

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

This chapter clarifies the process of researching this topic adopted in this study. It identifies its analytical framework beginning with its methodology and nature, location of the sample, population and sampling, instruments used, and data collection and procedures. Specifically, the researcher uses mixed methods by combining qualitative and quantitative tools. The key concern of this method was the compilation, analysis, and combination of qualitative and quantitative data in a single study, as stated by Creswell & Plano Clark (2007).

In incorporating both methods, the effect has been greater awareness of research objectives than the use of a single approach. Interestingly, the features have given much of the advantages related to the work performed by the researcher. In addition, it incorporates two data sources in several ways to generate the best results for analysis.

3.2 Research Approach and Design

Combined methods research has been described as a philosophic model of research incorporating qualitative and quantitative models of research so that evidence can be combined, and information increased in a more meaningful way than either model could accomplish on its own (Creswell & Clark, 2007). The researcher uses a mixed analysis referred to as the terminology used to interpret data in mixed research. So far as Onwuegbuzie and Combs are concerned, the mixed analysis integrated the definitions and classifications within the context of the methodologies used. To build this analysis, the researcher used the Exploratory Sequential Method.

According to Creswell & Plano (2011), exploratory design pinpointed on a two-phase sequential process as the researcher used the qualitative phase in exploring a subject before continued the quantitative phase. Moreover, the exploratory design intensified the qualitative data and expanded the quantitative information through the gathering process. The advantage of selecting this design was effortless to be implemented as it ornamented the separate stages, and qualitative data was tolerated as well.

The study has attempted to use the Exploratory Sequential Model. In the first place, it stressed the discovery of knowledge. The aim of this design was to generalise the qualitative results, based on the few participants that began in the first phase, to a large sample collected in the second phase. Second, it emphasises triangulation. This approach required more than one method of resolving research questions. Third, the approach was complementarity, where the researcher uses a qualitative process to examine key variables in promoting student self-efficiency in the integration of both Islamic and scientific knowledge. At the same time, the researcher has enhanced the quantitative process to create a survey questionnaire that deliberately identifies the level of student comprehension of information integration, the gap in skills integration reflected on the courses taken and the effect of the instructor and the subject on the students. Fourth, as regards progress, the researcher reiterated the qualitative approach to the production of the survey questionnaire, which was carried out during the quantitative process.

The researcher has divided the methodology into two phases, as in Figure 20 below:

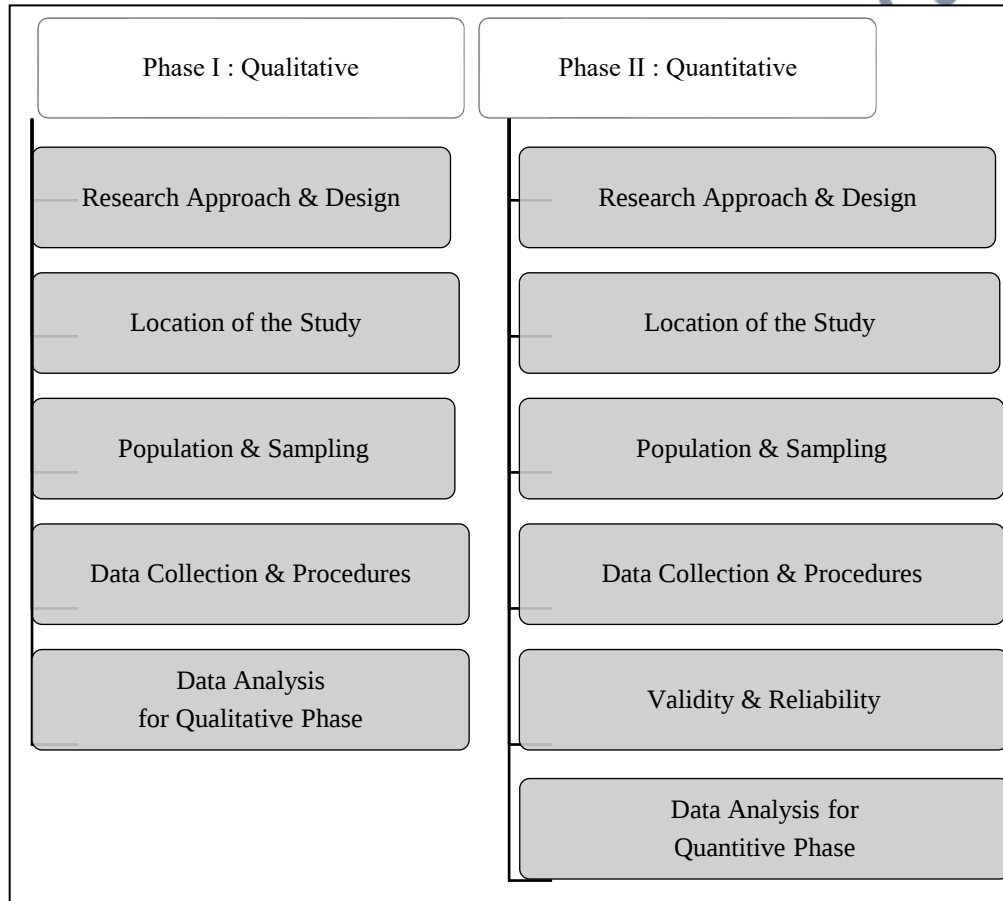


Figure 20: Mixed methods division

The researcher uses the qualitative method to evaluate the results of the semi-structured interview to discover the skills required to combine Islamic and scientific expertise. In the meantime, the quantitative approach is used to evaluate the survey questionnaire administered between final-year students to measure their level of integration of Islamic and scientific knowledge.

The researcher divides the research questions into three phases. Data collection of this study would be arranged based on the research questions that illustrated as below:

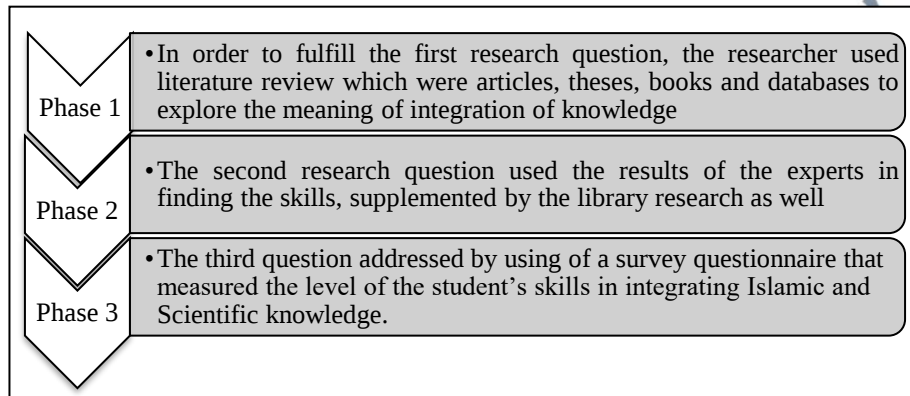


Figure 21: Data collection for Mixed- methods

The data were obtained from the sources categorised below:

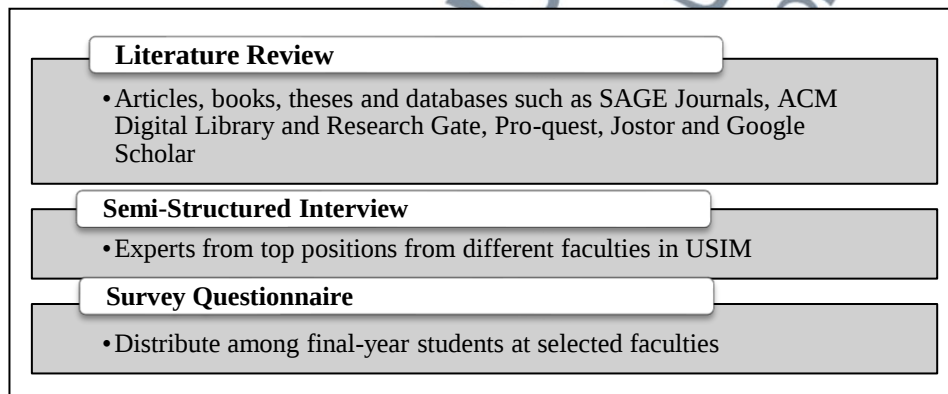


Figure 22: The data sources

In collecting the data and information related to the research topic, data would be collected from multiple sources such as document analysis, interviews, and a survey questionnaire.

3.3 Location of the Study

For this analysis, the qualitative research involved a semi-structured interview conducted at four separate faculties in USIM. The quantitative study also took place among the final students of the respective faculties in the same university. The faculties involved in this research were the Faculty of Quranic and Sunnah Studies, the Faculty of Law and Syariah, and the Faculty of Science and Technology and Faculty of Economy and Muamalat. The participants involved were the top positions including Dean of the Faculty and Deputy of Dean, Head of Programme and senior lecturers who have been appointed in leadership positions at respected faculties. This research aimed to acquire a variety of approaches and viewpoints from different faculties. These faculties were selected by considering the divergence of academic settings and the necessity of the students to integrate both Islamic and scientific knowledge. The four faculties were favoured by the researcher to make it multidisciplinary.

3.4 Population and Sampling

I) Qualitative Study

According to Patton (1990), qualitative research prefers smaller, targeted samples. This is supported by Creswell (1998), who asserted that conducting an interview was the preferable process for collecting data. The population in this study was favored by the fact that these participants were in current leadership roles, through which they had a great deal of experience in the respective academic sector, especially related to student growth. In qualitative research, the population included in this study were those currently serving in various positions at the respective faculties located in USIM. There was a total of eight participants.

There are eight faculties in USIM. The faculties are the Faculty of Quranic and Sunnah Studies, the Faculty of Leadership and Management, the Faculty of Syariah and Law, the Faculty of Economics and Muamalat, the Faculty of Medicine and Health Sciences, the Faculty of Major Language Studies, the Faculty of Dentistry, and the Faculty of Engineering and Built Environment. However, the researcher selected only four faculties which are the Faculty of Quranic and Sunnah Studies, the Faculty of Law and Syariah, and the Faculty of Science and Technology, and Faculty of Economy and Muamalat that closely related to theoretical approaches relevant to the integration of knowledge.

The selection of the four faculties is chosen based on the nature of their area and epistemological background. The researcher had the intention of distinguishing the pure background of Islamic studies and the pure science background. Knowledge integration can take place between two elements of Islamic and Scientific knowledge. As far as the pure background of Islamic studies is concerned, the researcher found it better adapted and clarified the Faculty of Quranic and Sunnah Studies methods and the Faculty of Law and Syariah. The syllabus and the direct comparison of the subjects are based on the Holy Qur'an and the Sunnah. Therefore, it is essential to incorporate scientific expertise to give it a holistic method for learning purposes. However, integration is not even that varied since the terminology used is the same. As a result, the researcher chose to pick only two faculties from the Islamic sector. The researcher has also selected the Faculty of Science and Technology and the Faculty of Economics and Muamalat for a pure science background. The researcher noticed that the terms and techniques used by scientists are always the same. Therefore, the researcher chose to select only two faculties with a scientific background. Nevertheless, the responses were saturated among the expert.

II) Quantitative Study

The researcher uses the stratified quota sampling, which provides the researcher versatility in accessing the sample population is focused on the use of a quota system. The survey will be driven by evidence of the presence of character and population of interest. Besides, non-proportional quota sampling is a technique with a slight constraint of the minimum sample number of units in each group. It is not interested in making a number that fits the proportions of the population. The approach is a non-probabilistic sampling that is usually used to ensure that small groups of samples are sufficiently represented (Etican et al., 2017).

Stratified sampling is used when the population from which the sample to be obtained from the group does not have a homogeneous set of stratified sampling techniques and is widely used to represent a strong sample. Stratified sampling provides more accurate and comprehensive information on the sample (Etican et al., 2017). For the quantitative analysis, the survey questionnaire was completed by a total of 285 students. This study aimed to obtain sampling among final-year students from the respective faculties which are the Faculty of Quranic and Sunnah Studies, the Faculty of Law and Syariah, and the Faculty of Science and Technology and Faculty of Economy and Muamalat, to understand and how they approach integrating Islamic and scientific knowledge.

The researcher discovered a fair amount of sampling as the results of the quantitative analysis were intended to support the conclusions of the qualitative study to investigate the skills needed to integrate Islamic and Scientific knowledge. The overall number of students enrolled since December 2020 is 10733. In addition, the data gathered showed that the responses were sufficient as it stratified quota sampling.

3.5 Research Instruments

In this analysis, the researcher splits the data sources into primary and secondary sources. The instruments used rely on the analysis of the data used in Figure 23.

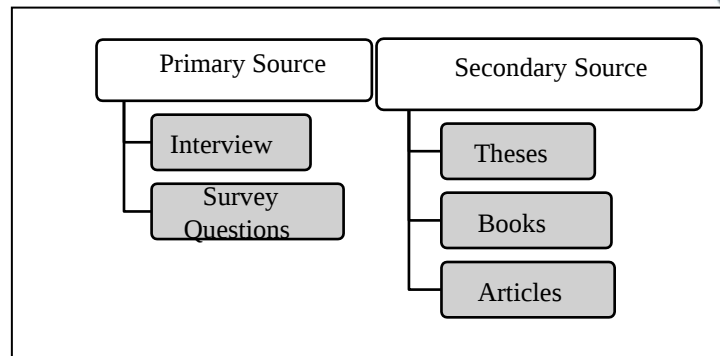


Figure 23: The types of data used in this study

I) Primary Source

a) Semi-Structured Interview

The researcher prefers conducting a semi-structured interview consisting of elements of both structured and non-structured interviews. The researcher prepared the formal question and used the freedom to develop the questions and explored them in advance. The researcher uses the qualitative research method promoted by Creswell's (2003) definition, which illustrated the interactive qualitative research which required the researcher to collect data by face-to-face approach.

According to Gay & Airasian (2003), the all-important component in sampling was to decide on the participants who could provide the information to fulfil the research questions. As mentioned above, the data collection approach for this study was a semi-structured interview, which indicated the fundamental methods of qualitative research design. A qualitative research

design is sensible for the participants to react freely using their own words and standpoints. Mitchell & Jolley (2001) stated that this arrangement would give more freedom to participants in answering the questions. The researcher conducted each interview separately to respect the privacy of the participants.

b) Survey Questionnaire

The researcher uses a survey questionnaire to address the questions regarding the level of skills integration among USIM students. For Burn & Grove (1993), a questionnaire was used as a data collection tool. A questionnaire is a typed self-report form intended to collect information that can be gathered from the written responses of the subjects. The details gathered by means of a questionnaire is like that obtained from the survey, but the questions appear to be less detailed.

II) Secondary Source

The researcher directly reviewed and cited the documents for printed documents such as Al-Quran and printed books whereas, for the electronic materials, the researcher collected the information from various sources of databases such as Sage Journals, ACM Digital Library and Research Gate, Pro-quest, Jostor, and Google Scholar.

3.6 Data Analysis

a) Document Analysis

The document analysis acted as the foremost method for data collection in this research. Furthermore, various kinds of documents were collected to acquire the overview and information pertaining to research such as journals, theses, books, proceedings, and websites.

b) Qualitative Study Analysis

As mentioned above, the data collection approach for this study was a semi-structured interview, which indicated the fundamental methods of qualitative research. A qualitative research design allows participants to react freely using their own words and standpoints. The researcher has chosen semi-structured interviews as it will be conducted for one respondent at a time, include a combination of closed-ended and open-ended questions, frequently followed with a follow-up on whether or how questions can be answered. The results of the interviews could fulfil the expectation of the research questions which discovering the skills needed in integrating Islamic and scientific knowledge. Dialogue may be about the subjects on the agenda — rather than sticking slavishly to verbatim questions as with a structured survey — and may be addressing potentially unknown problems.

c) Quantitative Study Analysis

A quantitative methodology attempted to fulfil the research questions stated in Chapter 1. A survey questionnaire was carried out among the selected students from the respective faculties. The data for this analysis were analysed using a statistical tool known as the SPSS. SPSS is a software application that is used for

statistical analysis. It is capable of handling vast volumes of data and can perform all the analyses covered by the text and much more.

3.7 Data Collection and Procedures

I) Qualitative Study

Besides that, the interviews were scheduled for the most convenient date and time. Moreover, the interviews conducted in-person at a place convenient for the participants. All participants were informed earlier by the researcher that the interview could last between 30 and 45 minutes and would be recorded by a mobile phone. This indicated a backup for the researcher if one of the recorders failed during the interview session. The interview protocol and interview questions were sent to the participants at least a week before the day of the interviews so that they could make some preparation and thoughtful insights for the study. Before each interview, the interview questions were modified according to the participant's position and responsibilities. The questions were rearranged during the interview and adjusted from what was planned to suit the flexibility of the participants. The researcher added and dropped the questions according to the needs of subjects. All the interview sessions recorded using a mobile phone and the audio data transcribed into a verbatim format.

In addition, the researcher collected data by using creativity and initiatives such as jotting down notes during and after the interview. The interview sessions were recorded by using a mobile phone, as suggested by Gay & Airasian (2000). In this study, the responses of each of the participants were recorded and used for the research only. The advantage of conducting the interview was that the researcher could benefit from the opportunity to gain more understanding from the participants as contemplated by Seidman (2006). Bogdan & Biklen

(2007) illustrated that conducting the interviews could benefit the researcher by using their words so that more insights could be dispersed in the data collection. When all eight interviews were accomplished, the researcher saved all the recordings. The recordings were transcribed and revised thoroughly by the researcher. After that, the researcher reviewed, coded, and analysed the recordings. The researcher took approximately five weeks to complete the data collection process, including the transcription.

a) Transcription

The researcher interviewed and transcribed the recorded files of all the participants. The transcription process was time-consuming as the focus needed to capture the delivered words of the participant's viewpoints. In qualitative research, the transcription process was an essential element for data analysis. Therefore, the researcher reviewed the transcripts of each interview several times while listening to the audio recording to reinforce the common senses of information as noted by Creswell (2003). The researcher verified the accuracy of all transcriptions, the researcher would re-read each transcript thoroughly, then make notes of diverging patterns, keywords, questions, and common themes.

b) Data Reduction and Data Display

In this study, the researcher reviewed, removed, categorised, and trimmed to investigate which responses from the participants should be kept for coding purposes. Apart from that, the researcher reviewed, highlighted, and identified as part of the coding process. The responses from the participants would be grouped accordingly based on the themes or variables. In this study, five variables have been highlighted, which were self-efficacy, integration of knowledge, the GIINA Model, Islamisation of knowledge, skills integration as the main variables.

Berg (2001) stipulated that the data reduction promoted the accessible, understandable of a variety of themes. Sato (2007) remarked that the analysis is done if the data reduction was executed. Indeed, data reduction should go through the analysis of transcripts as is a significant process to select, focus, simplify, and transform the data. From the data reduction, the researcher managed to draw conclusions based on the common themes. The purpose of the interview was to uncover the people's viewpoints as mentioned by Wallen & Fraenkel, (2001) in their study that displayed how they would think or feel about a specific issue. Creswell found that the qualitative interview visualised the salient characteristics as below:

- i. Allowing researchers to acquire important data they could not obtain from the observation.
- ii. Exploring and examining the participant's responses to gather the collective opinions and viewpoints in-depth.
- iii. Free-flowing and open in settings.
- iv. Allowing the researcher to control over the questions.

McMillan & Schumacher (2001) advocated trustworthiness, genuine, eye contact, proper and clear words during the interview session. According to Gay & Airasian (2000), the essential principles to organise the data are as follows:

1. Tend to listen more than talk.
2. Follow-up on the statement and ask questions when you lose the points.
3. Better to avoid the leading questions but preferably ask the open-ended questions.
4. Do not interrupt the session.
5. Ensure the focus of participants.

6. Respect the moment when there is silence. Perhaps the participant is thinking.
7. Do not simply judge the participants' perceptions and ideas.
8. Do not argue with the participant's ideas.

c) The Researcher's Role

According to Creswell (2003), the researcher plays a pivotal role in the process of qualitative research. Additionally, it reinforced the introspection and acknowledgement of biases, values, and interests of the researcher. The researcher should avoid unfairness and prejudice. In qualitative research, the population for this study were the participants who were currently working in various positions at respective faculties located in USIM.

There were eight participants in total. These universities have an enrolment between 10,000 undergraduate and graduate students. In this study, the researcher opted for semi-structured interviews as it promoted a variety of results from the respective representatives from different faculties in USIM. As a result, the data were collected from diverse perspectives and current approaches in finding the best approach to integrating Islamic and scientific knowledge.

The researcher highlighted the relevant steps that were modified to accomplish this qualitative study:

1. The set of semi-structured questions were set up accordingly.
2. The researcher contacted the participants to set an appointment time for the interviews.
3. The researcher interviewed selected participants from the respective faculties to know the skills needed by students in integrating Islamic and scientific knowledge. These

interviews were recorded manually by using a Mobile Phone.

4. The interview recordings were transcribed and grouped into the main variables.
5. The responses of the participants were cited, compared, interpreted, analysed, and synthesised to fulfil the research questions.
6. The conclusions from the findings would be used to offer recommendations.

In this qualitative research, the researcher used a semi-structured interview to collect the data. The interviews involved several faculties in USIM such as the Faculty of Quranic and Sunnah Studies, Faculty of Syariah and Law, Faculty of science and technology and Faculty of Economics and Muamalat. The interview would be comprised of the top position of the respected faculties such as Dean, Deputy of Dean, Head of Programme, and Lecturers.

The transcriptions of the interviews were then validated. The results of the interview were supposed to address the research questions to discover the skills needed to combine Islamic and scientific knowledge. Such faculties were selected by recognising the distinction between academic settings in their respective fields and were thus encouraged in this study to be multidisciplinary.

The set of questions are listed below:

- 1) What is the best method to channel Islamic and scientific knowledge (Naqli and Aqli) among the students in the classroom?
- 2) What is the skill required by lecturers to integrate knowledge of Islamic and scientific knowledge (Naqli and Aqli)?
- 3) Do you think that the students have enough capacity or capability to integrate Islamic and scientific knowledge (Naqli and Aqli) knowledge?
- 4) How can the skills help the student towards the integration of Islamic and scientific knowledge (Naqli and Aqli)?
- 5) Do you think that Islamic and scientific knowledge (Naqli and Aqli) integration is highlighted in the classroom?
- 6) What kind of knowledge is required to integrate Islamic and scientific knowledge (Naqli and Aqli)?
- 7) How the lecturers spark the idea of integration of Islamic and scientific knowledge (Naqli and Aqli) knowledge in the classroom?
- 8) Do you think there is a limit of knowledge in integrating Islamic and scientific knowledge (Naqli and Aqli) among the students?
- 9) How can the lecturers create a conducive learning environment to attract the students?
- 10) What are the problems in integrating Islamic and scientific knowledge (Naqli and Aqli) in the classroom?

d) Validity and Reliability

McMillan & Schumacher (2001) asserted that the measurement of validity should highlight the purpose, population, and environmental attributes. This was supported by Bryman & Bell, (2003) as well as Schwab (2005) who remarked that integrity and truth of the conclusion were part of validity. This agreed with McMillan and Schumacher (2006), who stated that the interpretation which resulted in mutual meanings between the interviewer and interviewee was a sign of validity. Creswell (2003) pointed out that validity was an indicator to determine the accuracy of the findings between the researcher, participants, and reader.

In addition, McMillan & Schumacher (1989) explained that reliability referred to the consistency of the data analysis and interpretation of the data. Moreover, Suter (2006) said, reliability described how well the instrument measured whatever was supposed to measure. This was concurred by Kumar (1996) that if the instrument was consistent and stable, that is how the reliability defined.

Merriam (2002) stated that reliability highlighted the extent of the research findings until it could be replicated. Indeed, Morse & Richards (2002) remarked that reliability showed the same results. Patton (2002) claimed that validity and reliability were significant under the investigation of the study and not only the imagination “to be”. Therefore, the researcher followed the following rules to assure reliability in this research:

1. The researcher structured interview questions that were clear and oriented.

2. The researcher created a precise and detailed interview protocol.
3. The researcher interviewed in a convenient place and the participants were given the freedom to express their viewpoints and experiences.
4. The researcher used a mobile phone and took some notes which then reviewed and concurred by the participant.

e) Limitations

In summary, the researcher concludes that there were limitations to the qualitative study. The limitations were sensed when the selected faculties were favoured. The diversity of the participant's curriculum background affected the result of the findings. It was predicted that limited experiences, PIINA training, especially in USIM in integrating Islamic and scientific knowledge, and the target goal by each participant from the programme.

II) Quantitative Study

The researcher used a survey questionnaire to address questions regarding the level of skills integration among USIM students. The research established a survey questionnaire to identify the level of demanded skills in integrating Islamic and scientific knowledge. The listing skills were obtained from the qualitative findings that involved the semi-structured interviews among the experts and supplemented by the library research. The questionnaire comprised all the main variables which were self-efficacy, integration of knowledge, the GIINA Model, Islamisation of knowledge and the skills of integration.

The structure of the questionnaire was divided into three which were:

- The meaning of the integration of knowledge
- The skills integration to integrate both Islamic and scientific knowledge
- The student's perceptions as the check and balance that would be used as the recommendation in Chapter Five.

The research determined the methods that could be used to generate and manage the survey questionnaire. The flows for the process are illustrated as below:

1. The researcher identified the questions for the questionnaire. These questions were expanded from the findings of the qualitative findings. The set of questions was verified from experts in the quantitative study.
2. The researcher selected the questionnaire subjects that intended to address the research questions.
3. The researcher carried out the analysis using the SPSS and interpreted the data and discussed the outcomes of the analysis.
4. The researcher investigated the links of the qualitative findings and the quantitative findings to draw a conclusion as well as the recommendation for further studies.

The researcher creates a designated instrument that categorised the survey questions into integration knowledge in general, the demanded skills in integrating Islamic and scientific knowledge and the students' perceptions. Fowler (1993) asserted that survey items should be expanded for each category obtained from the interview data and literature review. The researcher used the Likert-type scale to address the specific constructs of interest in quantitative study. Interestingly, this Likert scale was invented by Rensis Likert who

highlighted this tool for the attitude assessment purpose. Moreover, Mclver and Carmines (1981) proclaimed that, generally, a dataset comprised of an equivalent number to a statement whether it was favourable or unfavourable or not.

Furthermore, the respondents were requested to give their responses to the appointed statements and stated the degree of agreement or disagreement. Generally, there would be a display of five responses which were strongly agree, agree, neutral, disagree or strongly disagree. According to Edwards and Kenney (1946), a Likert scale was opted for its straightforwardness and widely used on the measurement of attitude and managed to achieve higher reliability with small numbers of items. Therefore, respondents requested to give their level of agreement or disagreement by using a five-point Likert scale. Typically, in the quantitative study, the most favourable attitudes would illustrate the highest scores, while the unfavourable scores would visualise the lowest scores. The researcher designated the scale as followed: 5 for Strongly Agree, 4 for Agree, 3 for Neutral, 2 for Disagree and 1 for Strongly Disagree. Spector (1992) contemplated that the characteristics relating to the summated scale rating in the survey questionnaire. The characteristics were illustrated as below:

- 1) The researcher should ensure multiple items on one scale.
- 2) The researcher should be aware of the purpose of each item measured within the quantitative measurement.
- 3) The researcher should be aware that there is a current and incorrect answer.
- 4) The researcher should display only the statement, and the respondents were requested to give their appropriated rating based on the preference.

In this study, the researcher used the self-administered survey to distribute the questionnaire. The researcher used Google Form as a tool for collecting information. Google Form is a free online tool where most people could access the survey, and it easily used and effective in collecting the data.

a) The List of Questions in the Survey Questionnaire

The researcher divided the questionnaire into three components. The first component concerned the integration of knowledge and related to the understanding part of the integration.

The list of questions for the first component are as follows:

- I understand well the concept of integration of Naqli and Aqli knowledge.
- I am familiar with the methods of integration of Naqli and Aqli knowledge.
- I am aware of the concept of Islamisation of knowledge.
- I am aware of the methods of Islamisation of knowledge.
- I know fundamental sources of reference related to the integration of knowledge.
- I know the pioneers of the integration of knowledge.
- I am aware of the graduate in the integration of Naqli and Aqli development.

The second component of the questionnaire highlighted the demanded skills in integrating Islamic and scientific knowledge. The questions for the second component are listed below:

- I understand the difference between Naqli knowledge and Aqli knowledge.
- While reading the scientific (rational) writings, I understand whether the idea supports Islam or not.
- The integration of knowledge combines the “two readings,” reading of the Qur’an and the created universe.
- While reading the Islamic (revealed text) writings, I understand their similarities and dissimilarities with any modern scientific knowledge.
- I understand the interconnections between Allah, human beings, and the universe.
- I understand the unity of themes of the Quran.
- I try to understand the universe and creation through the Qur’anic perspective.
- I understand the relation between the methodology of revelation and methodology of the universe, which are interconnected.
- I think the more knowledge we gain on revelation (wahyu), and the universe, the more we grow our capacity to integrate between revelation and science.
- I can distinguish between the methodology of revelation (wahyu) and the methodology of natural sciences.
- I understand how the supreme values of the Quran (tawhid, tazkiyah and civilisation) correspond to each other.
- I think memorising skills needed to understand the integration of Naqli and Aqli knowledge.
- I think skills in both Arabic and English languages are necessary to integrate Naqli and Aqli.

- I am comfortable with the sources of knowledge written in Arabic.
- I am comfortable with the sources of knowledge written in English.
- In integrative teaching-learning, the process of self-transformation happened when memorisation, understanding, thinking, and internalising take place in teaching and learning processes.

The third component of the questionnaire concerned the student's perceptions. The questions for the last component are as follows:

- The subjects offered by my faculty focus enough on the integration of Islamic and scientific knowledge.
- The lecturers help the students to gain more understanding about integrating Naqli and Aqli by giving the related assignments.
- The lecturers combine Naqli and Aqli perspectives.
- The lecturers encourage the students to memorise related verses to be attached in explaining modern knowledge.

b) Validity and Reliability of the Survey Instrument

Ary et. al (1990) explained that validity referred to the extent to which a test measured what it attempted to measure. It allowed the readers to evaluate the study's validity and reliability, as asserted by Kallet & Richard (2004). The researcher referred to experts regarding the questionnaire made for discovering the skills needed in integrating both Islamic and scientific knowledge. Furthermore, the questionnaire was arranged into main skills and sub-questions to strengthen the designated statements.

However, the researcher noticed the limitation in which there would be network coverage issues when using the online tool like Google Form. Ary et. al (1990) asserted that the consistency of the measuring instrument indicated reliability. For this study, the researcher used Cronbach's Alpha to qualify the reliability of this research. Aron et. al (2005) mentioned in their research that the most common measure of reliability was Cronbach's Alpha. Therefore, the researcher used SPSS to discover reliability and interpret the findings.

c) Reliability of the Research

Cronbach's alpha coefficient was used to evaluate whether the scales were accurate or not. The variables included in the questionnaire included integration knowledge in general, the listing skills required to integrate Islamic and scientific knowledge and student perceptions. Pallant (2005) remarked the ideal value for the Cronbach's alpha coefficient should be above 0.7.

The result of the reliability analysis captured that the value was reliable which was 0.9. The reliability is more than 0.7, which means the study was reliable with the data used by the researcher. The reliability has shown the answers were true, and the questions were not biased to any party.

Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardised Items	N of Items
.962	.963	27

Figure 24: Result of Reliability Statistics

Based on Figure 24, column N referred to a list of questions used by the researcher and the result obtained was 0.962, which is considered reliable. The purpose of the study was to assess the level of student skills required to combine Islamic and scientific knowledge. In other words, it articulated the students' self-efficacy to be accepted as being capable of integrating Islamic and scientific knowledge. Data Analysis for Qualitative and Quantitative Methods

3.8) Data Analysis

The researcher separates the analysis of data into two phases which are data analysis for Qualitative study and quantitative study.

I) Data Analysis for Qualitative Study

According to Morse & Richards (2002), the integration of research questions obtained data and data analysis was the advantage of a qualitative study. The researcher used the creativity, the variety of standpoints and skilful writing for qualitative data analysis suggested by Suter (2006). McMillan & Schumacher noted that the qualitative data analysis was considered as an inductive process where the data was organised and grouped into the same patterns.

Moreover, in this study, the researcher classified all the responses obtained into main themes, and then the data were interpreted and analysed to suit the research questions. Marshall and Rossman (1999) stressed that a researcher should know to do the content analysis which involved identified the all-important themes and examples.

The researcher constructed the meaningful patterns then emerged from the data, which made sense of them. According to Creswell (1998), the process of analysing data, including the data arrangement and how to read, memorise, describe, classify, interpret, and illustrate data. Gay and Airasian (2003) claimed that analysing data was one of the intimidating duties for the researchers. Hatch (2002) mentioned that a researcher should engage with intellectuality to sense the investigation for the qualitative data. Creswell (2003) that declared the specific types of strategies for the data analysis.

Besides, Patton (1990) found that thinking of both science and art analysis leads to qualitative advancement. Ritchie and Spencer (2002) proclaimed that the detection was essential in the qualitative study to classify, explain, explore, and map accordingly. The researcher read the interview transcripts and attempted to be familiar with them.

Furthermore, the researcher listened to the recordings of each interview at the same timing of the reading and reviewing process. Each interview transcript would be read multiple times by the researcher to ensure data accuracy. Any irrelevant discussions with the participants were removed. The researcher used the six strategies suggested by Creswell (2003), where qualitative researchers should follow the process of data analysis.

These strategies are listed below:

- i. The researcher organised and prepared data for the analysis process. This process involved to transcribe, scan, type, and arrange into the related sources.
- ii. The researcher read all the data thoroughly.
- iii. The researcher began the coding process.
- iv. The researcher used the coding to group the data into themes.
- v. The researcher used a narrative passage to display the findings of the analysis.
- vi. The researcher extracted the lesson learned.

The researcher categorises the qualitative findings according to the skills mentioned by Al-Alwani and synchronised them with the expected skills listed by the participants. In this research, the researcher began the data analysis and interpretation by the following process:

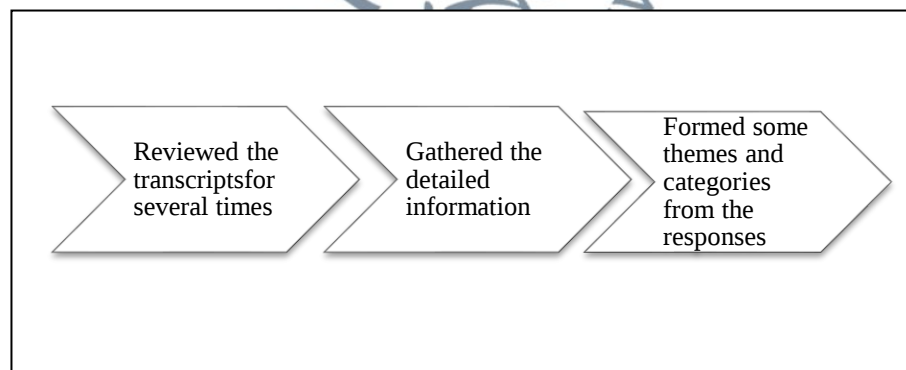


Figure 25: The data analysis and interpretation

II) Data Analysis for Quantitative Study

The researcher highlighted the descriptive statistics in the data analysis of the quantitative study. Aron et. al (2005) propounded that the descriptive statistics were promoted in reviewing and explaining the data obtained from the respondents. SPSS was chosen because of its compatibility with most other software packages and its ease of use for data analysis. The researcher mentioned the central tendency which used the value of the mean, central of dispersion which used the value of the standard deviation and the frequency distribution based on the preference from the respondents to discover the level of skills in integrating Islamic and scientific knowledge.

The researcher tests the reliability of each element dependent on Cronbach's alpha value. The Cronbach's alpha value determines the internal consistency or average correlation of items in the survey instrument to gauge its reliability. The Cronbach's alpha value varies from 0 to 1. The higher the ranking, the more accurate the scale produced. Variable Descriptive Analysis of quantitative data analysis was initially descriptive. Statistics including means, percentages, medians, ranges and variances have been measured. This study allowed researchers to establish an initial interpretation of the data obtained during the quantitative process.

The researcher collects information on dataset variables in the data analysis, such as averages and variable variances. In comparison, a variety of summary or concise statistics can be found under the descriptive method available from the analyse and descriptive statistics menu in the SPSS. The object of the descriptive statistics was to test the mean and the standard deviation of each variable.

In addition, a connection between variables has also been explored. When the differences between both variables are less than 0.90. This implies that there is a small risk of multicollinearity problems, as asserted by Tabachnick & Fidell (2007). The researcher uses the following steps for the descriptive statistics:

- i. To view the available descriptive data, press the Options tab.
- ii. Clicking on the boxes next to the names of the statistics will result in these figures being shown in the output for this process. The main numbers, which are mean, standard deviation, minimum and average, have therefore been chosen.
- iii. Selecting all relevant statistics, the performance can be created by first clicking the Continue button in the Options dialogue box, then clicking the OK button in the Descriptions dialogue box.
- iv. The number of cases in the data set is reported in the column called N. Data on the number of variables can be contained in the Minimum and Maximum columns. The sum is seen in the mean column. Variability can be measured by analysing the Std. Deviation column.

The descriptive statistics could be summarised as below in Figure 26:

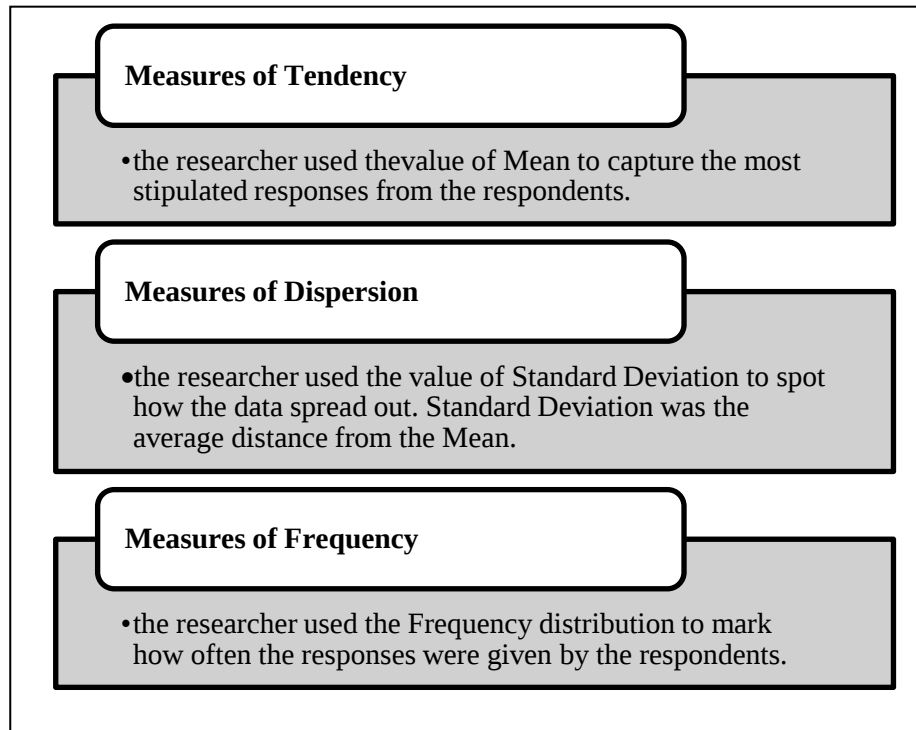


Figure 26: The descriptive statistics

3.9 Summary

Systematic methods have been used to address questions of research relating to the skills required to integrate Islamic and scientific knowledge. The researcher used expert insights to discover the skills required to combine Islamic and scientific expertise. In addition, the researcher created a survey questionnaire to measure the level of competence of the respondents by using quantitative tools to measure the findings.