CHAPTER III : RESEARCH METHODOLOGY

3.1 Chapter Overview

The discussion in this chapter revolves around the research methods used when conducting the study. This study uses the Design, Development, and Research (DDR) approach founded by Richey and Klein (2007). It covers the study design contained within it a methodological framework and model design. Next is a description of the phases involved in the study; the needs analysis phase and the design and development phase. Each phase describes the method used in detail. Then, the description of the respondent selection procedure, data collection process, and data analysis procedure and ended with a summary.

Justification of the researcher's choosing the DDR approach is that each phase in this approach will drive the development of the developed model and provide empirical evidence of its applicability (Richey & Klein, 2007). The researcher intends to emphasise that this is a study of model development, hence this study is focused on the critical phase of model design and development.

3.2 Research Design

In implementing this study, a design and development research (DDR) approach was used. In this context, an m-learning hadith model based on authentic hadith elements will be developed. This method is based on Richey and Klein's (2007) definition of a development study as a study that comprises a very organised and

systematic process that covers the processes of product design, development, and validation.

Briefly, the study was divided into two parts: a needs analysis phase and a model design and development phase. Figure 3.1 displays the phases involved in this study.

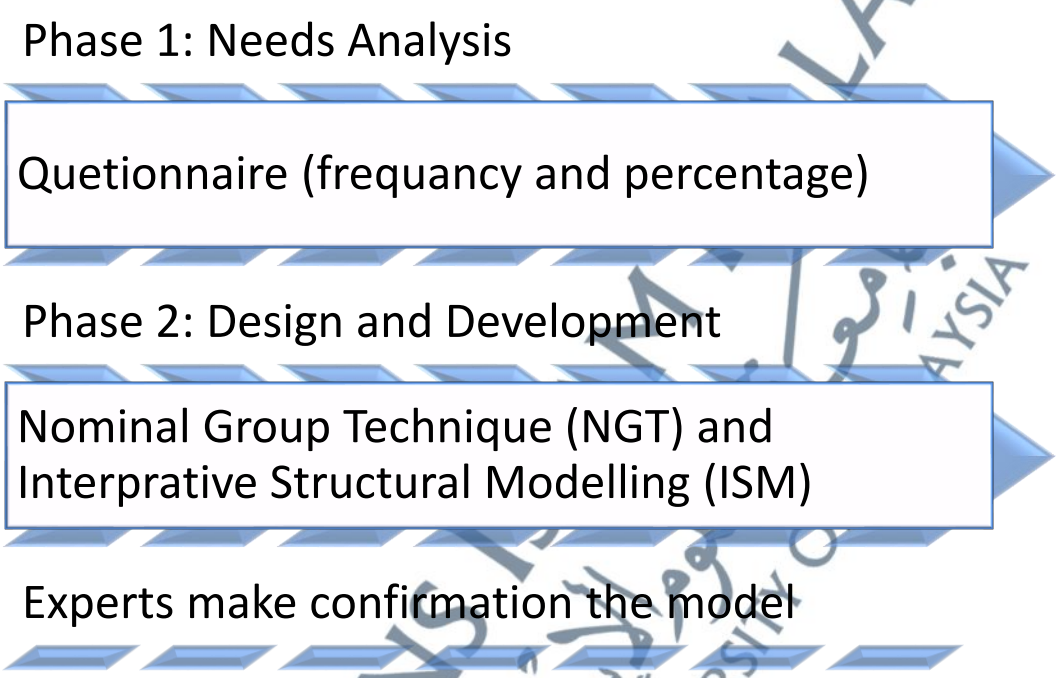

Figure 3.1: Phases in this study

Figure 3.1 shows the phases of the study using the DDR approach. The methodological framework of this study aims to provide a more detailed picture of the study that has been implemented. Based on Figure 3.1, the two phases involved in this study are clearly shown: the needs analysis phase and the design and model development phase. In each phase, the method that used was determined based on the objectives and questions of the study. The researcher, throughout the needs analysis phase, used a questionnaire. The design and development phases employed the Nominal Group Technique (NGT) and Interpretive Structural Modelling (ISM) techniques.

The researcher chose NGT in the study because this technique is carried out face to face and in groups and is able to equalize the level of education and argue based on

qualifications, experience and knowledge of an issue. It is a process of discussion to resolve an issue based on expert consensus. Meanwhile, the selection of the ISM approach in this study is due to a systematic, efficient process, able to record the results of discussions and analyze to produce a model. All this is done using computer software. Thus, experts need to focus on the discussion only because a moderator manages all ISM processes. A more detailed description of the methods used is given in the next section.

3.3 Phase 1: Needs Analysis

At this stage, an identification study was conducted to identify the need for the development of an m-learning hadith model based on authentic hadith elements. This study is to answer the following research questions:

a) What is the student's perception of authentic hadith knowledge?

b) What is the students' perception of the study of hadith using m-learning?

c) What is the level of acceptance and intention of students to use m-learning when integrated into the study of hadith?

The findings from phase 1 will be used as a guide and basis in developing of m-learning hadith model based on authentic hadith elements in phase 2 later.

3.3.1 Pilot study

Pilot studies are important for testing instruments, testing procedures, the selection of measurement techniques, and other aspects related to research. The implementation of a pilot study was to ensure that the research instruments were understood and to familiarise the researcher with the study situation, thereby reducing the expected timeframe taken to collect data (Isaac & Michael 1984). In addition, the use of pilot studies can also prevent researcher from obtaining too little information or not providing

direct information (Norfadzillah, 2006). The purpose of this pilot study is to test and develop the effectiveness of studies and instruments to determine the validity and reliability of instrument items (Frenkel & Wallen, 1993) and test the best methods for administering and interpreting instruments and the suitability of analytical methods (Mohd Najib, 2003).

In this study, the reliability of the instrument was determined by the consistency method in Cronbach's Alpha. According to a study conducted by Mohd Majid Konting (1990), the Cronbach's Alpha value received exceeds 0.6 and is classified as a reliable item. The results of the analysis should have high reliability and meet the requirements of the study, thus should be accepted. Therefore, a pilot study should be conducted on all the instruments used in this study. A pilot study will be conducted involving a sample of 30 students in the Faculty of Quranic and Sunnah Studies (FPQS). According to Cohen, Manion, and Marrison (2007), the 30 samples mentioned above are appropriate numbers to use for statistical analysis.

The findings of the pilot data reliability test analysis revealed high Cronbach's Alpha values. Table 3.1 shows the reliability test results for the pilot test.

Table 3.1: Results of the Study Instrument Reliability Test

Instrument	*No. Item*	*Cronbach's Alpha*
Perception toward Authentic Hadith Learning	12	.849
Perception toward Hadith Study via M-Learning	8	.871
Acceptance and Use of M-Learning	29	.949

3.3.2 Sample

The first phase of this study was conducted after the pilot study. Researcher have distributed questionnaires to identify development needs for the m-learning hadith

model based on the authentic hadith element. According to Noraini (2013), questionnaires are widely used in education as a method of collecting data. This survey study provides very useful information for collecting data related to phenomena that cannot be observed directly.

The population in this study was year 4 students from the Faculty of Quranic and Sunnah Studies, with 364 students, so the appropriate sample size was 191 students (Krejcie and Morgan 1970). However, the total sample that participated in this study was 200 students. The total sample was divided into three, with 98 students from Qur'an and Sunnah Studies, 52 students from Qur'an and Multimedia Studies, and 50 students from Sunnah Studies and Information Management. The justification for sample selection refers to their experience of the hadith study system used in the faculty, involving the use of technology.

The researcher used a set of questionnaires modified by the researcher with the help of a supervisor. The validity of the content of the questionnaire was obtained with the help of an expert, the researcher's supervisor. The instrument was also reviewed by two experts in the field of hadith to determine the validity of the content and items tested according to the suitability of the sample. Researcher used a Five-Point Likert Scale rated 1 to 5, with 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree.

3.3.3 Instrument

The research instrument used in this study was a questionnaire. About 200 respondents from the Faculty of Quranic and Sunnah Studies (FPQS) were involved. Questionnaire items are divided into 4 sections: 1) Student information; 2) What is the students' perception of authentic hadith knowledge; 3) What is the students' perception of the

study of hadith via m-learning?; 4) What is the level of acceptance and intention of students to use m-learning when integrated into the study of hadith? The questionnaire was presented to the students to assess whether they should have learning support tools, to assess the level of acceptance of m-learning tools, and to identify intentions for using m-learning.

The Unified Theory of Acceptant and Use of Technology 2 (UTAUT2) was used to create the questionnaire. Venkatesh, Thong, and Xu (2012) created UTAUT2 to describe users' intents and behaviours when using technological tools. UTAUT2 is a combination of eight theories about the use of technology. They are Theory of Reasoned Action (TRA), Theory Acceptance Model (TAM), Motivational Model (MM), Theory of Planned Behaviour (TPB), Combined TAM and TPB (C-TAM-TPB), Model of PC utilisation (MPCU), Innovation Diffusion Theory (IDT) and Social Cognitive Theory (SCT). Performance Expectancy, Effort Expectancy, Social Influence, Facility Condition, Hedonic Motivation, Price Value, and Habit are the seven main constructs that determine user intents and behaviours (Venkatesh et al., 2012).

Performance expectancy is defined as the degree to which the use of technology will benefit consumers in performing certain activities. Effort expectancy is the degree of ease related to consumers' use of technology. Social influence is the degree to which consumers perceive that they should use a particular technology. Facilitating conditions refer to consumers' perceptions of the resources and support needed to conduct a behaviour. Hedonic motivation suggests something important in determining technology acceptance and is defined as something that gives pleasure to the use of technology (Brown & Venkatesh, 2005). Besides, Venkatesh et al. (2012) state that hedonic motivation is a prediction of consumer behavioural intentions to use technology. The price value is defined as the consumers' cognitive trade-off between

the perceived benefits of the applications and the monetary cost of using them. Price value will have a positive impact on intentions when consumers feel the benefits of using technology are greater than monetary costs. Habit is defined as the extent to which an individual tends to engage in behaviour automatically. There are also three moderator factors: age, gender, and experience, with various effects that affect the main factors (construct) of the UTAUT2 model. Figure 3.2 illustrates the UTAUT2 model developed by Venkatesh et al. (2012).

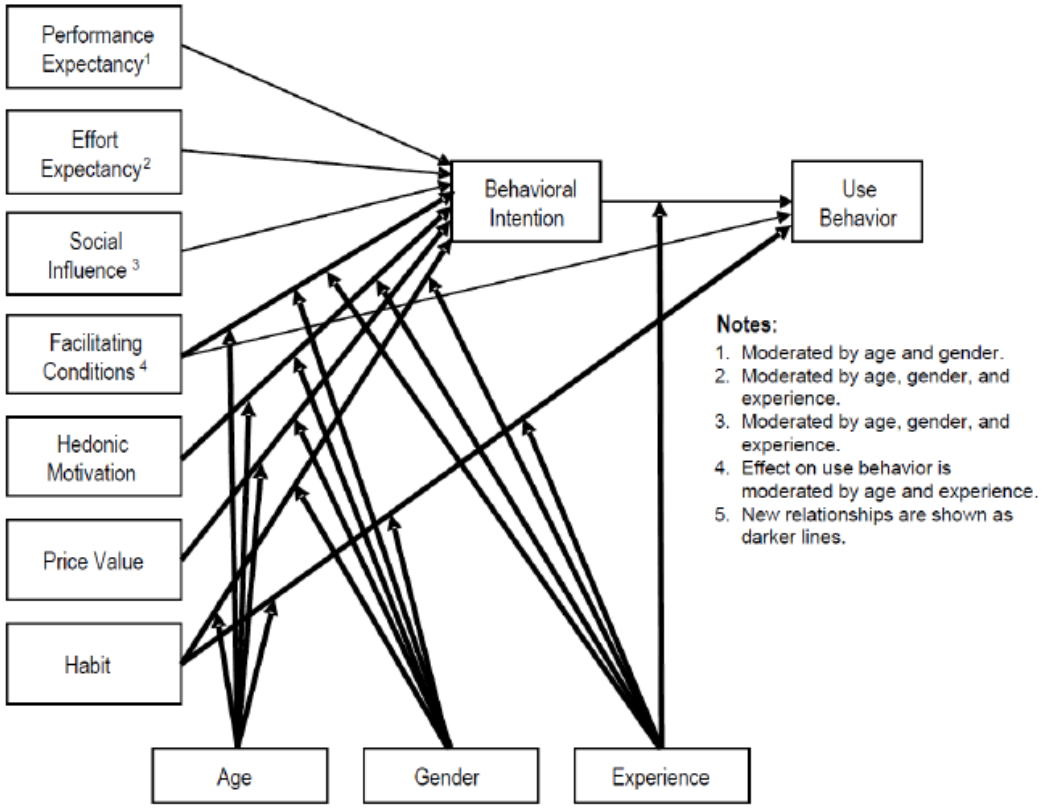

Figure 3.2: The Unified Theory of Acceptant and Use of Technology 2 (UTAUT2)

UTAUT2 was chosen as the study theory because UTAUT2 is considered more comprehensive as it can explain higher percentages of variance in use intent than any other model (Venkatesh et al., 2012). UTAUT2 is also a simple and uncomplicated theory and is very practical to apply in a single study (Venkatesh et al., 2012). UTAUT2 is also a very comprehensive theory of integrating constructs on factors that determine

an individual or an organisation's ability to receive and use new technology (Winarko & Mahadewi, 2013).

In this study, the researcher has chosen to use the UTAUT2 model in the needs analysis phase to determine the m-learning hadith model in terms of seven main indicators of acceptance: performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value, and habit. The moderating constructs of gender, age, and experience were omitted as the study only concerns the main constructs.

UTAUT2 has evolved and been tested and augmented by researcher, making use of existing models in conjunction with UTAUT2. A study by Ain, Kaur, and Waheed (2015) extended the UTAUT2 framework by integrating the learning value construct and provides fresh insight about predictors of students' intentions towards LMS and its use. A quantitative research approach was employed by utilising a closed-ended questionnaire to collect data from Malaysian university students who were users of LMS. The findings indicated a good measurement and structural model fit and suggested the significant influence of performance expectancy, social influence, and learning value on students' intention towards LMS. They also confirmed the influence of facilitating conditions and behavioural intention on LMS use.

Raman and Don (2013) investigated the relationships between the constructs that may influence preservice teachers' acceptance of Learning Zone (Moodle) in their learning process and assessed the influence of variation on performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, and the habit of the behavioural intention or intention of usage. The finding verified and found that the regression model revealed 29.5% of the variance in students' intentions, with

facilitating conditions and hedonic expectancy being considerable predictors of the behavioural intention.

3.3.4 Data analysis

Data for this phase was analysed using descriptive statistics using SPSS version 18. Researcher have used frequency and percentage analysis for this phase to identify m-learning hadith based on students' views.

3.3.5 Flowchart

To obtain information at the needs analysis phase stage, a questionnaire instrument was used. Figure 3.3 is a flow chart for the needs analysis phase. Based on the findings obtained through the process, the researcher has outlined the appropriate content requirements to be used in the authentic hadith model and set objectives to develop the model.

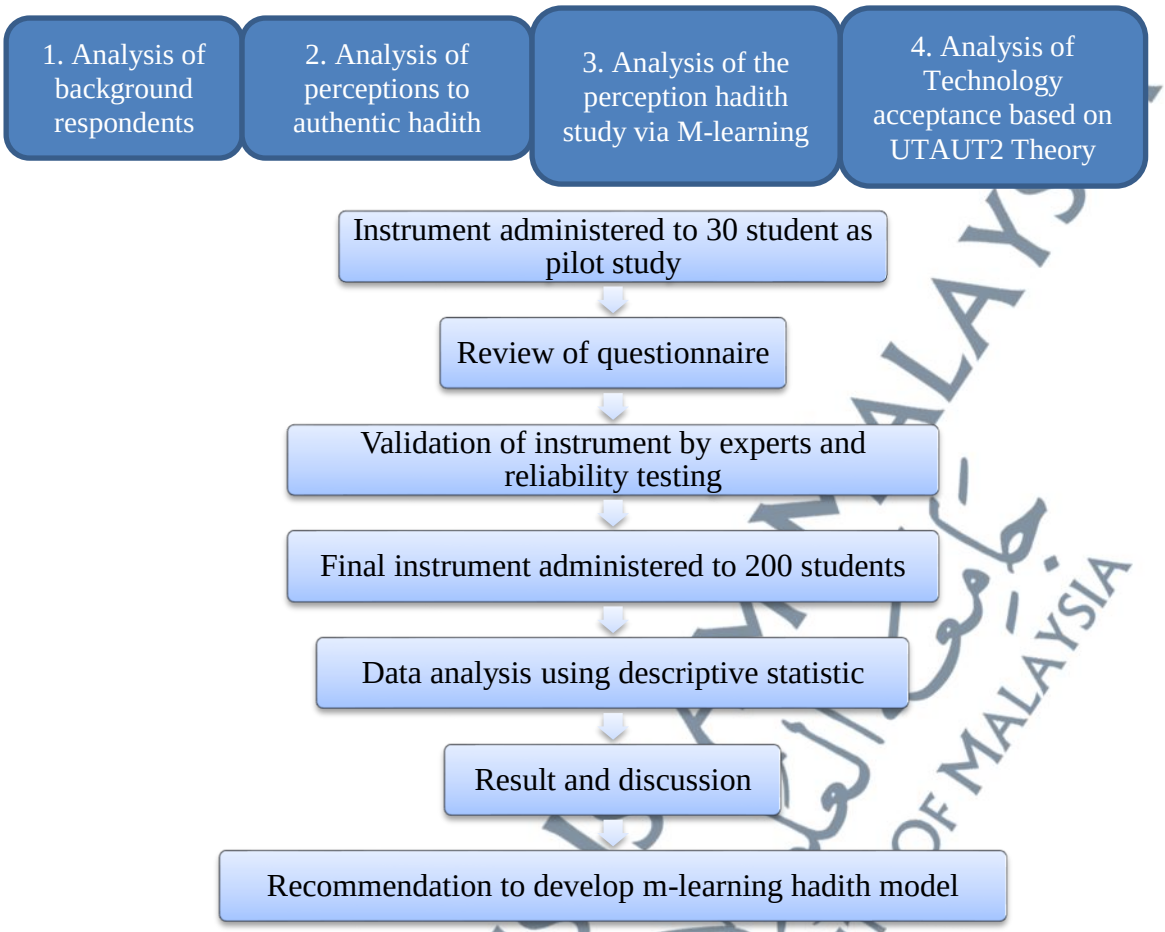

Figure 3.3 Flowchart of the needs analysis phase.

3.4 Phase 2: Design & Development of Learning Model

In the design and development phase, the proposed model has been developed with the strengths of m-learning. It is considered a tool that can help lecturers and students implement the process of teaching and learning hadith. This study aims to develop an m-learning hadith model based on authentic elements. Through this study, the implementation procedure is based on the combination of hadith subjects with the use of m-learning to develop an m-learning hadith model. This model will be designed so that the process of learning hadith does not rely solely on traditional methods.

A group of expert panels selected model elements and items proposed based on a literature review. These experts have identified model elements and items that are

suitable for students to use mobile devices in the study of hadith. However, determining the appropriate model elements and items in an environment using mobile devices is not easy but it is a relatively complex learning process when there is a fusion between hadith learning and mobile devices. This process requires a significant time commitment as well as a precise and condensed commitment to investigate and test each of the proposed elements and items. This is a complex task because the model to be developed can be used as a guide and practical model to help students achieve learning objectives.

This design and development phase answers questions such as:

a) What are the items for the elements in the m-learning hadith model based on authentic hadith elements according to expert consensus?

b) What is the position (ranking) of items for the elements of the m-learning hadith model based on authentic hadith elements according to expert consensus?

c) What is the sequence (priority) of items for the elements of the m-learning hadith model based on authentic hadith elements according to expert consensus?

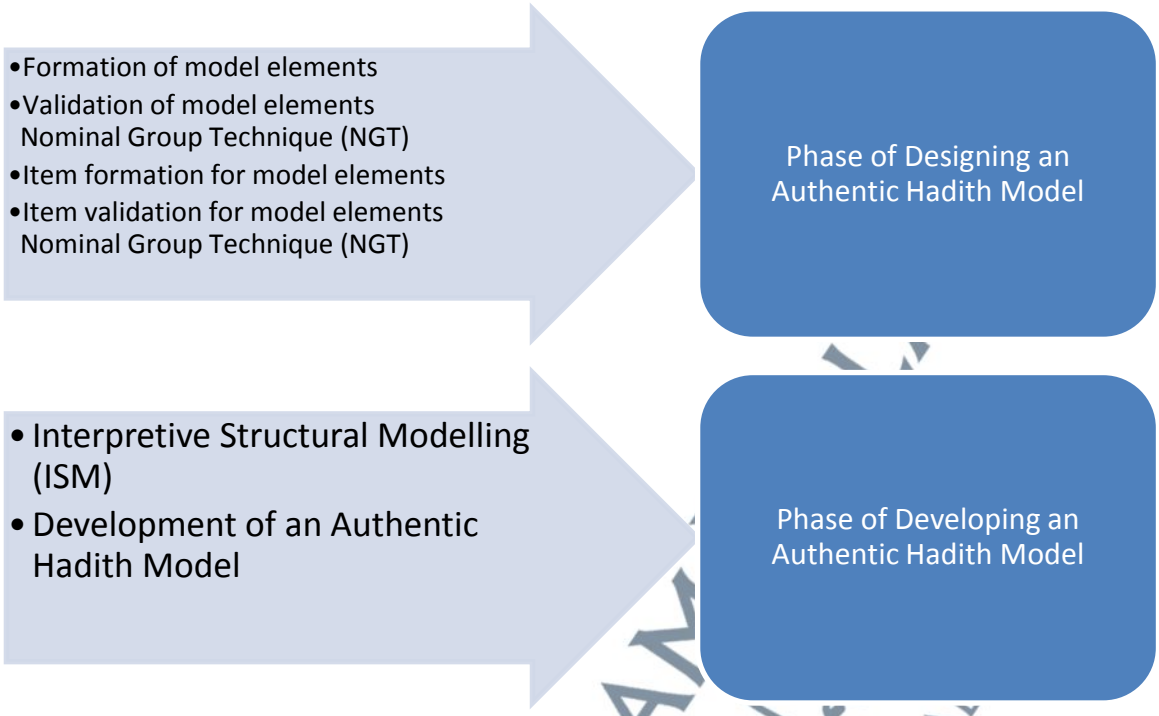

Figure 3.4: Design and Development model

To understand Figure 3.4, the researcher has divided it into two sub-phases, the first sub-phase refers to the design, and the second sub-phase refers to the development of the m-learning hadith model. The design sub-phase refers to the production and construction of model elements and items for each element found in an m-learning hadith model. Researcher used the Nominal Group Technique (NGT) approach to construct the elements and items of this model, which involves a group of experts agreeing to confirm, evaluate, subtract, and add each element and item in the model developed. Expert selection is important, and it must be fit to the study's context. The sub-phase of model development involves the process of developing an m-learning hadith model. Each item designed using the Nominal Group Technique (NGT) will be developed using the Interpretive Structural Modelling (ISM) method. The purpose of this model's development is to look at the priority of each item in the main components. ISM may also be used to determine the driving power for each element. This approach

also involved a group of experts that were brought together to conduct an NGT poll to develop an m-learning hadith model.

3.4.1 Nominal Group Technique (NGT)

NGT is a small-structured group discussion to reach a consensus (Van de Den & Delbecq, 1971) and has further developed into various fields, including education (Abdullah & Islam, 2011). NGT is also known as an interview technique in which participants meet face-to-face and are free to express their ideas orally or in writing (Macphail, 2001). The NGT technique is a popular technique and one of the most effective techniques using structured group discussions (Duggan et al. 2004; Dowling et al. 2000). Meanwhile, Dang (2015) stated that there are two main processes in NGT techniques: group discussion and a voting phase. This is because NGT begins with a qualitative method of "accepting ideas without consideration." which is then followed by a quantitative method of "levelling or arranging ideas" (O'Neil & Jackson, 1983). Besides that, it generates semi-quantitative data and its format is used to induce meaningful experiences and interpersonal exposure among participants in reaching consensus.

NGT techniques have been used in management, education, engineering, clinical, and medical fields. It can be applied to large groups or clusters (Lomax & McLeman, 1984; Dobbie et al., 2004), such as the study by Lomax and McLeman (1984) on the evaluation of polytechnic courses involving 122 participants, formed into 12 groups, with the number of members being 7 to 14 people. NGT techniques can also be performed in small groups, such as Perry and Linsley's (2006) study of students' interpersonal skills assessment, involving only 36 participants. A study by Dobbie et al. (2004) related to the evaluation of a medical course curriculum consisting of only 4–8

members for each of the 4 groups formed. This indicates that the number of groups and participants in the NGT technique varies according to research needs. Participants were also sufficient to form a group if the selected group members were fully qualified to answer questions, as done by O'Neil and Jackson (1983) on the curriculum development of a degree programme involving only 11 participants.

One of the benefits of the NGT technique is a constructive and structured problem-solving approach to reaching consensus on a wide range of issues (Williams, White, Klem, Wilson, & Bartholomew, 2006; Aizzat et al., 2006) that produces a group of proposals or solutions for prioritising (Dobbie et al., 2004; Aizzat et al., 2006). This technique requires each group member to generate and organise their ideas in evaluating a given item (Dobbie et al., 2004), enabling the participation of all group members while avoiding prominent individual influences from dominating the discussion while reducing individual pressure on group views (O'Neil & Jackson, 1983; Lomax & McLeman, 1984; Dobbie et al., 2004; Aizzat et al., 2006).

The NGT technique is suitable for studies that require approval and evaluation because the NGT technique can produce high consensus (Pokorny et al., 1988). NGT was originally used by Van de Den and Delbecq (1971) as a tool to help underprivileged communities in the community's residential environment. Now, the use of NGT techniques has evolved into various fields, including education, business, health, social, and government organisations (Abdullah & Islam, 2011).

3.4.2 Respondent of the Study

There is some debate about the most accurate sample size when conducting research using NGT techniques. Some scholars suggest that NGT can be conducted on a single cohort or group (Lomax & McLeman, 1984; Dobbie et al., 2004), but that they can be

divided into small groups so that effective communication can be conducted depending on the needs of the study. For that purpose, the following are the sample measurements used by previous researchers that have been detailed in the table below.

Table 3.2: Sample size

Researcher	Sample size
Van de Ven dan Delbecq (1971)	5–9 participants; 9–200 participants
Horton (1980)	7–10 participants
Steward (2001)	5–8 participants
Allen et al. (2004), Odu and Okereke (2012)	9–12 participants
Harvey dan Holmes (2012)	6–12 participants
Carney et al. (1996)	Min. 6 participants
Dang (2015)	6 participants
Kuo-Hung et al. (2006)	13 participants
Mohd Ridhuan (2016)	21 participants
Abdullah & Islam (2011)	7–10 participants
Habibah et al. (2016	7–14 participants

Several criteria should be addressed in the selection of participants, according to Abdullah and Islam (2011), who proposed that participants have significant knowledge in the field of study and that they be able to share their perspectives on various problems and ideas. Individuals who criticise others' views at meetings, on the other hand, are discouraged from engaging in discussion sessions (Thor, 1987). Thus, the researcher determined the criteria of the participants involved in the group discussion: (i) individuals with extensive knowledge and background or experience in the field of study; (ii) willingness and timeliness to participate; (iii) good communication skills; (iv) more than 5 years of experience (Siti Farhah and Saedah, 2015).

This phase also involves a group of experts consisting of lecturers who are involved in the teaching of hadith, lecturers who are involved in the teaching of hadith

using technology, or whose publications are related to the study of hadith using technology. The selection of hadith lecturers as experts is appropriate and consistent with the development of an m-learning hadith model that guides hadith lecturers in teaching and implementing the importance of preserving hadith authenticity. The selection of experts in the design and development phase was conducted among hadith lecturers since these lecturers are active in the technology-based process of hadith study. These hadith lecturers should have at least five years of teaching experience in the field of hadith. According to Berliner (2004), who stated that someone is competent if they have been involved in a field consistently for at least 5 years. Furthermore, these selected lecturers have a PhD in hadith and have published articles related to the use of technology in the study of hadith.

Therefore, the expert criteria among hadith lecturers in the design and development phase of m-learning hadith models are as follows:

1. Have a PhD-level education in the field of hadith.
2. Have served for more than 5 years.
3. Have published articles on the study of hadith related to technology.

3.4.3 Instrument

This phase involves two main instruments used in the NGT and ISM techniques: The instrument in the NGT technique is a questionnaire distributed to all experts before the NGT session. This NGT session's questionnaire consists of five elements that have been developed. Each element contains several items that will be discussed in further detail in Chapter 5. The questionnaire also underwent a content validation process to see to what extent elements and items were successfully defined (Sekaran & Roger, 2013). According to Burns and Grove (1993), there are three methods for obtaining content

validity: literature review, representation from relevant populations, and expert panels. While Creswell (2012) claimed that there are two methods to determine the validity of the content: one is to obtain empirical evidence, and the other is to validate the questionnaire with a panel of experts in the field studied. Thus, to obtain content validity, researcher have used an approach through expert evaluation as suggested by Creswell (2012) and Johnson and Christensen (2012).

After going through the information validation process, the questionnaire was distributed to all experts using Google Form to facilitate the data collection process. Experts are requested to complete the questionnaire and provide feedback if there are any additions or rejections. Based on the formula that was stated, the responses to this questionnaire were analysed using Microsoft Excel software. The instrument used in the ISM technique is concept star software, which works to develop the model.

3.4.4 Data Analysis

In the model design phase analysis, the Nominal Group Technique (NGT) approach to identifying, evaluating, and validating all elements of the model and the items contained inside is used. Scores will be converted to percentages to determine if each element and item reviewed is relevant and useable, and to assess the model's applicability. The total percentage score for items to be accepted must be equal to or greater than 70%. According to Dobbie et al. (2004) and Deslandes, Mendes, Pires, and Campos (2010), items would be appropriate in the usage of the NGT if the total percentage of marks given by participants was 70% or above. Meanwhile, for model development, researcher have used the Interpretive Structural Modeling (ISM) approach to allow experts to vote on the items presented by using Concept Star software to develop the

model. This approach involves meeting a group of experts face-to-face in a workshop that has been conducted.

3.4.5 Interpretive Structural Modeling (ISM) Approach

Researcher have applied the Interpretive Structural Modeling (ISM) approach to develop an m-learning hadith model based on authentic hadith elements. The main purpose of using this approach is to determine the priority of the items contained in each element of the m-learning hadith model. Warfield (1973; 1974; 1976) introduced the ISM approach. This approach serves to solve and analyse all complex problems. It may be used as a decision-making tool by incorporating the opinions and votes of the experts participating in a study.

On the other hand, the Interpretive Structural Modeling (ISM) approach can connect all the views of experts involving the items contained within it and then be able to form and develop a model (Charan, Shankar & Baisya, 2008). A group of experts agrees that the Interpretive Structural Modeling (ISM) approach is particularly useful for organising the ideas of a group so that their knowledge may be structured collectively (Sohani & Sohani, 2012; Gorvet & Liu, 2006).

The Interpretive Structural Modeling (ISM) process requires using computer software to develop and structure models based on expert views (Walfred, 1982). Therefore, the Interpretive Structural Modeling (ISM) approach is a qualitative tool with high strength that may be used to solve a complex and complicated problem with a variety of knowledge (Talib, Rahman & Qureshi, 2011).

Many studies have applied the Interpretive Structural Modeling (ISM) approach. This approach has also been used in various fields such as education (Muhaamad Tony et al., 2013; Rohani et al., 2012), engineering education (Upadhayay et al., 2007;

Debnath & Shankar, 2012), engineering (Harwinder & Khamba, 2011; Yanmei & Chen, 2012), marketing and business (Mathiyazhagan et al., 2013), and so on.

3.4.6 Basic Steps in the Interpretive Structural Modeling (ISM) Approach

Based on previous studies, it is also clear that the Interpretive Structural Modeling approach has three basic steps in implementing it (Sohani & Sohani, 2012; Mckell, Hansen & Heitger, 1979):

1. The process of determining and identifying a complex issue or problem. As discussed earlier, the Interpretive Structural Modeling (ISM) approach can unravel and solve a complex problem that requires votes and discussions from a group of experts and is assisted by software using computers. Walfred (1982) stated that the computer-assisted Interpretive Structural Modeling (ISM) approach can develop a framework and model that structures the relationship between the views of each expert involved in a discussion. In the context of this study, the researcher has identified the problem based on the literature review and supported it with the needs analysis phase to develop an m-learning hadith model based on authentic hadith elements.
2. The process of identifying and listing the items involved in an issue. In this second step, the identification and listing process performed is an extension of the issues that have been identified based on the first step. The researcher employed the Nominal Group Technique (NGT) to evaluate all of the model's elements and pieces, with the discussion taking place in a workshop with a group of experts.
3. The process of comparison and matching the items is done through a graphical representation by linking them in the form of a matrix. The use of conjunctions as contextual is used. This context refers to verb phrases that are generic and influential, such as "be a priority" or "more important than". In the context of this study, the use

of the verb phrase "must be a priority before" is used to describe the more important items in each element of the m-learning hadith model.

In conclusion, the Interpretive Structural Modeling (ISM) approach may be used to clarify any unclear or complicated process. This aligns with Ahuja, Yang, and Shankar (2009), who stated that the Interpretive Structural Modeling (ISM) approach can form, develop, and solve complicated difficulties that are not visible in thinking systems.

3.4.7 Procedures of Interpretive Structural Modeling (ISM) Approach in the Context of the Study

In addition to adopting the Interpretive Structural Modeling (ISM) approach in this study using Concept Star software, the researcher organised a workshop to construct a model based on expert votes. Additionally, the researcher suggested six phases for constructing an m-learning hadith model. The following is the order of the procedures:

Step 1: Identify model elements and items

In this step, the researcher has applied the Nominal Group Technique (NGT) approach to validate the model elements and items contained within it based on the views and consensus of experts that are closely relevant to the context of the study. As previously stated, the elements of the model and its items were generated by the researcher based on the existing problems, findings from the needs analysis, and literature review.

Step 2: Establish the context of the relationship between the variables

The process of creating contextual verb phrases has been determined to connect and link the items contained in each element of the m-learning hadith model. In the context of this study, the researcher has obtained the agreement of the expert

that the contextual verb phrase refers to “must be a priority before”. This contextual phrase is very important to connect each item found in the study.

Step 3: Develop a self-interaction structure matrix (SSIM)

The process of developing a self-interaction structure matrix (SSIM) has been established, which is based on the items in the elements of the model. Assistance from Concept Star software via a computer was used. The voting process of experts is carried out in which a pair for each item is displayed. This process runs repeatedly until all items are completed and voted on by experts.

Step 4: Model Generation from the ISM Approach

The software, in turn, generating a model based on the pair concept, carries out the model generation process.

Step 5: Presentation of the Study Model

The development of the studied model was presented to experts involved in the voting process. The purpose of this presentation is to get expert feedback if minor amendments need to be made to the model.

Step 6: Presentation and Amendment of the Final Model of the Study

The presentation of the final model should be done again to experts if some minor modifications and amendments have been made, where the amendments are also the result of comments and suggestions from experts involved in the study.

3.4.8 Final List of Items for M-learning Hadith Model Elements

After all the elements and items of the model contained within it are evaluated and validated by experts through the Nominal Group Technique (NGT) approach, these items have been incorporated into the Concept Star software, which aims to conduct a

voting process with experts in Interpretive Structural Modeling (ISM) (Refer to Appendix G).

3.4.9 Number of Experts in Interpretive Structural Modeling (ISM) Approach

There are various views on determining the number of experts in the Interpretive Structural Modeling (ISM) approach. Muhammad Ridhuan Tony Lim (2014) suggested that the number of experts to conduct the findings process using the Interpretive Structural Modeling (ISM) approach be eight, where he argued that if the selected experts fit the context of the study, it can increase the potential for good communication between experts. On the other hand, describing the ideal number of experts for a session involving the Interpretive Structural Modeling (ISM) approach is as many as 6–9 experts (Harvey & Holmes, 2012). In the context of this study, the researcher has appointed seven experts who are directly involved and knowledgeable in the context of the study.

3.4.10 **Summary**

The main framework in this study uses the Design, Development, and Research (DDR) method that is used to develop an m-learning hadith model based on authentic hadith elements. This study is divided into two phases, which are phase needs analysis and phase design and development model. The needs analysis phase is carried out through a questionnaire distributed to students. They were sampled to obtain information for model development in the use of m-learning as a means of supporting the learning needs of hadith and then solving the students' learning needs. Acceptance of the use of m-learning as support in learning is measured using questionnaires based on UTAUT2. Technology acceptance analysis has been done by using descriptive statistics through SPSS software. The second phase is the stage of design and development of the m-

learning hadith model. The design and development phase involves the application of Nominal Group Technique (NGT) and Interpretive Structural Modeling (ISM) approaches. Both of these approaches need the identification of experts with expertise relevant to the research setting, and it is necessary to discuss the items for each study element and then construct an m-learning hadith model through voting using the Concept Star software.