CHAPTER III
RESEARCH METHOD

In this chapter, the researcher wants to present the research design, variable, population and sample, instrument of the research and technique of data analysis.

A. Research Design

A research design is a set of guidelines that are followed in a single study to analyse a specific topic.[64] The descriptive quantitative technique was adopted in this study. It signifies that the goal of this study is to describe a situation or a specific population area in a systematic and accurate method. Furthermore, an online questionnaire was employed in this study as a survey tool. The researcher decided on a survey study strategy since it was the most appropriate for answering the questions and achieving the research goals. Surveys are one of numerous descriptive quantitative research approaches. It entails gathering the same information from a population that is geographically separated and diverse. The survey approach is recommended because it allows for the collection of data from a larger number of people than experimental designs typically allow.[65]

Survey research is defined as study that manages a group of people or objects by analysing data from a small number of individuals or items that represent the complete group. Despite the fact that just a portion of the population is investigated, the results are supposed to be generalized to the entire population.[66] Similarly, McBurney describes a survey as one that uses a questionnaire and sample procedure to analyze public opinion or individual characteristics.[67]

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[64] Johan Mouton., *The practice of social research.* (Cape Town: Oxford University Press,2001), 23.
[65] Donna Mertens, *Research and evaluation in education and psychology: integrating diversity with quantitative, qualitative, and mixed methods*. (Thousand Oaks, CA: Sage, 2005), 43
[66] B.G. Nworgu. *Educational research, basic issues and methodology. (*Wisdom Publishers Limited: Ibadan, 1991) 68.
[67] Donald H. McBumey, *Research methdi (3rd ed.).* (Belmont, CA: RrookslCole.,1994), 170

B. Variable

The variable studied in this study is the students' views regarding the use of e-learning platforms during the Covid-19 pandemic. The student views in question are a student's response to their perception on the use of e-learning platforms during the Covid-19 pandemic situation.

C. Population and Sample

1. Population

Population and sample are important in conducting research. Creswell said, "Quantitative research is very important in selecting a sample from a population. In this way, the sample is representative of the population".[68] In this study, the population of the research is all high school students in Kediri. However, according to Arikunto's provisions, if the subject is large, it depends on at least from:

a. Researcher's time, energy and funds
b. Narrow or wide area of observation of each subject, because this involves a lot at least data.
c. What the possible risks are faced by the researcher. A study with a high risk would be better if the sample was large, and the results would be better.[69]

Before determining how many samples to take, it is needed to find out how many populations are in each region. The population are the students of senior high school level in Kediri including senior high schools, vocational high schools, and Islamic high schools in 2020/2021 school year second semester.

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[68] John W. Creswell Educational research: planning, conducting,evaluating, quantitative and qualitative research (Fourth Edition). (USA: Pearson Education Inc, 2012). 297
[69] Arikunto Suharsimi. Prosedur Penelitian: Suatu Pendekatan Praktik Edisi Revisi. (Jakarta: Rineka Cipta. 2010). 177

Experts' calculations and table references are employed to calculate the sample of persons (students). Researches with a too small sample size may be unable to describe real-world population situations. A big sample, on the other hand, might result in a waste of research funds. In general, the minimum sample size for correlational research is 30, whereas the minimum sample size for experimental research is 15 from each group, and the minimum sample size for survey research is 100.[70]

The size of the sample depends on the degree of confidence level and the accuracy or error tolerance desired by the researcher. In this study, the level of confidence was 95% (0,05). This probability accurately reflects the attitude of the population so that the standard confidence level is taken. Moreover, the maximum tolerance level for research error was 10% (0.1). The lower the sample size, the higher the error rate. The fewer the samples (and the closer they are to the population), the lower the probability of generalization mistakes. The greater the probability of generalization mistakes, the fewer the number of samples (away from the population).

The number of samples is determined as the following formula:

$$n = \frac{Z^2 x\ P\ (1 - P)}{e^2}$$

$$n = \frac{1{,}96^2 x\ 0{,}5\ (1 - 0{,}5)}{0{,}1^2}$$

$$n = \frac{3{,}8416\ x\ 0{,}25}{0{,}01}$$

$$= 96{,}04$$

[70] Louis Cohen, Lawrence Manion, and Keith Morrison, *Experiments, Quasi-Experiments, Single-Case Research and Meta-Analysis, Research Methods in Education*, 2020, 102

Based on the calculation above, it can be concluded that the research sample needed in this study is at least around 96 respondents. However, in this study, the researcher took a sample of 204 respondents due to the better survey research the minimum sample size is 100.

2. Samples

Considering the narrow or wide area of observation and the data taken are from various school, it is recommended that the cluster sampling technique was used to take the sample in this study. This technique is taken because this research requires a large population and is heterogeneous or diverse. When a researcher wants to construct a more efficient probability sample in terms of monetary and/or time resources, cluster sampling is used. Instead of selecting individual units that may be geographically dispersed across large distances, the researcher samples naturally occurring groupings (clusters) in the population, such as neighbourhoods, schools, or hospitals.[71]

To determine which students will be sampled, sampling is determined in stages from a large area to the smallest area. This regional sampling technique is often used in two stages, namely, the first stage is to determine the school sample and the second stage determines the objects or individuals (students) that are in the school. Thus, from many schools in Kediri, the researcher observed some state and private high schools. They are:

Table 3.1 The school samples in Kediri

State Schools	Private Schools
SMAN 7 Kediri	SMAS Pawyatan Daha Kediri
SMKN 2 Kediri	SMKS Pawyatan Daha 2 Kediri
MAN 1 Kota Kediri	MAS Al Ishlah

[71] Charles Teddlie and Fen yu, 'Mixed Methods Sampling: A Typology With Examples', *Journal of Mixed Methods Research*, 1.1 (2007), 77–100 <https://doi.org/10.1177/2345678906292430>.83

D. Instrument of The Research

One of the most important activities in conducting research is how to obtain and collect the required data. A suitable research instrument has been tried to be applied by the researcher. According to Arikunto, researchers use research instruments to gather data in order to make their work simpler and to obtain better, more complete, and systematic so that data is easier to process.[72]

Because the aim of research is to measure, a suitable measuring device is required. As a result, a research instrument is a device that is used to measure natural and social phenomena. The data gathering tool is the research instrument. Data was collected using a variety of tools, including questionnaires, observations, filed notes, interviews, and tests. Then, the data for this study was acquired by the researcher using a questionnaire as an instrument.

1. Questionnaire

Questionnaire is used as the instrument to collect the data about the students' use and perception on e-learning platforms during Covid-19 pandemic. In survey research, questionnaire as a source of data is widely used in studies.[73] Arikunto stated that a questionnaire is a set of questions written on a sheet of paper in the context of the study problems to be observed.[74] A set of questions will be given to the subject and will be returned with multiple answers. Questionnaires are another way of obtaining information presented to research subjects. However, to make it easier to deliver and return, the questionnaire was made by using Google Form and then the link was shared via WhatsApp chat.

There are three types of questionnaires, they are: the structured or close questionnaire, the unstructured or open questionnaire, and combination

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[72] Arikunto. S. *"Prosedur Penelitian:Suatu Pendekatan Praktik".* (Jakarta: Rineka Cipta, 2010)., 192
[73] Donal Ary. *Introduction to Research in Education* (Australia: Wadsworth, 2002), 148
[74] Arikunto. S., 128.

(between structured and unstructured).[75] However, all of the type of questionnaire used in this study is structured or closed types because this type can make it easier for writers and respondents to collect data. The author can easily analyze the results of the questionnaire and get as many respondents as possible. Respondents also had the opportunity to be relaxed in answering research questions.

The questionnaire is mainly based on the literature relevant to all factors important to e-learning activities in the previous chapter. However, the instruments are adapted from L. Ncube's dissertation[76], J. Hsieh and V. Cho's article[77], S. Harris, Y. Larrier, & M. Castano-Bishop's pilot study[78], E. Edelhauser & L. Lupu-Dima's article[79], Cakrawati's article[80], and Sari & Oktaviani's article[81]. Then, they are divided into some section such as students' background information, students' use of e-learning platforms, and students' perception on the use of e-learning platforms. In order to make it easier for respondents to answer the questions on the questionnaire, the researchers translated all items from English to Bahasa Indonesia. The distribution of the question in questionnaire was presented in the following blueprint table while the questionnaire will be presented in the appendix.

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[75] William M K Trochim. *The Research Methods Knowledge Base.* (Ithaca,N.Y: Cornel Custom Publishing1999), 113

[76] Lncelord Siphamandla Ncube, "Students' Perceptions of E-Learning in The Department of Information Science at The University of South Africa" Dissertation. South Africa: University of South Africa, 2015., 26.

[77] J J Po-an Hsieh and Vincent Cho, 'ScholarWorks @ Georgia State University Comparing E-Learning Tools ' Success : The Case of Instructor – Student Interactive vs . Self-Paced Tools', *Computer Information Systems Faculty Publications.* 17 (2011), 1-35. 16.

[78] Sandra M Harris, Yvonne I Larrier, and Marianne Castano-Bishop, 'Development of the Student Expectations of Online Learning Survey (SEOLS): A Pilot Study', *Online Journal of Distance Learning Administration*, 14.4 (2011), 1–11 , 5.

[79] Eduard Edelhauser and Lucian Lupu-Dima, 'Is Romania Prepared for Elearning during the COVID-19 Pandemic?', *Sustainability (Switzerland)*, 12.13 (2020), 1–29 <https://doi.org/10.3390/su12135438>., 20.

[80] Laxmi Mustika Cakrawati, 'Students' Perceptions on the Use of Online Learning Platforms in Efl Classroom', *English Language Teaching and Technology Journal (ELT-Tech Journal*, 1.1 (2017), 22–30., 27.

[81] Fatimah Mulya Sari and Lulud Oktaviani, 'Undergraduate Students ' Views on the Use of Online Learning Platform during Covid-19 Pandemic Universitas Teknokrat Indonesia', 19.1 (2021), 41–47., 44

Table 3.2 The blueprint of the questionnaire

Criteria	Indicator	Numbers
Demographic Information	- Grade - School	1 2
Students' use of e-learning platforms	- What e-learning platforms (virtual classroom) most used by students - Devices used for accessing e-learning platforms - The duration on the use of e-learning platforms	3 4 5

Criteria	Indicators	Numbers	
		Positive	Negative
Students' perception	- Self-efficacy	1, 2, 3	4, 5
	- Enjoyment	6, 7, 8	9, 10, 11
	- Usefulness	12, 13, 14, 15	
	- Ease of use	16, 17, 18, 19	20, 21
	- Obstacles		22, 23, 24
	- Expectations	25, 26, 27	
	- Intention to use	28, 29, 30	

2. Process of Instrument Development

a. Validity

The validity test is a tool that shows the extent to which a tool has accuracy and accuracy in performing the measurement function. In quantitative research, validity must be used. Validity is a measure of the extent to which a concept used is accurate in quantitative studies.[82] An absolute requirement for obtaining valid and reliable research results is a valid and reliable instrument as well. The research is accurate or not, it can be seen from the validity of the research.[83] Before obtaining data through questionnaires, researchers first check the validity of the questionnaire used using content validity and construct validity.

1) Content Validity

Content validity is defined as "the degree to which items in an instrument reflect the content universe to which the instrument will be generalized". It is strongly suggested to use content validity while developing a new instrument. The judgemental approach to establish content validity involves literature reviews and then follow-ups with the evaluation by expert judges or panels.[84] Therefore, the researcher uses expert validation in testing this content validity.

2) Construct Validity

Construct validity relates to how successfully a concept, idea, or behaviour that is a construct is translated or transformed into a functional and operational reality.[85] Construct validity can be carried out through the validity of the factors test and the validity of the items

[82] Roberta Heale and Alison Twycross, 'Validity and Reliability in Quantitative Studies', *Evidence-Based Nursing*, 18.3 (2015), 66–67 <https://doi.org/10.1136/eb-2015-102129>.
[83] Sugiyono, *Metode Penelitian Kuantitatif Kualitatif dan R&D*, (Bandung: Alfabeta, 2012), 121.
[84] Hamed Taherdoost, "Validity and Reliability of the Research Instrument ; How to Test the Validation of a Questionnaire / Survey in a Research," *International Journal of Academic Research in Management*, 5.3 (2016), 30.
[85] Taherdoost.,31

test using Statistical Product and Service Solution (SPSS). In this research, the questionnaires are tried out to several students who are selected randomly. The test technique used is correlation technique through Product Moment correlation coefficient in SPSS Version 25 for Windows. The total score of the item is connected with the score of each question item that was assessed for validity. The item is valid if the correlation coefficient is positive; if it is negative, the item is invalid and will be removed from the questionnaire or replaced with a statement of improvement.

The r count must be equal to or greater than r table at a significant level of 5% to determine whether the instrument is valid (five percent). In contrast, the instrument is stated to be invalid if r count is less than r table at a significant level of 5%. As we can see below:

a) If r_{count} (r pearson) $\geq r_{table}$ then item is valid.
b) If r_{count} (r pearson) $\leq r_{table}$ then items is invalid.[86]

b. Reliability

Apart from validity, measuring quality in quantitative studies also implements the reliability or accuracy of an instrument. According to Creswell, reliability is maintaining consistency and stability of scores in an instrument.[87] In addition, Heale and Twycross, stated that the research instruments had the same situation consistently on several occasions.[88] A reliable instrument is a tool that can be used several times to measure the same object and will produce the same data.[89]

[86] Sugiyono, 122
[87] John W. Creswell, 302
[88] Heale and Twycross., 69
[89] Sugiyono., 124

According to Sekaran and Bougie, A reliability value of greater than 0.80 is regarded good, an average of 0.70 is acceptable, but anything less than 0.60 is poor. The statement item may be compared against r alpha and r table to see if it is reliable.[90] In this study, reliability was measured by the Cronbach Alpha formula and will be calculated in Statistical Product and Service Solution (SPSS) Version 25 for Windows so that the data accuracy can be known and easier to understand.

The criteria index reliability according to Sekaran as follow:

Table 3.3 The criteria index reliability

No	Interval	Criteria
1	< 0,60	Low
2	0,60 – 0,70	Sufficient
3	0,70 – 0,80	High
4	0,80 – 0,96	Very High

E. Technique of Data Analysis

The data management system in a graphical environment uses simple descriptive menus and dialog boxes, making it easier to understand how to operate. This study used computation of SPSS (Statistical Product and Service Solution) Version 25 for Windows because it has high statistical capabilities and the data management system in a graphical environment uses simple descriptive menus and dialog boxes, making it easier to understand how to operate.[91] The analytical method used in this research is descriptive analysis. The percentage is processed by frequency divided by the number of respondents and multiplied by 100 percent. Then, the information data obtained will be grouped and separated according to its type and given a percentage value, presented in tables and descriptions with the percentage formula using the formula from Nana Sudjana and Ibrahim as follows:

[90] Sekaran, and Bougie. *Research Methods for Business: A Skill-Building Approach. 6th Edition,* (USA: New York, Wiley, 2013). 287.
[91] Sugiyono., 126

P = f/N x 100%

Description:

P = Percentage

f = Frequency

N = Number of Respondents

100% = Constant Number

The calculation of this descriptive percentage as follows:

a. Correcting the questionnaire answers from respondents.

b. Calculating the frequency of respondent's answers

c. The overall number of respondents

d. Insert into the formula.

e. Interpret the result with the table, chart, or diagram[92]

Data interpretation of the participants' views towards the questionnaire statements using the 5-point Likert-scale, as can be seen in Table 2, is based on the following mean scores Suwannasri as cited in Suebwongsuwan, W. & Nomnian.[93]

Table 3.4 Scoring range of Likert scale of the survey

Mean rating	Value	Range	Interpretation
Strongly disagree	1	1.00 – 1.80	Very Negative
Disagree	2	1.81 – 2.60	Negative
Neutral	3	2.61 – 3.40	Moderate
Agree	4	3.41 – 4.20	Positive
Strongly Agree	5	4.21 – 5.00	Very Positive

[92] Sudjana. 2001. *Metode & Teknik Pembelajaran Partisipatif*. Bandung: Falah Production

[93] Waraporn Suebwongsuwan and Singhanat Nomnian, 'Thai Hotel Undergraduate Interns ' Awareness and Attitudes towards English as a Lingua Franca', 9.3 (2020), 704–14.,708.