



**JOURNAL OF INFORMATION
SYSTEM AND TECHNOLOGY
MANAGEMENT (JISTM)**

www.jistm.com



AL-QURAN *TADABBUR* APPLICATION FOR SELF-LEARNING

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Article Info:

Article history:

Received date: 23.07.2023

Revised date: 06.08.2023

Accepted date: 30.08.2023

Published date: 15.09.2023

To cite this document:

Ta'a, A., Aziz, N. N. A. A., Ashari, M. S. S. @ H., Ismail, S., & Arif, A. S. C. M. (2023). Al-Quran *Tadabbur* Application For Self-Learning. *Journal of Information System and Technology Management*, 8 (32), 21-35.

DOI: 10.35631/JISTM.832002

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Abstract:

This research aims to create an al-Quran *tadabbur* application named Self-*Tadabbur* to provide a conducive learning environment for learners engaging by themselves to learn about the meaning of verses in al-Quran. This research's significance lies in providing a new platform for learners to learn al-Quran by accessing features such as browsing and searching in different group elements, pairs, blocks, and subblocks of chapters. The *tadabbur* application is developed based on SALaM model, which caters specifically to exploring the al-Quran verses coherences and contributing to the development of Islamic software that facilitates the understanding of learners. The research adopted the Rapid Application Development (RAD) methodology for building the prototype and performing usability testing to evaluate the usability of the application. The evaluation was conducted on 30 randomly selected respondents from the Universiti Utara Malaysia (UUM) community. The results have shown that the *tadabbur* application was well-assisted by users to understand the meaning of al-Quran verses.

Keywords:

Islamic Software, Self-Learning, Al-Quran Model, RAD, Usability Testing

Introduction

The al-Quran, revered as the holy scripture in Islam, holds profound significance for Muslims worldwide. It is considered a divine gift from Allah to human being as a whole, revealed through the beloved prophet Muhammad SAW, offering guidance and wisdom to govern human life. Understanding the al-Quran is not only a religious obligation but also an intellectual and spiritual journey that requires devout readers to delve deep into its teachings and apply them in their daily lives. This process, known as *tadabbur* involves comprehending the content of the al-Quran and internalizing its directives and commands. Muslims are challenged by Allah to read al-Quran and get into a real reflection of its contents so as to render it the ultimate guide in life. Reading and reflecting on the essence of the al-Quran is a fundamental requirement for every Muslim as echoed by many verses in al-Quran (23:68, 38:29, 4:82) among others:

أَفَلَا يَتَدَبَّرُونَ الْقُرْآنَ أَمْ عَلَى قُلُوبٍ أَقْفَالُهَا

Then, do they not give serious thought (*tadabbur*) to the Qur'ān, or do they have locks on their hearts? (al-Quran 47:24)

To facilitate the process of *tadabbur* and enhance the learning experience, the development of a user-friendly digital platform, becomes paramount. This paper aims to present the objectives, scope, and significance of *tadabbur* in fostering a conducive environment for al-Quran readers, with a particular focus on enhancing reading comprehension skills and promoting deep understanding.

The primary objective of *tadabbur* is to create a digital platform that offers a conducive learning environment for learners seeking to engage in self-study of the al-Quran. By providing a user-friendly interface, the *tadabbur* application aims to empower users, particularly the academic community (i.e., staff and students), with the necessary tools to explore the content of the al-Quran and enhance their reading comprehension skills. Moreover, the *tadabbur* application strives to facilitate a deeper understanding of the Quranic teachings by encouraging learners to reflect on their meanings and relevance to real-life situations. Through interactive features and thought-provoking exercises, this platform seeks to foster contemplation and introspection, allowing learners to develop a comprehensive understanding of the al-Quran and its practical applications. The utilization of the *tadabbur* application encompasses UUM academic staff and students as the primary target audience. However, outsiders, such as public learners, are also granted access to this application, recognizing the importance of wider community engagement in Quranic education.

By introducing the *tadabbur* application, this research aims to shed light on the importance of comprehending the content of the al-Quran and the role of information technology (IT) in facilitating Quranic learning effectively. Through this application, learners can embark on a transformative journey of self-learning, reflecting on the teachings of the al-Quran and applying them in their lives. The *tadabbur* application was structured into five levels, ranging from groupings of chapters, pairing of chapters, and blocking of chapters toward specific verses, with an initial focus on the al-Baqarah chapter. This will serve as a testament to enduring the relevance of the al-Quran and its potential to guide individuals toward a more enlightened and fulfilling existence.)

Literature Review

The primary way a Muslim engages with the al-Quran is through the act of reading, known as *qara'a*. However, reading for comprehension can be challenging, especially when encountering an unfamiliar text like the al-Quran. The reason for this difficulty lies in the fact that comprehension goes beyond simply understanding the words; it involves grasping the ideas presented and the connections between them. While someone may be able to read the Quranic text and comprehend the translated words through a translation, they may still struggle to fully grasp the profound meaning of the verses, the grouping of verses, and ultimately, the entire chapter of the al-Quran. Reading and comprehending a piece of text involve various elements, as succinctly expressed by Graesser A. C. [1, pp. 3-4].

“words contain graphemes, phonemes, and morphemes. Sentences have syntactic composition, propositions, and stylistic features. Deep comprehension of the sentences requires the construction of referents of nouns, a discourse focus, presuppositions, and plausible inferences. The reader needs to distinguish given versus new information in the text and implicitly acknowledge what is shared among most readers in a community (called the common ground). At more global levels, the reader needs to identify the genre, rhetorical structure, plot, and perspective of different characters, narrator, theme, story point, and sometimes the attitude of the author.”

Various techniques and methods have been developed by experts and trainers in the field of reading to tackle the complexities of comprehension. These strategies, known as reading comprehension strategies, involve cognitive or behavioral actions aimed at enhancing different aspects of comprehension [1, p. 6]. The choice of which strategy to implement depends on the specific model or theory used to explain the process of reading comprehension. For this particular *tadabbur* application development, we have opted to adopt the SALaM model (Ta'a, Ashari, Ismail, & Arif, 2018; Ashari, Ta'a, Ismail, & Arif, 2023), which was developed from two well-established models of reading comprehension: i) the Construction-Integration model (CI model) (Wharton, & Kintsch, 1991), and ii) the Constructionist Theory (Graesser, Singer, & Trabasso, 1994).

Reading involves both cognitive and behavioral actions. When deep comprehension of a text is required, the task becomes more complex as it involves making inferences, connecting ideas coherently, critically evaluating the validity of claims, and sometimes understanding the motives of the authors. In such cases, readers may experience difficulties and require strategies to continue reading. Numerous studies have shown that the implementation of reading strategies improves comprehension, making it an essential component for both skilled and unskilled readers (Graesser, 2007). Successful readers are characterized by their effective utilization of reading strategies. They are proactive learners who actively construct coherent mental representations of the material they read (Wharton, & Kintsch, 1991). In contrast, struggling readers are passive learners who fail to monitor or reflect on their reading strategies while they read (Torgesen, 1982).

The 4-Pronged Comprehension Strategy framework McNamara, Ozuru, Best, & O' Reilly (2007), which is heavily influenced by the CI model, is one way **how** reading strategies are implemented. Different reading comprehension efforts were marketed by various groups under various titles. Certain tactics worked better with one type of text than another. For example, the Hi 5! strategies are designed specifically to help students understand expository texts. The

Read Naturally method is applied to two distinct sets of text types: explanatory and narrative texts (Naturally, 2023). The reading comprehension theory on which a reading strategy is built is important. Each reading approach is thus put into practice using a platform that is dependent on a particular reading comprehension theory. Text comprehension and the integration of prior knowledge are two of the many complicated cognitive processes in reading comprehension. In order to decode a text, integrate the surface text they read with background knowledge, execute deep comprehension, and engage in critical thinking about the text they are reading, a reader must be skilled and aware of the reading comprehension process involved.

It would be necessary for a reading comprehension platform to be able to support the conditions of the theory it is founded on before it could be put into use. Every reading comprehension theory shares the need for the textuality of the concerned text as a basic prerequisite. What qualities should a perfect text have in order to aid in text comprehension? It is the fundamental issue posed in relation to textuality. In the case of the al-Quran, the textuality model will assist in developing crucially important coherence schemata of the content of the al-Quran on which all other elements, such as reading comprehension theories and reading techniques, can function. Al-Quran readers will reach a new level of reading proficiency through reading comprehension, going beyond the simple act of reading words on the page. In the literature, researchers began to propose al-Quran applications or systems that assist users in their self-learning of the content of al-Quran as summarized in Table 1. Interestingly, most of the applications (or systems) do provide text and translation of the al-Quran, which can be found on the internet or mobile apps. Several of them provide interpretations of various languages like Quran Bahasa Melayu, Al-Quran Perkata dan Tafsir, and Al-Quran (Tafsir & By Word).

Table 1: List of the Apps for Assist Learners in their Self-Learning

| Related Studies | Description |
|-------------------------|---|
| Tadabbur e-Quran Tafsir | <i>Tadabbur</i> e-Quran Tafsir provides users a function where user can bookmark the verse, can easily switch to dark mode, night mode, and default mode, and easily select the font's size for the Quran words and its translation. The review lacks a specific focus on <i>tadabbur</i> al-Quran and fails to address the unique requirements of self-study and deep comprehension. |
| Quranic Apps | Quranic Apps provides users a basis for understanding the existing landscape. It does not delve into the specific aspects of <i>tadabbur</i> al-Quran or focus on the development of critical thinking and understanding. |
| Quran Tadabbur | Quran Tadabbur features 4 kind of interpretations which are as-Sa'di interpretation, al-Muyassar interpretation, Ibnu Katsir interpretation and at-Taysir by Ustaz Firanda Andirja. It does not explicitly address the aspect of <i>tadabbur</i> al-Quran or cater to the unique needs of readers seeking comprehensive understanding. |

Although many apps are available in the App Store and Google Play Store, there is an opportunity to improve the overall process of self-learning the content of al-Quran; thus, bridging the existing gap presence in consumer science research. Overall, while existing literature and research papers provide valuable insights into Quranic learning applications and approaches, there is a clear gap when it comes to addressing *tadabbur* al-Quran

comprehensively. The project aims to fill this gap by developing a user-friendly digital platform that focuses on enhancing reading comprehension skills, facilitating deep understanding, and promoting contemplation and reflection. It strives to integrate technology seamlessly into the process of *tadabbur*, offering a transformative learning experience for al-Quran readers.)

Methodology

This research used Rapid Application Development (RAD) methodology (Bakar, & Ta' a, 2014) to carry out the software development derived from the SALaM model, which are requirement analysis, process and interface design, database structure, input and output mechanism, and other elements of agile software requirements. This paper focuses on the development of *tadabbur* application using six major phases - planning, requirements specification gathering, designing, prototyping, evaluating, and developing a comprehensive software application using a systematic and rigorous approach. The process of methodology is illustrated in Figure 1.

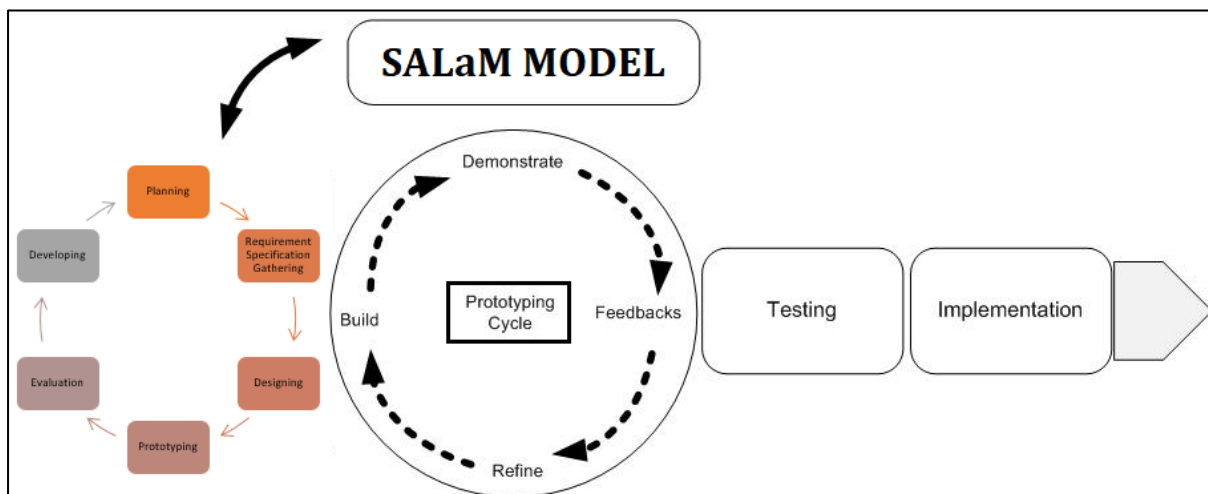


Figure 1: Six Major Phases in Methodology

This section elaborates on the methodology, outlining each process and its corresponding activities while referencing relevant literature and best practices. During the project planning phase, the topic will be researched. This includes the background of the topic, previous works done by other researchers, problem statement, research objectives, project scope and significance, methodology to be used in this research and the project schedule.

SALaM Model

The SALaM model, heavily utilizing the Islahi's Nazm principles in tafsir (Abdullah, 2012) basically incorporated the coherence structure model of al-Quran's content with textual reading strategies aimed at creating coherence views in understanding al-Quran's content (Naturally, 2023). The SALaM model basically provides a conducive platform for readers to implement the reading comprehension strategies to achieve comprehension of the content of al-Quran as a result. The SALaM model has embedded number of interventions to support users' application of the reading strategies in their *tadabbur*.

During Specification Gathering phase, the necessary requirements for the *tadabbur* specification will be gathered from the SALaM model as shown in Figure 2. SALaM model consisted of three main components: the coherence model (the seven layers), the reading

comprehension strategies, and the reading strategy interventions. This phase's deliverable is a list of functional and non-functional requirements for the proposed system. These requirements are then documented and represented visually using Unified Modeling Language (UML) diagrams (Semenova, Tynchenko, Chashchina, Suetin, & Stashkevich, 2022), which include use cases, activities, and class diagrams. The utilization of UML diagrams for presenting software requirements is a commonly employed practice, as observed in the works of (Adediran, & Al Bazi, 2018; Hussain, Mutalib, & Yasin, 2014).

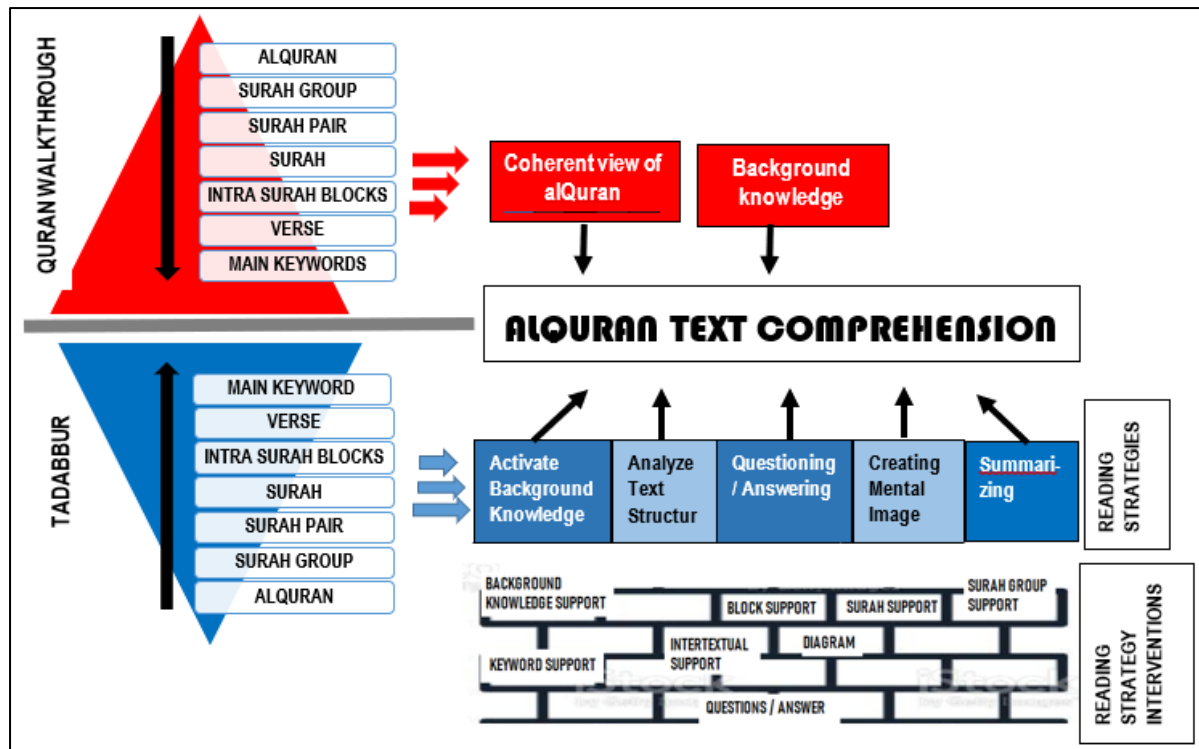


Figure 2: SALaM Model

Prototyping application is developed concurrently with the user interface design using Figma¹. Figma is a cloud-based design tool with functionality and features similar to Sketch², but with significant differences that make Figma much better. Figma allows designers to create their preferred buttons, navigation, menu, and other things from scratch. All functions specified in the requirement specification will be included. For the developing phase, the programming tool used was Laragon as a portable, isolated, fast, and powerful universal development environment for building web-based software. The Laragon provides Apache web server, MySQL database, PHP, all are included in a single package. Finally, an evaluation is conducted to measure the usability of the application. The detailed implementation of the development process is explained in the following sections.

Analysis and Design

This section is divided into two subsections, the requirements analysis of *tadabbur* application and the development of *tadabbur* prototype – which is a web-based application used to demonstrate the functionalities of the application. The requirements analysis process was

¹ <https://www.figma.com/>

² <https://www.sketch.com/>

carried out using two methods including interviewing learners and analyzing documents and apps from the Internet and mobile related to *tadabbur* application. The interview was conducted online using a Google form and face-to-face with the learners, selected randomly among the staff and students from UUM. Once participants were identified and agreed to participate in the evaluation, the purpose of the research and given any necessary background information about the application will be explained to them. Clear instructions were given on how to proceed with the assessment. The participants were given a questionnaire via Google form. The questionnaire included multiple sections related to demographic information, usefulness, ease of use and efficiency, satisfaction, and feedback. The participants were asked to complete the questionnaire by answering the evaluation items for each section. They were instructed to indicate their level of agreement or disagreement with the given statement using the response options provided, such as *strongly agree*, *agree*, *neutral*, *disagree*, or *strongly disagree* based on Likert scale measurement (Newson, 2021). After participants completed the questionnaire, the collected data were recorded for further analysis. The data shall include participant demographic information, as well as their responses to assessment items. The collected data is analyzed to gain meaningful insights and draw conclusions. Statistical techniques are utilized to interpret the meaning of data. Analysis of the collected data leads to the generation of decisions and findings on various aspects of the application. These results, such as the number of participants agreeing or disagreeing with certain statements, are then summarized, and presented in the form of prepared survey results. Table 2 lists five significant requirements (and their priority) produced from the requirements gathering process. The requirements include Register User, Login User, Browse Content, and Update Data.

Table 2. List of Requirement of *Tadabbur* application

| ID | Requirement Description | Priority |
|----------|--|----------|
| 1 | Register User | |
| 1.1 | User shall enter the registration details like name, email, and username, and password. | High |
| 1.2 | The user must click on the 'Submit' button | High |
| 1.3 | The system shall notify the User that the account has been created. | High |
| 2 | Login User | |
| 2.1 | User and admin shall login to the system by entering the valid username and password | High |
| 2.2 | System can verify for valid or invalid username and password | Medium |
| 2.3 | User and admin can request new password via email if they forgot | Optional |
| 3 | Browse Content | |
| 3.1 | System allow users to browse the group pairs, chapter pairs, block of chapter, and number of verses. | High |
| 3.2 | System allow users to search for al-Quran contents by group pairs, chapter pairs, block of chapter, and number of verses | High |
| 4 | Update Data | |

| | | |
|-----|--|----------|
| 4.1 | Admin must add group pairs, chapter pairs, block of chapter, and number of verses | High |
| 4.2 | Admin can also edit the group pairs, chapter pairs, block of chapter, and number of verses | Optional |
| 4.3 | Admin can also delete the group pairs, chapter pairs, block of chapter, and number of verses | Optional |
| 4.4 | Admin can also query the group pairs, chapter pairs, block of chapter, and number of verses | Optional |
| 4.5 | The system will be able to verify the completion of updated data. | Optional |

The requirements presented in Table 2 were translated into the computer system functionality. The next process is visualizing and modeling the requirements of the application using the appropriate modeling method and tools. In this work, the Unified Modelling Language (UML) was used to visualize and model the requirements. The models used in this work are two behavioral diagrams namely use case and activity diagrams, and a class diagram that represents the database of the application. The diagrams were drawn using VioletUML³ as shown in Figure 3. The figure illustrates the use case diagram and the communications between the use cases and the actor for *tadabbur* application. Five major use cases are Login User, Register User, Register User, Update Data, Search, and Browse Content.

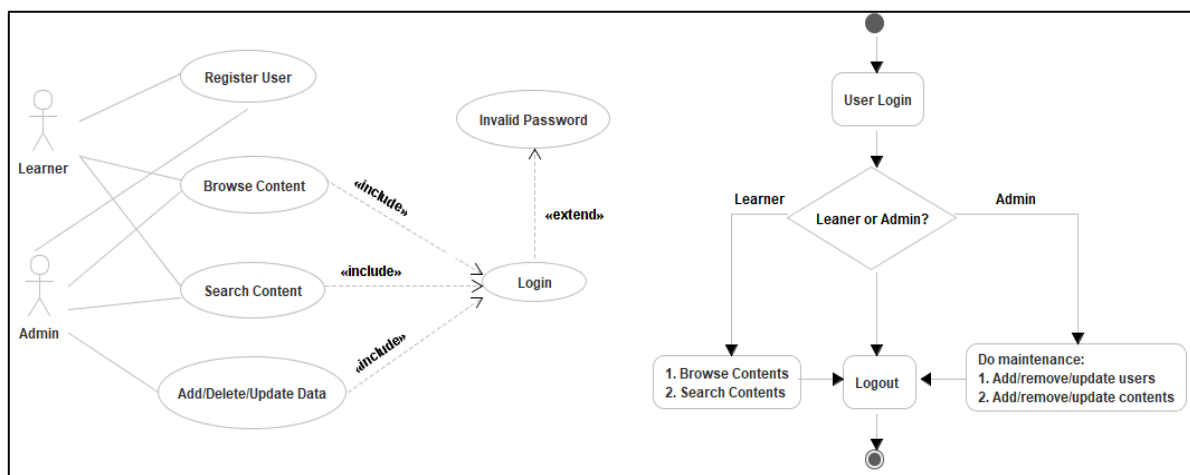


Figure 3: The Use Case and Activity Diagram

The use case diagram is detailed to show the dynamic behaviour of the application. Use cases share different kinds of relationships between two use cases as a decision of the software developers. For example, a relationship between Admin (actor) with Register User is basically modeling the process of user registration that can be done by the Admin. The reuse of an existing use case by using different types of relationships reduces the overall effort required in developing the *tadabbur* application. Moreover, the structural components of the application for creating and managing *tadabbur* database are defined from the structure relationship

³ <http://alexdp.free.fr/violetumleditor/page.php>

between a group of chapters to the theme, pair, block, and subblock of a chapter as illustrated in Figure 4.

The database schema is designed based on Figure 4 as represented in a class diagram illustrated in Figure 5. The class diagram in Figure 5 shows the attributes and relationships between the classes or tables. Eight main classes (i.e., tables) were identified namely al-Quran, about al-Quran, coherent structure, theme, group, pair, block, and keyword. The interactions between the classes such as one theme containing several coherent verses are illustrated clearly in the diagram.

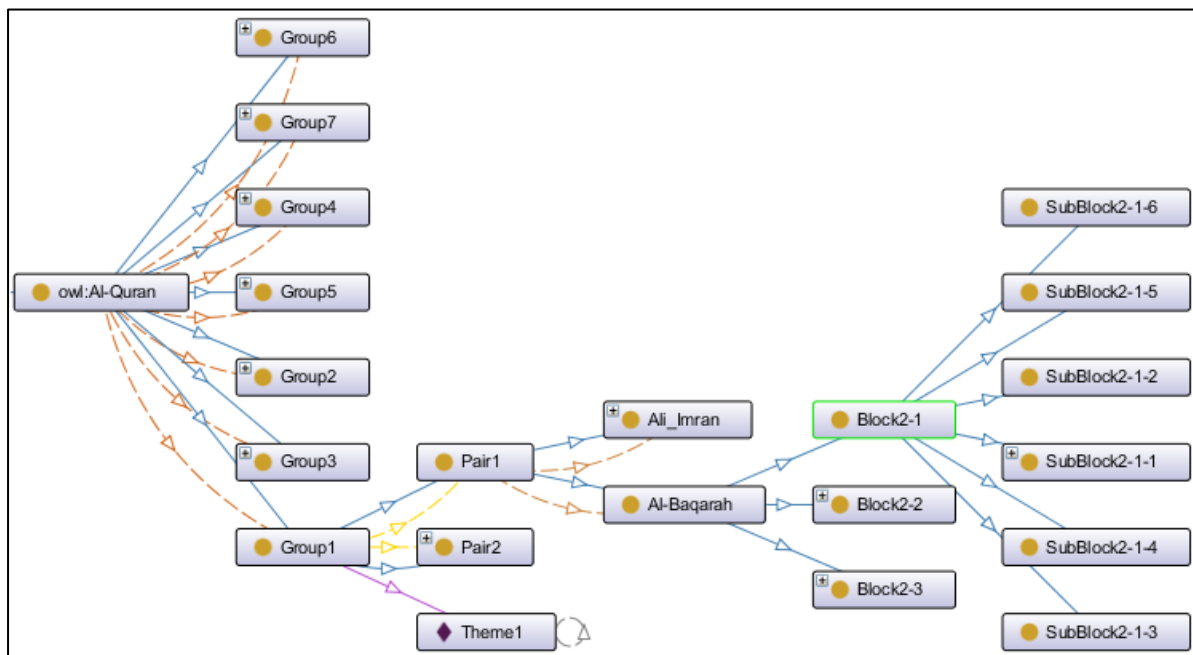


Figure 4: The Structure Relationship of *Tadabbur* Components

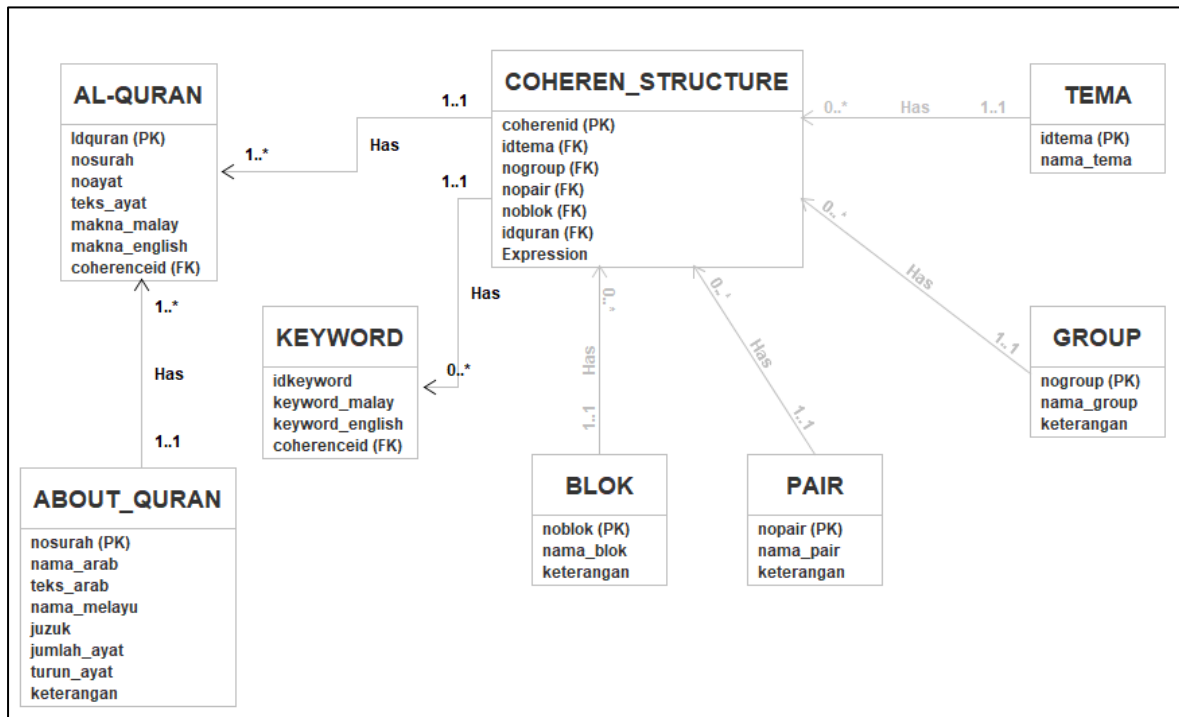


Figure 5: The Class Diagram

Prototype Development

The prototype of *tadabbur* application was developed using PHP and MySQL database in the Laragon framework. The application represents the requirements as explained in the previous subsection. As we know, software prototyping is a standard way of demonstrating the requirements so that further comments and suggestions can be obtained from the users based on their experience in interacting with the prototype. As described in RAD methodology, the process cycle will iterate until user requirements were completed. Screenshots in Figures 6.1, 6.2, and 6.3 show the selected interfaces of *tadabbur* application. Figure 6.1 shows the screen for learner registration in order to allow them access and use the *tadabbur* application anytime, anywhere, and on any device. Figures 6.2 and 6.3 are examples of dashboard screens for the admin to manage the creation of groups, pairs, blocks, and subblocks.

Figure 6.1: The Interface for Registration

| # | Name of Surah | Definition | Juz / Juzuk | Total Ayat | Place of Revelation | Summary | Action |
|---|---------------|------------|-------------|------------|---------------------|---------|--------------------|
| 1 | Al-Fatihah | الحَمْدُ | 1 | 7 | Makkiyyah | | Detail Edit Delete |
| 2 | Al-Baqarah | البقرة | 1-3 | 286 | Madaniyyah | | Detail Edit Delete |

Figure 4.2: The Dashboard for User

| # | Nama Surah | Teks Arab | Maksud | Juzuk | Jumlah Ayat | Di turunkan di | Action |
|---|------------|-----------|--------------|-------|-------------|----------------|--------------------|
| 1 | Al-Fatihah | الحَمْدُ | Pembukaan | 1 | 7 | Makkiyyah | Detail Edit Delete |
| 2 | Al-Baqarah | البقرة | Lembu Betina | 1-3 | 286 | Madaniyyah | Detail Edit Delete |

Figure 6.3: The Interface Chapter Section for Admin

Evaluation

In this task, user evaluation is done to evaluate the usability of the *tadabbur* application. The evaluation of user perception is made to ensure the data and function of this application are captured and run smoothly, and finally meet the user satisfaction. The evaluation was made by surveying the user's perception of usability, ease of use, and user satisfaction (Hussien, Khalid, Hussin, Ijab, Baharudin, & Ismail, 2023) with the *tadabbur* application implementation. This evaluation was done through an online questionnaire using the System Usability Scale (SUS) (i.e., Likert scale) method (Sauro, & Lewis, 2011). The SUS method was chosen because it is accurate with the software-based platform that can provide easy and practical evaluation measurements, especially those involving web and mobile-friendly application technology nowadays.

The evaluation involves 30 respondents who answered the survey questions accordingly. The survey focuses on aspects of the usability of the *tadabbur* application. The questionnaires contain the uniform resource locator (URL) for *tadabbur* application, classified into five sections: demographic, usefulness, ease of use and efficiency, satisfaction, and feedback. Figure 7 shows several questions created through the online Google form survey. The usability evaluation was conducted on 30 respondents, approached randomly on a voluntary basis. The instruments used for the evaluation were the *tadabbur* application and questionnaires in the Google Form (both URL were provided). The Google form questionnaire consists of 19 questions in five sections: section A asked about demographic, section B about usefulness, section C about ease of use, and efficiency, section D about satisfaction, and section E about user feedback. All responses were recorded on a five-point Likert scale, in which value one represents strongly disagree, and value five represents strongly agree. The evaluation is

basically carried out in two steps: (1) interaction with *tadabbur* application via the URL provided, and (2) reading and answering the questionnaires in Google Form.

Findings

Analysis of the respondents' demographic information revealed that the majority of respondents are female, which is 20 users (66.67%) compared to male respondents, which are 10 users (33.33%). The respondents also reported that 40% of them were 18-24 years old, 13.33% were 25-34 years old, 6.67% were 35-44 years old, 10% of respondents were 45-54 years old and 3.33% were 55 years old and above. Half of the participants (50%) indicated that they have used the al-Quran application for *tadabbur*, and the other 50% has never used the application, even in their mobile apps. Even currently many al-Quran applications are available via the internet or mobile, access to the application is still in low number. Many factors can be identified; however, the actual application really provides the *tadabbur* learning environment still in need.

Section A: Demographic Data

- a) Gender
- b) Age
- c) Have you ever used any *tadabbur*/or self-study of al-Quran application before?

Section B: Usefulness (Likert Scale: Strongly Disagree-Strongly Agree)

- a) The content provided in *e-Tadabbur* is informative and enriching.
- b) *e-Tadabbur* enhances my understanding of the content of al-Quran.
- c) *e-Tadabbur* is a valuable resource for self-paced learning of al-Quran.
- d) The interactive features of *e-Tadabbur* are engaging and helpful.

Section C: Ease of Use and Efficiency

- a) The registration and login process of *e-Tadabbur* was straightforward and hassle-free.
- b) It is easy to search for specific content or verses within *e-Tadabbur*.
- c) The structure of the content within *e-Tadabbur* is logical and easy to follow.
- d) Overall, *e-Tadabbur* is an easy-to-use and efficient for learning the content of al-Quran.

Section D: Satisfaction

- a) I am satisfied with the overall functionality of *e-Tadabbur*.
- b) *e-Tadabbur* meets my expectations for learning the content of al-Quran.
- c) I find *e-Tadabbur* to be a valuable resource for my al-Quran learning journey.
- d) The interactive features and exercises in *e-Tadabbur* enhance my learning experience.

Figure 7. The Questionnaires

An analysis was conducted on the respondents' responses in Section B-E of the respondent opinion about *tadabbur* application. The section measures the respondents' perception of *tadabbur* usefulness, usability, satisfaction, and feedback. It also measured the respondents' satisfaction with *tadabbur*. Figures 8.1, 8.2, 8.3, and 8.4 reported the frequency of the responses.

The respondents rated four or five of the questionnaire scales for the four aspects of usability. A few rated one, two, and neutral.

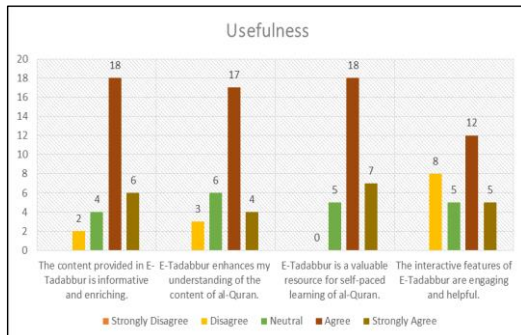


Figure 8.1: Response to the Usefulness

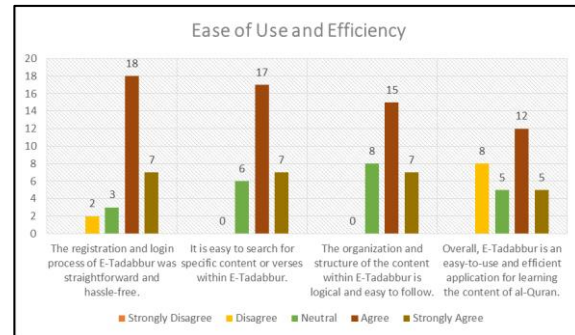


Figure 8.2: Response to the Usability

The degree of usefulness ratings is shown in Figure 8.1. Respondents agreed on numerous statements based on the prior graph. For instance, they concurred that the content provided in *tadabbur* is informative and enriching, with a rating of 18, and 6 of them strongly agree. There are only two users who disagree and four users are just neutral with the statement. The application significantly enhanced their understanding of the content of al-Quran. Three users tend to disagree, six users neutral, 17 users agree and four out of the 30 respondents strongly agree with the statement. Furthermore, the majority of respondents strongly agreed that the system is a valuable resource for self-directed learning of al-Quran, as reflected by the frequency rating of 18. For neutral, there are five users and for the strongly agree seven users are counted. The majority of respondents regarded the interactive elements of *tadabbur* to be interesting and useful, as indicated by the frequency rating of 12. The second-highest response rate, with eight respondents disagreeing with the features, is followed by the neutral and strongly agree responses, which each had five respondents.

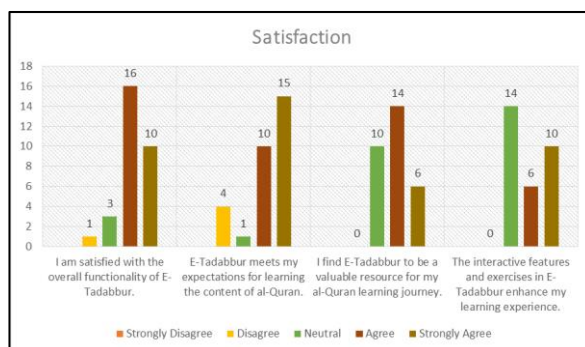


Figure 8.3: Response to the Satisfaction

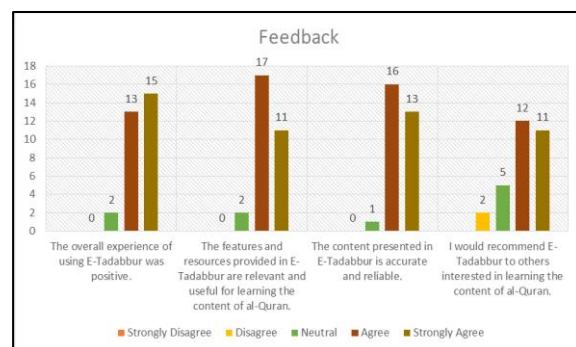


Figure 8.4: Response to the Feedback

Figure 8.3 illustrates the rating scale measuring ease of use and efficiency. According to the graph, the system received the highest frequency of 19, indicating that the registration and login process of *tadabbur* was straightforward and hassle-free. There are seven of the respondents strongly agree with the statement while three respondents are neutral and another two respondents disagree. Additionally, for the statement it is easy to search for specific content or verses within *tadabbur*, the highest is agree with 17 respondents, followed by strongly agree, with seven respondents, and last but not least is neutral with six respondents. Besides, the highest number of respondents (15 respondents) for the organization and structure of the content within *tadabbur* are logical and easy to follow. Moreover, 8 and 7 of the respondents choose neutral

and strongly agree with the statement. The majority of respondents that is 12 users stated that *tadabbur* application is an intuitive and effective tool for learning the contents of the al-Quran. Eight of the respondents disagree, and the neutral and strongly agree responses, which each had five respondents.

Based on the data presented in Figure 8.4, the majority of respondents strongly agree, with a frequency of 16, express satisfaction with the overall functionality of the system. 10 people strongly agree with the system's overall operation, 3 respondents are neutral, and only 1 responder disagrees. Thus, 10 of the respondents agree that the approach suited their needs for teaching them the substance of the al-Quran. Meanwhile, the biggest number, 15 strongly agreed with the statement. Four respondents disagree, with just one responding neutrally. Additionally, 14 respondents agreed regarding the system is a valuable resource for the theory al-Quran learning journey. The other 10 and 6 respondents are neutral and strongly agree with the statement. Last but not least, a considerable number of respondents, as evidenced by a frequency of 14, neutral, felt that the system's interactive elements had improved their learning experience. 10 users strongly agree, followed by 6 respondents who agree.

Based on the data presented in Figure 11, the rating scale is used to measure feedback related to the system. The graph reveals that a significant number of respondents, with a frequency of 15, strongly agree that the overall experience of using *tadabbur* was positive. 13 users agree followed by 2 respondents who were neutral. Moreover, the majority of participants, indicated by a frequency of 17, agree that the features and resources provided in the system are relevant and useful for learning the al-Quran content. 2 of the respondents are neutral and the other 11 strongly agree. The majority of respondents agree that the information provided by the application is accurate and reliable, as can be seen in all the Figures, which is indicated at 16. Only one respondent is neutral, while 13 respondents strongly agree. Finally, a total of 12 respondents concur that they would recommend others to use the *tadabbur* application, meanwhile, 11 of them strongly agree, 5 are neutral, and 2 are in disagreement.

Conclusion

The main concern of this research is to develop an application to support the implementation of *tadabbur* al-Quran based on the SALaM model, which was developed from the previous research. SALaM model enables learners to *tadabbur* the al-Quran using different reading strategies and to help them to achieve better comprehension in al-Quran learning. Noticeably, there are many areas of the *tadabbur* application that can be improved. For example, the implementation of a progress tracking mechanism that allows users to monitor their learning journey and track their achievements. This can be included features such as completion badges, progress charts, and the ability to set learning goals and targets. Other than that, provide the offline access functionality that allows users to download Quranic content for offline reading and learning. This feature ensures accessibility even in areas with limited internet connectivity and enables uninterrupted learning experiences. Ultimately, this SALaM-based *tadabbur* al-Quran application will be a self-learning assistant for users to engage with al-Quran at any time, any place, and device.

Acknowledgement

The researchers would like to thank the Universiti Utara Malaysia (UUM) for financially supporting this research under Grant Scheme (PENJANAAN /1/2016/UUM/02/3/3 (S/O code 13444).

References

- Abdullah, M. (2012). Trend of Nazm-al-Quran in Tafsir Literature in the Sub Continent. *AL-Adwa*, 37(27), 55-70.
- Adediran, T. V., & Al Bazi, A. (2018). Developing an agent-based heuristic optimization system for complex flow shops with customer-imposed production disruptions. *Journal of Information and Communication Technology*, 18(2), 291-322.
- Ashari, M. S. S. @ H., Ta'a, A., Ismail, S., & Arif, A. S. C. M. (2023). Al-Quran learning model for self-directed learning. *Quantum Journal of Social Sciences and Humanities*.
- Bakar, M. S. A., & Ta'a, A. (2014). Business Intelligence Modelling for Graduate Entrepreneur Programme. *Journal of Information Communication Technology (JICT)*, 13(1), 55–86.
- Graesser, A. C. (2007). An introduction to strategic reading comprehension. *Reading comprehension strategies: Theories, interventions, and technologies*, 2579, 3-26.
- Graesser, A. C., Singer, M., & Trabasso, T. (1994). Constructing inferences during narrative text comprehension. *Psychological review*, 101(3), 371.
- Hussain, A., Mutalib, N. A., & Yasin, A. (2014). jFakih: modelling mobile learning game. In 2014 International Conference on Computer and Information Sciences (ICCOINS) (pp. 1-6). IEEE.
- Hussien, F. S., Khalid, F., Hussin, S., Ijab, M. T., Baharudin, D. F., & Ismail, A. N. (2023). The Usability Evaluation of Online Training Plagiarism Module Using ICCEE Approach for Academic Writing Beginners. *Journal of Information System and Technology Management (JISTM)*, 8(31), 113-128.
- McNamara, D. S., Ozuru, Y., Best, R., & O'Reilly, T. (2007). The 4-pronged comprehension strategy framework. *Reading comprehension strategies: Theories, interventions, and technologies*, 465-496.
- Naturally, R. (2023). Comprehension: The Goal of Reading. *Comprehension*. <https://www.readnaturally.com/research/5-components-of-reading/comprehension#programs>
- Newson, P. (2021). 12 Reasons Why The 5-Point Likert Scale Is A Universal Sentiment Measurement. *WorkTango*. <https://worktango.com/2021/01/28/12-reasons-why-the-5-point-likert-scale-is-a-universal-sentiment-measurement/>
- Sauro, J., & Lewis, J. R. (2011). When designing usability questionnaires, does it hurt to be positive? *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, 2215–2224.
- Semenova, E., Tynchenko, V., Chashchina, S., Suetin, V., & Stashkevich, A. (2022). Using UML to Describe the Development of Software Products Using an Object Approach. *IEEE International IOT, Electronics, Mechatronics Conference (IEMTRONICS)*, 1–4.
- Ta'a, A., Ashari, M. S. S. @ H., Ismail, S., & Arif, A. S. C. M. (2018). A Self-Directed E-Learning Tool for Learning Al-Quran Based on the Nazam Al-Quran Concept. *International Conference on Islam and Global Issues*, 857–861.
- Torgesen, J. K. (1982). The learning-disabled child as an inactive learner: Educational implications. *Topics in Learning & Learning Disabilities*.
- Wharton, C., & Kintsch, W. (1991). An overview of construction-integration model: a theory of comprehension as a foundation for a new cognitive architecture. *ACM Sigart Bulletin*, 2(4), 169-173.