

CHAPTER 6

DISCUSSION, RECOMMENDATIONS AND CONCLUSION

6.1 Introduction

This chapter presents the overview of the research findings to address the research questions. It starts with a summary of the research. The findings of the study were found to further explain the implications of the study on the domain of Quran. This study has found answers to research questions related to the development and evaluation of the application of semiotic icon for Quran in Quranic domain through discussion of research findings. The chapter concludes the research journey and opens a new path for future research.

6.2 Summary of Research

This research is a study that combines general application technology and general icon design techniques with the Quranic domain. Limited study on icon design had been conducted on the domain of Quran. Therefore, this study proposed a SIDQ framework for the development of application based on Peirce's theory of semiotics (1931-1958) (Chandler 2007), ADDIE development model (McGriff, 2000), ARCS motivational design model (Keller, 2000), Prototyping model (Sommerville,

2016), and fidelity prototype (Cao & Kamil, 2015), PACMAD usability model (Harrison et al., 2013) and Technology Acceptance Model (TAM). The aim of this research was to propose the Semiotic Icon Design for Motivating Youth in Reciting Quran (SIDQ) as a supportive tool to visualize the genre of Surah that can assist in motivating youth in reciting the Quran. This study introduced an alternative technique in reciting Quran using icon. Further, Semiotic Icon Design Application (SIDAQ) was developed to contribute to the discovery and development as a supportive tool that can create a new impact on motivating youth in reciting Quran. Four research objectives were outlined in this research, namely: to identify semiotic icon design elements for reciting Quran, to design fidelity of semiotic icon design for motivating in reciting Quran, to develop a prototype of semiotic icon design application for motivating youth in reciting Quran, and to evaluate the icon design, usability, motivation, and acceptance of Semiotic Icon Design Application for reciting Quran (SIDAQ).

To answer research questions in this study, the research employed the design and developmental research (DDR) approach integrated with the ADDIE instructional model. Three (3) phases are involved, namely needs analysis, design and development and evaluation phase. The ADDIE five stages are analysis, design, development, implementation, and evaluation. The prototyping model technique was also being used throughout the five (5) stages.

The phase one, needs analysis phase, focused on the literature review and preliminary study on the need of the study. The preliminary study was performed to identify the need of the youth to have a supportive tool to motivate them in reciting Quran as revealed in the findings of phase one. The comparative study icon design for mobile application was performed to identify the appropriate icon design elements for the mobile application. Six suitable icon design elements were selected for this Quran

study. The design elements are: recognizable, simple, color, semantic, familiarity, and consistency. Apart from that, the gap analysis on icon design for mobile application was also being performed to identify the gap in the icon design studies to support the proposed icon design elements. The outcomes from this phase produced a proposed six (6) icon design elements for mobile application that guides the icon design for Quran and in phase two.

The phase two, design and development phase, focused on design of the SIDQ by employing the proposed six (6) icon design elements (recognizable, simple, color, semantic, familiarity, and consistency) and the element of motivational design from the ARCS Motivational Design Model (attention, relevance, confidence, satisfaction) using fidelity technique (low-fidelity, medium-fidelity, and high-fidelity) in prototyping. There was an icon survey with youth respondents and validation of icon design with experts in Quran and youth from Quranic academic background. The output of this design stage was the fidelity of semiotic icon design for reciting Quran. The results of the survey and validation showed consensual agreement on the suitability of semiotic icon design.

In the development stage, prototype of Semiotic Icon Design Application for reciting Quran (SIDAQ) was developed as a mobile application in Android platform. This application was subsequently tested and evaluated in phase three. The evaluation was conducted with the youth respondents and experts in IT to evaluate the application in the aspect of icon design, usability, motivation, and acceptance. The result of the evaluation showed positive feedback from the experts and youth as the end user. This indicated that the SIDQ and SIDAQ were suitable to be used in motivating youth in reciting Quran. Based on the proposed research, this study found that the application was very much accepted by the respondents and experts. Further, the findings of the

study do have implications for youth to motivate practice in reciting Quran, as discussed in the following section.

6.3 Research Findings

Based on four (4) research objectives (RO) and eight (8) research questions (RQ) outlined in Chapter 1, the next section presents the discussion on outputs of this study.

6.3.1 Identify Appropriate Semiotic Icon Design Elements for Reciting Quran

RO1- To identify appropriate semiotic icon design elements for reciting Quran.

RQ1 - What are the appropriate semiotic icon design elements for reciting Quran?

The output of first research objective was achieved in phase 1, needs analysis and stage 1 of ADDIE, Analysis. The first research objective is to identify appropriate semiotic icon design elements for mobile application through the systematic literature review and comparative study. This study found forty-two (42) elements of icon design and ranked the ten (10) common icon design elements for mobile application as discussed in Chapter 2. The initial six (6) most suitable icon design elements were selected to be applied in this study namely recognizable, simple, color, familiarity, semantic and consistency as illustrated in Figure 6.1. These six initial icon design elements were validated and accepted by the three Information Technology (IT) experts, who verified that they are appropriate for used in Quranic field. The explanation on the proposed six icon design elements is summarized in Table 6.1.

In addition, a semiotic analysis of icon design elements has also been done in Chapter 2 for mapping the selected six icon design elements with three main elements of triadic Peirce's theory of semiotics (1931-1958) (object, representation, and interpretation) (Chandler, 2007).

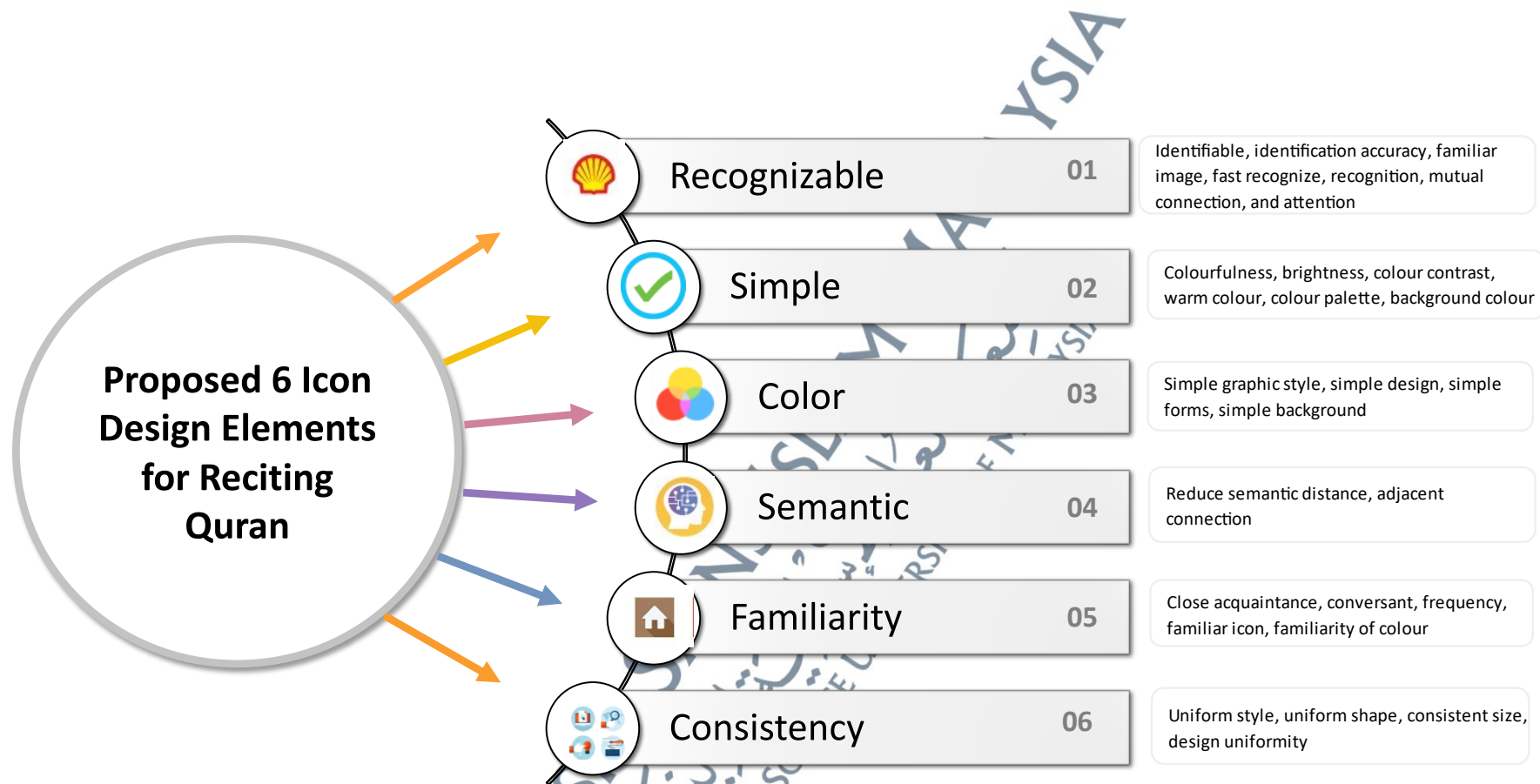


Figure 6.1: Icon Design Elements SIDQ – Research Output (RO1, RQ1)

Figure 6.1 illustrated the proposed six icon design elements for reciting Quran that concerned with icon meaning namely recognizable, simple, color, semantic, familiarity and consistency. These six icon design elements have successfully been applied in designing the semiotic icon design for reciting Quran to facilitate visualising the genre of Surah that can motivate youth in reciting Quran. Table 6.1 summarized the proposed six icon design elements for reciting Quran.

Table 6.1: Summary of Proposed Six Icon Design Elements for SIDQ

Icon Design Elements	Summary
Recognizable	Recognizable is the ability to be identified from previous knowledge. This element emphasized on the icon as identifiable, identification of accuracy, using familiar image, fast recognition, mutual connection, and attention of the icon. This study focused on the identifiable aspect of icon using the familiar image in the icon.
Color	Color is a property owned by object in producing diverse perceptions on eye that returns or produces light. This element focused on colourfulness, brightness, color contrast, warm color, color palette and background color of the icon. This study employed three colors in the icon design by emphasizing on the brightness and warm color to attract users.
Simple	Simple means straightforward and easily implicit. This element focused on simple graphic style, simple design, simple forms, simple background. This study employed simple icon design and simple graphic style.
Semantic	Semantic is related to meaning in language or logic. This element reduces the semantic distance to have close connection to the meaning. This study employed the low semantic distance to ensure close connection of the icon to the meaning.
Familiarity	Familiarity is the close acquaintance with something. The elements focused on close acquaintance, conversant, frequency, familiar icon, familiarity of color. This study employed the frequent seen icon image and familiar color in the icon design.
Consistency	Consistency means the way in which a substance holds together. The elements focused on uniform style, uniform shape, consistent size, design uniformity. This study maintains the consistency of icon design through the uniform of simple and flat icon style with round shape icon.

Based on the output of the first research objective, the proposed six icon design elements for reciting Quran were in line with the scholars stated that it is crucial to focus on the icon elements related to meaning to ensure the icon is recognizable, low semantic distance (Ghayas, 2019; Yang, 2015; Zender & Meija, 2013), familiarity (Ghayas, 2019), maintain simplicity, consistency (Zender & Meija, 2013), and color of the icon (Guo, 2016). This finding had addressed the first objective of this study on what are the

appropriate semiotic icon design elements for reciting the Quran are and successfully answered the first research question. These proposed six icon design elements are suitable for this study and are also generic and can be adapted for other studies in other domains of knowledge.

6.3.2 Fidelity Semiotic Icon Design for Motivating in Reciting Quran (SIDQ).

RO2 – To design fidelity semiotic icon design for motivating in reciting Quran

RQ2 - How to design fidelity of semiotic icon design for motivating in reciting Quran?

RQ3 – How to validate fidelity semiotic icon for motivating in reciting Quran?

The output of the second research objective was achieved in phase 2, design and development and stage 2 ADDIE, Design. The output of second objective is to design the fidelity of semiotic icon for motivating in reciting Quran. In this research, the icons were designed based on six icon design elements identified in phase 1 which are: recognizable, semantic, simple, color, familiarity and consistency integrated with the ARCS model of motivational design to embed the four motivational elements (attention, relevance, confidence and satisfaction) into the design. This icon was designed using fidelity design technique in prototyping. The semiotic icon design was designed based on process flow for fidelity semiotic icon as discussed in Figure 3.6 in chapter 3 and findings in Chapter 4. The seven (7) steps in semiotic icon design are: identify Surah genre, identify icon design elements, illustrate icon, digital icon design, preliminary study (icon survey), proposed final icon design and validate icon design.

In the first step (1) the Surah genre and three Surah samples were identified by referring to three experts in Quran. (2) The systematic literature review and comparative study were performed to identify the suitable semiotic icon design elements for reciting Quran. Next, (3) the low fidelity semiotic icons were illustrated through sketching two

sample icons using paper sheet to visualize the genre of three Surah samples studied, namely Surah An-Nur, Al-Hujurat and As-Saff (see Appendix 4). (4) The medium fidelity of semiotic icon (two digital icon designs) was then designed using Adobe Photoshop software (see Appendix 4). (5) The preliminary study (icon survey) was performed on 113 youth using the two digital icons to determine the youth preference for icon suitability for reciting Quran (see Appendix 2). (6) The selected digital icon was improvised and redesigned as the high-fidelity semiotic icon (final digital icon) (see Appendix 4).

Lastly, (7) the semiotic icon design was then validated by the three experts in Quran for content validation using questionnaire form. There was also validation by youth on the icon design that involved thirty-seven (37) youth from the Quranic background. The results from the expert and youth validation were analysed through descriptive analysis using SPSS 26.0 and reported in Chapter 4.

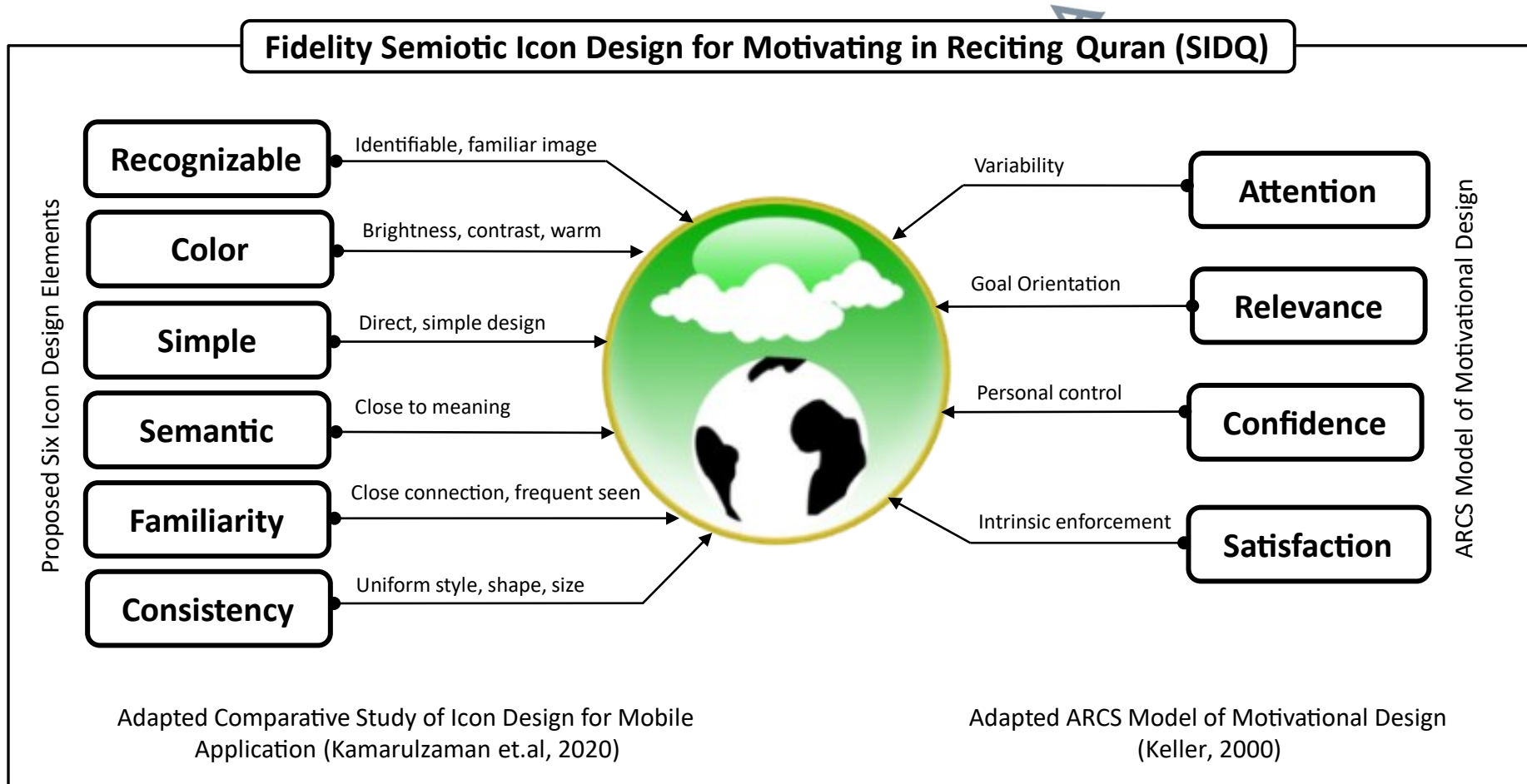


Figure 6.2: Fidelity of SIDQ – Research Output (RO2, RQ2-3)

Figure 6.2 illustrates the fidelity of semiotic icon design for motivating in reciting Quran as the output of the second research objective that successfully answered the second and third research questions. The icon illustration is based on the proposed six (6) icon design elements namely: recognizable (focused on the identifiable aspect of icon using familiar image); color (employed on the brightness and warm color to attract users), simple (focused on direct and simple icon design); semantic (employed the low semantic distance to ensure close connection of the icon to the meaning); familiarity (employed the frequent seen icon image and familiar color in icon design) and consistency (maintains the uniform style, shape, and size of icon through flat icon style and round shape icon).

The four (4) elements of ARCS Model of Motivational Design embedded in icon design are: attention (variability to get intention, need to use different ways of reciting method); relevant (goal orientation by giving the usefulness of the topic for youth to get interest to learn or use); confidence (personal control where learner need to get control over their learning process so that they can feel their success does not totally depend on external factors. Instead, they have internal factor affecting their success); satisfaction (intrinsic reinforcement by encouraging intrinsic enjoyment of learning experience so that the youth have fun, continue the learning process without expecting reward or other kind of external motivational elements).

Based on the findings of the second research objective, fidelity semiotic icon design for motivating in reciting Quran was in line with the scholars stated that using visual icon can visualise the object, representation and interpretation meaning (Chandler, 2007), proper icon design improves comprehension of the icon (Batista et al., 2019; Landa, 2014; Yang, 2015; Zender & Meija, 2013), and fidelity help to enable early visualization of the alternative design solution (Cao & Kamil, 2015; Mcelroy,

2017; Zezovski & Hultgren, 2016; Merdeyen et al., 2014). In terms of motivational design, when the users feel good about the outcomes, they felt motivated (Keller, 2000, Ying & Yang, 2013, Faryadi, 2012). This finding further addressed and answered the second research question of this study on how to design the semiotic icon design for reciting the Quran and how to validate the semiotic icon design for reciting the Quran.

6.3.3 Prototype of Semiotic Icon Design Application for motivating in reciting Quran

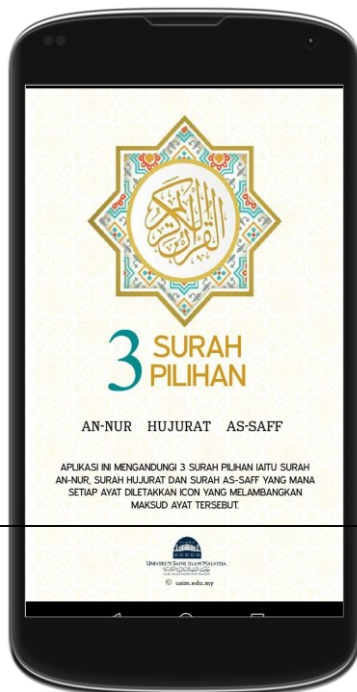
RO3 – How to develop a prototype of semiotic icon design application for motivating youth in reciting Quran?

RQ4: How to design the prototype of the semiotic icon design application for motivating youth in reciting Quran?

RQ5 – How to develop the semiotic icon design application for motivating youth in reciting Quran?

The output of third research objective was achieved in phase 3 and stage 3 ADDIE, Development. The output of third objective is to develop the prototype of Semiotic Icon Design Application for Reciting Quran (SIDAQ) in Android mobile application platform.

3 Surah Samples



Main page



Main Menu



Surah page



Semiotic Icon, Genre, Summary of Translation

- Genre
- Semiotic Icon
- Summary Translation
- Semiotic Icon

Figure 6.3: SIDAQ – Research Output (RO3, RQ4, RQ5)

Figure 6.3 illustrates the prototype of semiotic icon design application for motivating youth in reciting Quran as the output of the third research objective that successfully answered the fourth and fifth research questions. In this research, the interface design for SIDAQ was designed based on prototyping technique in the Prototyping model (Sommerville, 2016). First, the flow of the semiotic icon design application interface design was determined that consisted of main page, main menu page and Surah page of the application. Second, the storyboard for the interface of the semiotic icon design application prototype was designed (see Appendix 3). The twenty-three-screen layout for interface design of prototype were sketched and designed using PowerPoint. The SIDAQ interface was then developed using Adobe Flash software as discussed in Chapter 4. This application consisted of twenty-eight (28) Semiotic icon designs for reciting Quran (SIDQ) for three (3) Surah samples from stage 2 ADDIE, Design.

Based on the findings of the third research objective, the prototype of semiotic icon design application for motivating youth in reciting the Quran was in line with the scholars stated that prototype was developed for the experiment to check the feasibility of the proposed design (Sommerville, 2016). This also to get the actual feel with functionality (Jordaan et al., 2017). The draft version is to explore the idea, concept before investing and developing (Cao & Kamil, 2015; Mcelroy, 2017). This finding further addressed and answered the fourth research question of this study on how to design the semiotic icon design application for motivating youth in reciting Quran and the fifth research question on how to develop the semiotic icon design for motivating in reciting Quran.

6.3.4 Evaluation on Icon Design, Usability, Motivation and Acceptance of Semiotic Icon Design Application for Motivating Youth in Reciting Quran (SIDAQ)

RO4 – To evaluate the icon design, usability, motivation, and acceptance of Semiotic Icon Design Application for reciting Quran (SIDAQ) using PACMAD Usability model, ARCS Model of Motivational Design and Technology Acceptance Model (TAM).

RQ6 – What are the responses on the icon design, usability, motivation, and acceptance of Semiotic Icon Design Application for Motivating Youth in Reciting Quran (SIDAQ)?

RQ7 – Does the semiotic icon design element influence youth's motivation in reciting Quran?

RQ8 – Does the acceptance of Semiotic Icon Design Application for Reciting Quran (SIDAQ) influence youth's motivation in reciting Quran?

The evaluation generally reviewed the application from the aspect of usability, motivation, and acceptance of the application. The output of the fourth objective is the responses on the icon design, usability, motivation, and acceptance of semiotic icon design application for motivating youth in reciting Quran (SIDAQ). The questionnaire was developed based on the icon design, usability and motivation and acceptance evaluation elements in accordance with the needs and requirements of this study. Two hypotheses have been developed and tested to prove the seventh and eighth research question for this study.

Following Table 6.2 summarized the responses on the icon design, usability, motivation, and acceptance of Semiotic Icon Design Application for Motivating Youth in Reciting Quran (SIDAQ). It summarized the answer to the sixth research questions

for the semiotic icon design application for Quran. The elements for icon design, usability, motivation, and acceptance of application receive positive responses and feedback that are beneficial for further improvements.

Table 6.2: Evaluation on Icon Design, Usability, Motivation, Acceptance

Evaluation	Findings
Icon Design	The suitability of the fidelity semiotic icon design that focused on the icon design elements of recognizable, simple, color, semantic, familiarity and consistency that can assist youth in visualizing the Surah genre thus motivate youth in reciting Quran.
Usability	The usability of the semiotic icon design application through the aspects of satisfaction and effectiveness to fulfil the youth satisfaction and the effectiveness of the application to them.
Motivation	Fulfil the motivation aspect of the semiotic icon design application that focused on the aspect of attention, relevance, confidence, and satisfaction to motivate youth in reciting Quran.
Acceptance	Fulfil the acceptance of the semiotic icon design application that focused on perceived ease of use and perceived usefulness of semiotic icon design applications in the field of Quranic Studies.

To summarize the answer to the seventh research question for the semiotic icon design application for Quran, the hypothesis 1 (H_1) was tested and proven that there is a significant influence between semiotic icon design elements and the youth's motivation in reciting the Quran. The result shows that semiotic icon design element has a positive impact on youth' motivation in reciting Quran. Thus, the hypothesis that there is a significant influence between semiotic icon design elements and the youth's motivation in reciting Quran is accepted in this study.

To summarize the answer to the eighth research question for the semiotic icon design application for Quran, the hypothesis 2 (H_2) was tested and proven that there is a significant influence between acceptance of Semiotic Icon Design Application (SIDAQ) and the youth's motivation in reciting the Quran. The result shows that acceptance of semiotic icon design application has a positive impact on youth' motivation in reciting Quran. Thus, the hypothesis that there is a significant influence between acceptance of semiotic icon design application and youth's motivation in

reciting Quran is accepted. Thus, the hypothesis that there is a significant influence between acceptance of Semiotic Icon Design Application (SIDAQ) and the youth's motivation in reciting the Quran is accepted in this study.

The results of the prototype development in this study have received constructive feedback in the evaluation of semiotic icon design that are significant in improving the icon design and the application to suit end user needs. This finding further addressed and answered the sixth, seventh and eighth research questions of this study on how to develop the semiotic icon design for reciting Quran. The findings show that overall, the respondents strongly agree with the use of semiotic icon design as an alternative approach to visualizing the Surah genre in Quran. This demonstrates the usefulness of SIDAQ as a supportive tool that can assist in understand the overall idea or genre of the Surah in Quran.

This finding demonstrates the high acceptance of the application to be used in the domain of Quran. The results also show that application that use icon design elements have successfully integrated into other disciplines. From the expert interview, experts said that the application is great for reciting Quran. However, some improvements to the icon design were needed to ensure suitability of the icon for Quran domain. Besides, experts emphasized that the application is a recent innovation that incorporates technology in the domain of Quran.

The result from the correlation analysis of hypothesis developed in this study showed that acceptance of semiotic icon design application has a positive impact on youth's motivation in reciting Quran. Thus, the hypothesis that there is a positive relationship between acceptance of semiotic icon design application and youth's motivation in reciting Quran is accepted.

Based on the finding of the fourth research objective, responses on icon design, usability, motivation, and acceptance of the application were in line with the scholars' stated that evaluation was important to measure the outcomes after the learning process (Almomen et al., 2016; Koneru, 2010). The good outcome will motivate the user (Keller, 2000, Ying & Yang, 2013, Faryadi, 2012), and around three (3) to five (5) evaluators can identify about sixty-seven percent 66-67% on usability problem application interface (Nielsen, 1993). Overall, the findings presented that the developed SIDAQ application has successfully applied the technique of semiotic icon design for the Quran domain. Implementation of this technique introduced an invention that will help improve the icon design effectively in line with the era of visual communication with information technology being dominant in today's world. Figure 6.4 summarizes the research output in this study.

	Research Objective (RO)	Research Question (RQ)	Method	Instrument	Output
Need Analysis (Phase 1)	RO1: To identify appropriate semiotic icon design elements for Quran	RQ1: What are the appropriate icon design elements for reciting Quran?	1. Systematic Literature Review (Comparative study) 2. Preliminary Study/Interview (Expert & Youth)	1. Journal 2. Comparative Matrix 3. Interview Question 4. ATLAS.ti 8	1. Comparative Study of Icon Design for app 2. Proposed 6 elements of Icon Design for Quran 3. Needs Analysis 4. Thematic Analysis using Atlas.ti
Design & Development (Phase 2)	RO2: To design the fidelity of semiotic icon design for motivating in reciting Quran RO3: To develop the semiotic icon design application for motivating in reciting Quran	RQ2: How to design fidelity of semiotic icon for motivating in reciting Quran? RQ3: How to validate fidelity of semiotic icon for motivating in reciting Quran? RQ4: How to design semiotic icon design application for motivating in reciting Quran? RQ5: How to develop semiotic icon design application for motivating in reciting Quran?	1. Fidelity icon (Low, Medium, High) 2. Preliminary study/Survey 3. Questionnaires 4. Content Validation 5. Pilot Test 6. Interview (Youth) 7. Validity & Reliability 8. Data Analysis SPSS 26.0	1. Papers, Digital Sheets, Final Digital Sheets 2. Survey form 3. Questionnaire 4. Interview Question 5. SPSS 26.0 6. ATLAS.ti 8	1. A fidelity of Semiotic icon design for reciting Quran (SIDQ) 2. A prototype of semiotic icon design for reciting Quran (SIDAQ) 3. Descriptive Analysis SPSS 26.0 4. Thematic Analysis using Atlas.ti
Evaluation (Phase 3)	RO4: To evaluate on the icon design, usability of application, motivation and acceptance of semiotic icon design application for reciting Quran	RQ6: What are the responses on the icon design, usability, motivation and acceptance of semiotic icon design application for Quran? RQ7: Does the semiotic icon design elements influence youth's motivation in reciting Quran? RQ8: Does the acceptance of Semiotic Icon Design Application for Reciting Quran (SIDAQ) influence youth's motivation in reciting Quran?	1. Experimental Post Method 2. Evaluation (Icon Design, Usability of application, Motivation and Acceptance 3. Interview (youth) 4. Data Analysis SPSS 26.0	1. Questionnaires 2. Interview Question 3. SPSS 26.0 4. ATLAS.ti 8	1. Responses on icon design, usability, motivation and acceptance of application 2. Descriptive analysis and correlation analysis SPSS 26.0 3. Thematic Analysis using Atlas.ti

Figure 6.4: Summary of Research Output

6.4 Research Implication

The Semiotic Icon Design for reciting Quran (SIDQ) is seen as an essential study to be implemented. The development of the domain Quran as a scientific study to the community is something that is limited to be explored. This study becomes one of the pioneering studies in researching the reciting of Quran using icon.

Semiotic Icon Design Application for reciting Quran (SIDAQ) may serve as an effort in visualizing the Quranic information. This SIDQ and SIDAQ were accepted by the respondents as supportive and alternative techniques for visualizing the genre of Surah using semiotic icon that subsequently assist to motivate youth in reciting Quran. This in line with the Peirce's theory of semiotics (1931-1958) (Chandler, 2007) that emphasized on using visual icon to visualize the object, representation and interpretation meaning of the information. This section will discuss the implications of SIDQ and SIDAQ applications on the icon design and Quranic domain. Semiotic icon design techniques give implications in visualizing the information as follows:

6.4.1 Implication of Semiotic Icon Design as a supportive tool and technique in Reciting Quran using icon.

Semiotic icon has the capability to convey the meaning of the information visually to the user. Having the icons to assist in communicating the message for Surah genre was extremely beneficial to youth. The Surah genre was visualized using the semiotic icon to ease the understanding of information that can assist in recognizing the messages of the Quran. The message can be supported by the visual as supportive tools in understanding the genre of Surah. It visualizes the meaning and information behind the verses in the Surah. Reciting Quran will become more interesting and unique with the

visual elements in the Surah. The icon represents the genre of the Surah verses. The youth can visualize and increase their motivation by knowing more about the genre of the Surah.

It is an obligation for us as Muslims to understand the content in the Quran that guides us to practise in our life. Therefore, the semiotic icon can assist in delivering the message. This application benefits the Muslims because it is an alternative technique and supportive tool to visualize the genre that can motivate youth in reciting Quran. Application of semiotic icon design techniques has been proven successfully through application evaluation by respondents. The evaluation showed the expert feedback and youth feedback within terms of general usage and icon design aspects. Experts have given a score of four and five which is the expert's consent to using the application as a means of visualizing the genre in Surah. Meanwhile, students also acknowledge expert statements with mean of 4.34. Although the semiotic icon design technique is new, the youth perceived the semiotic icon design application as following (see detail in Table 5.8):

- Suitable for describing the Quran
- Clearer to visualize the information
- Easy to understand the information
- Quick access to instant information
- Simplify the translation process
- Reciting with icon is more interesting
- Easy compared to conventional application
- Useful alternatives and supportive tool

The semiotic icon design has given implication to youth in motivating them in reciting Quran. The SIDQ had been designed using icon design elements to visualize

the genre of Surah that can assist in understanding the idea or message of the Surah in Quran. Using the icon can ease understanding of the genre in Surah, enable quick access to instant information, simplify the translation of the verse process, make reciting more interesting using visual icon, using the mobile application that can be accessed at anytime and anywhere and it is a useful alternative and supportive tool to assist youth in reciting Quran.

The findings are in line with the views of Ruth et al. (2006) stating that visual use is better than verbal use for students to identify an object and to understand the information. Spence (2014) also acknowledges that visuals are tools for exploitation of human perceptions and visual representations can create internal insights and shape the understanding of the information and knowledge to be conveyed. This finding also shows that the domain of the Quran is a form of knowledge that corresponds to the visual environment. This finding is in line with Jensen and McConchie (2020) that environment influences processes of information acquisition and the environment for optimum acquisition is the visual environment in which 80 percent to 90 percent of the information absorbed by the brain is visual.

6.4.2 Implication of Semiotic Icon Design as a guide and reference for designers and developers

Icon design is among the vital challenges in implementing mobile applications. Appropriate icon designs for mobile applications are essential to improve the meaning of icons to the user. This study had proposed six key elements of icon design for mobile application for reciting Quran that are recognizable, color, simple, semantics, familiarity, and consistency. These proposed elements are beneficial for designing icons for mobile application that can assist designers, developers, and researchers to improve

the icon meaning and user experience. Therefore, it is crucial to manage these elements to ensure icon usability and effectiveness for mobile application. These semiotic icon design elements are applicable to any specific field of study that focus on icon meaning. The proposed elements for icon design can be applied in apps icon design in any field to convey the complex information using icon but may require further mechanism by evaluating through experiments, questionnaires, expert evaluation to examine the suitability of the icon design elements and recognizing the real circumstances related to icon design.

The semiotic icon design application developed can also be used as a reference or guide to parties involved in developing applications or instructional application so that the application developed can meet user needs and at the same time can provide ideas in designing and visualizing content of the information. In addition, this study is also important to meet some of the shortcomings of studies in icon design in the Quranic domain especially in generating and encouraging development of digital content to visualize the information using icon.

6.4.3 Implications of Semiotic Icon Design in Quran Domain

The advances in information technology and mobile technology have provided benefits in the Quranic field. The benefit of semiotic icon can be applied in Quran field thus can bring Quran as parallel to the information technology. Semiotic icon makes reciting Quran more interesting, enable getting the message at a glance and brings the Quranic field to the high level.

In line with the implications of this study as a scientific study on the development of the domain of Quran, this study proposes research on semiotic icon design in the domain of Quran to promote research in the branch of Islamic science in general and

specific research related to the Quran. Studies on using such semiotic icons and mobile applications can shape development of the domain of knowledge in line with the challenges of globalization now and in the future. The development of mobile technology and mobile application can give high impact in communicating information visually. The semiotic icon has been widely used in other fields of study and its successful use for that field gives a solution to the user and assists the community by delivering the information immediately.

The semiotic icon design application is the unique application used in Quran to visualize the meaning or message of the verse in the surah. This is a contribution to the Quranic field that can assist in motivating Quran recitation among young people. This application can be used by others and is not only restricted to youth but can be used by other user groups such as teenagers and adults to motivate them to recite the Quran. Moreover, this research may be beneficial to the Quranic agencies to introduce an alternative technique in reciting Quran using icon. This invention is less explored in Quranic domain and can be expanded further using advances in mobile technology and information technology.

Based on the traditional method, reciting Quran and its translation was in the form of text. While the semiotic icon design approach used visual icon and technological components in mobile application to visualize the genre of the Surah in Quran domain in this study.

6.5 Research Contribution

This study aims at providing some insight into how to design and develop the Semiotic Icon Design with semiotic theory and icon design elements. In doing so, evaluating the icon design, usability of application, motivation and acceptance is

essential. Therefore, the findings of this study offer several contributions, and they are divided into theoretical, practical, methodological, and empirical contribution on how the Semiotic Icon Design (SIDQ) can be used as a supportive tool in reciting Quran.

6.5.1 Theoretical Contribution

Theoretically, SIDQ was designed based on the semiotic approach by theory of semiotics namely Peirce's theory of semiotics including the literature in elements of icon design that was adapted from other fields into the Quranic field. The literature and comparative study theoretically contributed to the body of knowledge in Quranic field pertaining to the icon design. This will enrich the literature review by enhancing the elements in designing the semiotic icon. Besides, there is also a new developed semiotic icon design framework for reciting Quran based on theory of semiotics, icon design elements, ARCS model of motivational design, PACMAD and TAM model.

Methodologically, this study applied the design and developmental research (DDR) Type 1 integrated with ADDIE Model, which explained the systematic process to develop SIDQ and SIDAQ and simultaneously, focusing on the experimental design to test the icon design, usability, motivation, and acceptance of the application to the real respondents. It contributes to framework design for semiotic icon and instructional design (ID), icon design and fidelity prototype of semiotic icons design application and evaluation of usability, motivation, and acceptance of semiotic icon design application for reciting Quran. Overall, it provides contributions on the summative and formative evaluation of Semiotic Icon Design for Reciting Quran (SIDQ) and Semiotic Icon Design Application for Reciting Quran (SIDAQ). Lastly, it can provide a detailed process to develop mobile application throughout the DDR phase that can be used as a guideline by other researchers and developers.

6.5.2 Practical Contribution

Practically, this is the new approach in the research of Quran which focuses on visualizing the Surah genre using icon technique. The prototype Semiotic Icon Design for Reciting Quran will provide an alternative technique in reciting Quran using semiotic icon that can visualize the genre of Surah. This study potentially will provide an alternative tool to promote icon design in the Quranic domain. Indirectly, this application can enrich the reciting media of Surah in Quran using the semiotic icon. In addition, the study will contribute to the field of semiotic icon design and icon design for Quranic domain. This study also can assist the nation on an innovation of semiotic icon for visualizing the Surah genres in reciting Quran as a supportive tool that can assist youth in practising the Quran. Furthermore, it can assist the Quran and Islamic industry for an innovation of semiotic icon for visualizing the genres that can assist in reciting Quran. The output also could produce an application and physical Quran with semiotic icon.

6.5.3 Methodological Contribution

This study contributes to the framework design for semiotic icon and instructional design (ID). This study enriches the method of semiotic icon design by employing six proposed semiotic icon design elements, some elements of the ARCS model of motivational design, prototyping model and fidelity technique, evaluation on proposed six icon design elements, motivation evaluation using ARCS Model of Motivational Design, usability evaluation by People at Centre of Mobile Application (PACMAD) Usability model and acceptance through the Technology Acceptance Model (TAM). This methodological contribution will be a reference for future studies.

6.5.4 Empirical Contribution

Empirically, the study contributes to the feedback on the evaluation on the SIDQ and SIDAQ on the aspect of icon design, usability, motivation, and acceptance of semiotic icon design application for reciting Quran. The evaluation study was beneficial for this study for further improving the application and for future research.

6.6 Recommendations for future research

Future research can take several directions. First, this study has provided the usability, motivation, and acceptance of SIDAQ to motivate in reciting Quran; thus, the testing of the SIDAQ can be extended to the other range of users such as teenagers, muallaf, the disabled, the elderly and other age group of users to examine suitability of the application.

The second direction for future research is to improve on a few icon designs in SIDQ. Some icons may need to be redesigned in terms of representation of icon to deliver the clear meaning to the user. The third direction for future research is to extend the icon design of SIDQ for other Surah in the Quran. This will need more collaboration from the Quran experts and extension of this research.

The fourth direction for future research is to consider the physical form of Quran that focus on reciting Quran using icon technique as a supportive tool in reciting Quran. Hence, in future, SIDQ can be printed as a supportive tool in Mushaf Quran. The fifth direction for future research is to extend the SIDAQ by adding the full translation of verse, audio and tajwid. This will become a complete Quran application.

The sixth direction for future research is SIDAQ can be upgraded using more multimedia elements in design such as Three-Dimensional (3D) icon image, animations and more variation of positive reinforcements and rewards to the user to increase the

motivation in reciting Quran using SIDAQ. This also can increase the interactivity and attractiveness of SIDAQ. Lastly, the seventh direction for future research of SIDAQ is to evaluate the effectiveness of the icon design and icon design application. This will determine effectiveness the icon design application to the end user in more detail.

6.7 Conclusion

As a conclusion, this chapter has presented a summary of the research, discussion of research findings, research contribution as well as recommendations for further research. This study is an attempt to design the Semiotic Icon Design for Reciting Quran (SIDQ), develop Semiotic Icon Design Application for Reciting Quran (SIDAQ), and evaluate the application in the aspect of icon design, usability, motivation, and acceptance of application to motivate youth in reciting Quran. This study subsequently contributes a proposed technique of reciting Quran using the icon and a supportive tool to assist youth in visualizing the genre of Surah that can motivate them to recite the Quran.

For this purpose, a conceptual framework on the SIDQ using the Peirce's theory of semiotics, ARCS Model of Motivational Design and semiotic icon design elements using fidelity semiotic icon and prototyping techniques was proposed. The six proposed elements for a semiotic icon design for reciting Quran that concerned with icon meaning which are recognizable, semantic, simple, color, familiarity and consistent have successfully been applied in designing the semiotic icon to facilitate visualizing the genre of Surah that can motivate in reciting Quran. Considering the results of this study, youth, Quranic agencies, designers, and developers can benefit from these findings, which demonstrated the icon design elements integrated with the ARCS Model of Motivational Design to assist youth motivation in reciting Quran. Therefore, any party

interested in adopting an alternative technique in reciting Quran using icon may explore this field as a researcher.

Based on the arguments in the earlier chapter, it shows that youth have experienced a lack of motivation and awareness in reciting Quran because of several issues highlighted in Chapter 1. Through the implementation of SIDQ and SIDAQ, it is obvious to a certain extent that both have helped to overcome the lack of motivation faced by youth in reciting the Quran and overcoming difficulty in understanding the genre of Surah due to low comprehension in Arabic.

Knowing about the importance of the Quran to our lives, we must encourage not only youth to recite the Quran, but also enable the young to understand the message of the Surah to practice in our life. SIDQ and SIDAQ provides youth with experience in visualizing the genre of Surah using icons, thus motivating them in reciting Quran. This study hopes that youth will be interested in Semiotic Icon Design Application (SIDAQ) and subsequently will contribute to the icon design field and Quranic domain for the future of the nation. This study showed how knowledge of Islam especially for Quran has made it possible to establish a society through a variety of information delivery techniques and to prove the validity of the information that has undoubtedly been presented for centuries. The sophistication of Islamic and IT scholars, with their knowledge and ingenuity, has made an immense contribution to Muslims today.

The researcher believes that visualization of the information in the Quran domain using icons is seen as a study that can be expanded in the future through various aspects and techniques. The results of this study also received positive feedback and suggestions on the semiotic icon design and semiotic icon design applications that can be enhanced in the future. Overall, this semiotic icon design study has contributed to the body of knowledge in the icon design field and icon design in Quranic domain to assist in

information acquisition. This study concludes that the semiotic icon design is the main approach of application development following the semiotic icon design for visualizing the information for the domain of Quran. The semiotic icon can be a supportive tool that can strengthen understanding of Surah genre for youth. The use of visual semiotic icons can improve the communication processes and understanding of the information in the Quran.

