efficacy Questionnaire

Self-efficacy questionnaire of 30 items adapted form Bandura.⁸ The questionnaire is given to the object of the research to know their courage in Self-efficacy. The questionnaires consist of some items boxes consisting of questions about self-efficacy. The questionnaire is categorized 3 types: magnitude, generality and strength. The respondents are asked to rate each item of the questionnaire by using four-point like scale ranging. The complete of blue print and questionnaire (see in appendix 3) and (appendix 4).

The scoring of the questionnaire in this research is based on the rating called fully anchored rating scale. A fully anchored rating scale has all points in each item.⁹ The questionnaire is in statement and use agreement rating scale.

In addition, there are four scale of the answer choices of the statements, namely Strongly Agree, Disagree, Disagree and Strongly Disagree. The students are required to choose one of them based on what their actual experience.

Table 3.5
Scoring of Self-Efficacy Questionnaire, as follows:

⁸ Bandura, A. Self-Efficacy: Toward a Unifying Theory of Behavioral Change. *Psychological Review*, 84(1997).
⁹ Ibid, 127-130

The Positive Statement		The Negative Statement	
Statement	Score	Statement	Score
Strongly Agree	4	Strongly Agree	1
Agree	3	Agree	2
Disagree	2	Disagree	3
Strongly Disagree	1	Strongly Disagree	4

Since the instrument was adopted, a face validity had been done with the step of expert judgment (See appendix). The face validity or tryout was also used by researcher to evaluate the appearance of the questionnaire in the context of feasibility, readability, consistency of format and style, and the clarity of language used. After the tryout, there were two items invalid (Number 9, 18, 21). Therefore, those items were not taken into account to be measured anymore.

To measure the consistency of the score, the researcher also used reliability. The researcher used coefficient alpha or Cronbach's alpha to estimate internal consistency. The result of reliability test of self-efficacy questionnaire showed 0.894 in Cronbach's alpha. This indicated that the instrument is reliable based on the fact that the alpha value is greater than 0.7.

Table 3.6
Reliability of Self-Efficacy Questionnaire

Cronbach's Alpha	N of Items
0,894	27

2. Test

In this study, the researcher use test as the second instrument. TOEFL Listening test. TOEFL had three sections: listening, structure, and reading, but the researcher only takes listening section for making a test. The listening test questions are 50. This test is developed by professional test developers at ETS (Educational Testing Service).¹⁰TOEFL Test is

¹⁰Retrieved from https://www.ets.org/s/toefl/pdf/free_practice_test.pdf

developed by ETS as a meaningful measurement to know the level of English language comprehension which has been used in more than 65 countries. It consists of 50 questions for each reading and listening skills. the complete test script.

To know further information about the reading test, the researcher draws the specification of the questionnaire below:

Table 3.7
The Specification of TOEFL Listening Test

	Indicator	Item number
Competency		
Short conversation	Determine the main idea and meaning	1,2,3,4,5,6,7,8, 10,11,12,14
	Determine the inference	9,13,17,18,19, 20,22, ,26
	Determine the suggestion in the conversation	21, 27,28,30
	Predict the possibility of the conversation	23,24,25,29
Long conversation	Determine the topic and main idea of long conversation	35, 38, 45, 50
	Understand the detail information	31, 32, 33, 34, 36, 37
Short lecture or talk	Determine the topic and main idea in the monologue lecturer	46, 47, 48, 49
	Understand the detail information in the monologue lecturer	39, 40, 41, 42, 43, 44

The face validity or tryout was also used by researcher to evaluate the appearance of the questionnaire in the context of feasibility, readability, consistency of format and style, and the clarity of language used. After the tryout, there were seven items invalid (Number 6, 11, 13, 27, 30, 45, 49). Therefore, those items were not taken into account to be measured anymore.

To measure the consistency of the score, the researcher also used reliability. The researcher used coefficient alpha or Cronbach's alpha to estimate internal consistency. The result of reliability of listening test showed 0.925 in Cronbach's alpha. This indicated that the instrument is reliable based on the fact that the alpha value is greater than 0.7.

Table 3.8
Reliability of TOEFL Listening Test

Cronbach's Alpha	N of Items
0,925	43

D. Data Collection

In collecting the data, the researcher uses some steps. Firstly, preparing the questionnaires: personality traits and self-efficacy. Next, preparing the listening comprehension test. After that, the researcher distributes the instrument to the sample of the research. It is necessary to make sure that the instruments are valid and reliable. Therefore, the researcher will take two random classes of eleventh grade at SMAN 6 Kota Kediri as the respondents (not the research participants). After conducting the try out, the researcher will analyze the validity and reliability using SPSS.

After all the instruments are valid and reliable, the researcher distributes the instruments to four classes that represent each department of the school (Science, Social, Language, and Religion) of eleventh grade with total 120 students. There are two proses of collecting data, they are:

1. Collecting Data of Questionnaire

This collecting data starts from distribute the questionnaire of Personality and Self-Efficacy. There are 25 items of personality' questionnaire and 30 items of self-efficacy's questionnaire. The students get an hour to answer the questionnaire.

2. Collecting Data of Test

In next day, the researcher collects the data of test. This test distributes to the student for measuring the listening comprehension, there are 50 questions of listening. The researcher allocates an hour to complete the test.

To collect the data, the researcher will conduct 2 sessions. The first session, the researcher will collect data non test and the second session, the researcher collect data of TOEFL test. The first thing that the researcher will do in this research , give the personality traits to the students,

after the students finish fulfill the first questionnaire, the researcher gives to the students the second of questionnaire, it is self-efficacy questionnaire. In order to avoid the bias result so the researcher conducts the listening test of TOEFL in next day. After the data was collected, the researcher tabulated and calculated the data in Ms. Excel program.

E. Data Analysis

In this study, the researcher had analyzed 3 parts: (1) instrument analysis, (2) prerequisite test, and (3) hypothesis testing.

F. Instrument Analysis

There are two kinds of instrument analysis in this study, here are analysis of questionnaire and analysis of test TOEFL.

a. Analysis of Questionnaire

In analyzing the data from the questionnaire to determine students' personality traits and self-efficacy, here is the process of analyzing the data:

1) Personality Questionnaire

In identifying students' personality trait, this study adopted the questionnaire from the thesis of Carter (2005), with 25 statement items which measure five dimension of personality: Sociability, Excitements, Expenditure of energies, Risk-taking/planning, Interests in internal events. The data of the questionnaire are calculated by summing up the scores, in which each participant's choice on option a was scored 1, option b was scored 0, and the last option c would be scored 2. To calculate the data, the researcher input the score into Microsoft Excel, and the result is classified in cased analyzing frequency and percentage.

2) Self-efficacy Questionnaire

Self-efficacy questionnaire of thirty items adapted form Bandura.⁸¹ The questionnaire is given to the object of the research to know their courage in Self-efficacy. The questionnaires consist of some items boxes consisting of questions about self-efficacy. The questionnaire is categorized 3 types: magnitude, generality and strength. It consists ten questions in every dimension of self-efficacy and measured on a four points likert scale with its direction of scoring (+ or -). For + key items, the response 1: Strongly disagree, 2: disagree, 3: Agree, 4: Strongly Agree. For – key items, 4: Strongly disagree, 3: disagree, 2: Agree, 1: Strongly Agree. To calculate the data, the researcher input the score into Microsoft Excel, and the result is classified in cased analyzing frequency and percentage.

b. Analysis of TEOFL Test

The students' overall section in English test would be scored by calculating correct answers. The correct answer was scored 2 and the incorrect answer 0. There were 50 items so there were 100 points of the highest score. The result of students' listening comprehension is taken from the numbers of the right answer divide to the total number of the test times 100.

G. Prerequisite Test

In analyzing the data SPSS is used to gain the result of prerequisite test. This test divided into four steps: normality test, linearity test, heterocedascity test, and linear regression.

H. Normality test

The purpose of normality test is to know the research data distribution is normal or not. To test the normality, the researcher uses Kolomogrov-Smirnov test. The data is normal distributed if the significance (sig) number is greater than 0.05. if it is lower, it can be concluded that the data distribution is abnormal.

I. Linearity test

The linearity test is used by researcher to know the linearity between independent and dependent variables. The linearity test can be known by using ANOVA (test for linearity) on the significance value 0.05. Two variables are considered linear if significance value of deviation from linearity is greater than 0.05

J. Heteroscedasticity test

Test for heteroscedasticity is used to test whether the variance of errors from regression is dependent on the values of the independent variables. If there is no error with the heteroscedasticity which means that the assumption that the errors are independent and identically distributed if the dots at the scatter plot is spread without any clear pattern.

K. Linear regression

In linear regression, there is a part when the researcher aimed at knowing the correlation between independent and dependent variables. Correlation is statistical measure that indicates the extent to which two or more variables fluctuate together, while contribution is how independent variable help produce or achieve dependent variable. Therefore, the parameter to determine whether the correlation is strong or not is needed. The table below shows the parameter of correlation

Coefficient Variable		
No	Value (r)	Degree
1	0.00 – 0.199	Very weak

2	0.20 – 0.399	Weak
3	0.40 – 0.599	Sufficient
4	0.60 – 0.799	Strong
5	0.80 – 1.00	Very strong

L. Hypothesis Testing

To analyze the data, the researcher uses AMOS 25.0 to identify the relation, direct and indirect contributions among the variables through path diagram. The model of this path analysis is recursive model. It can be indicated if all arrows go toward same direction (Z). The requirements or the characteristics of this model are the arrows are going to one direction only, there is no arrows head in the reverse direction and there is only one exogenous variable and three endogenous variables.¹¹ To know the significance of indirect contribution, the researcher calculates the data of direct contributions from the AMOS through Sobel test.

¹¹ Jonathan Sarwono, “Mengenal Path Analysis: Sejarah, Pengertian dan Aplikasi” 11, no. 2 (2011): 12.

