

Analysis and Design of IOS-Based Zikirin Applications Using Agile Scrum

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Dhikr is a worship activity in Muslims to remember Allah. Among them by chanting and praising the name of Allah. Dhikr has the potential to alleviate anxiety by involving the repetition of Allah's names or praises, aiding in focus, calming the mind, and strengthening spiritual bonds. This research aims to assist Muslim teenagers in enhancing the quality and consistency of their dhikr practices through a mobile application. The methodology employed is agile scrum, beginning with a needs analysis involving the distribution of questionnaires to actively engaged Muslim teenagers in dhikr activities, as well as a comparison with existing similar applications. The system design phase is carried out using the Unified Modeling Language (UML) and storyboard for interface design. The evaluation stage utilizes three methods: Black Box Testing, User Acceptance Test, and Measurable Human Factors. The results of this research demonstrate that the developed application can help users establish a dhikr routine by providing convenience and support in consistently and regularly engaging in dhikr practices.

Keywords: Dhikr practice, Muslim youth, IOS, Agile Scrum, Application, Software Engineering

Introduction

The global health crisis of COVID-19 has instilled significant anxiety in communities around the globe. This pandemic has given rise to various worries and uncertainties about the ongoing progression of the virus and the most effective measures to contain it. In Indonesia, this pandemic has led to numerous negative impacts, including an increase in the level of anxiety among the population. Several factors contribute to the anxiety experienced by the Indonesian society during this pandemic, such as the uncertainty surrounding the ongoing development of the virus, restricted mobility, economic pressures, fear of illness, and mental stress [1].

Adolescents are a vulnerable age group prone to experiencing anxiety during the COVID-19 pandemic. This can be attributed to several factors, such as drastic changes in lifestyle, social restrictions, and uncertainty about the future. Additionally, teenagers often feel pressured by the academic environment, which can sometimes be overwhelming in terms of completing school assignments [2]. As a result, teenagers may feel inadequately equipped to manage stress and

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experience higher levels of anxiety. To address this anxiety, teenagers need emotional and psychological support from parents, friends, and teachers. Providing support can be done by offering clear understanding and explanations about the COVID-19 pandemic, as well as providing strategies for managing stress and maintaining mental well-being. One of the ways to achieve this is through mindfulness practices. Mindfulness is a state that enables individuals to focus on the present moment [6] and serves as a strategy for regulating emotions and enhancing concentration [7]. The practice of mindfulness can help individuals reduce stress, enhance emotional intelligence, and improve overall quality of life. However, it requires regular training and practice to experience these benefits. [5].

In Islam, dhikr is a practice that involves remembering Allah by repetitively reciting specific phrases or verses from the Quran [3]. Dhikr can be performed at specific times throughout the day, such as upon waking up, before sleeping, before meals, and so on. Several scientific studies have found the effects of the intensity of dhikr and prayer on reducing anxiety, promoting inner peace, and enhancing the body's immunity. One such finding is that phrases containing loud letters, such as the phrase "tauhid" (there is no deity except Allah) and "istighfar" (seeking forgiveness from Allah), can facilitate the expulsion of carbon dioxide from the lungs [4].

An application can indeed be developed to assist individuals in enhancing mindfulness through practices aligned with Islamic teachings. Such an application can provide a selection of dhikr phrases that users can choose based on their needs or preferences. Additionally, the application can offer reminders for engaging in dhikr at specific times throughout the day and provide information on suitable locations or times for performing dhikr. Indeed, the development of a dhikr application aims to assist individuals in achieving mindfulness through practices that align with Islamic teachings. This application can serve as a source of inspiration and support for those who seek to enhance the quality of their lives in a manner consistent with their religious beliefs.

Methodology

The method used in the development of the Zikirin application is the Agile method with the Scrum framework. In the Agile Scrum method, there are several key components and activities involved:

Product Backlog

The Product Backlog describes the items that need to be worked on during the development of the Zikirin application. Estimation in the Product Backlog is the total sum of story points from the Sprint Backlog that exist within a Product Backlog.

Sprint Planning

Sprint Planning explains the work plan for all sprints that will take place during the development of the Zikirin application. The sprint cycle in the development of the Zikirin application typically lasts for one to two weeks.

Sprint Backlog

The Sprint Backlog describes the tasks to be worked on and the estimated duration for each task within a sprint. The duration of tasks is represented in story points, which is an estimation of the effort required to complete a task. In this context, one story point is equivalent to approximately one hour of work.

Daily Scrum

The Daily Scrum is a daily meeting where the team discusses the tasks to be done, tasks that have been completed, and any issues or obstacles encountered on that day. During this phase, the team members engage in self-reflection and review the progress made since the previous day. The purpose of the Daily Scrum is to foster transparency, collaboration, and continuous improvement within the development process of the Zikirin application.

Sprint Review & Sprint Retrospective

The Sprint Review is a meeting where the progress of the application developed during the sprint is discussed to determine if it meets the set targets. It also involves addressing any issues that occurred during the sprint and discussing the estimated tasks for the next sprint. On the other hand, the Sprint Retrospective is a meeting that focuses on evaluating the performance of the application's development during the sprint. It provides an opportunity for team members to share their opinions, suggestions, and criticisms regarding the progress made. The retrospective aims to identify areas for improvement and to make any necessary adjustments for future sprints.

Results

In this section, which will be described, focuses on the application design and the testing that has been carried out. The objective of this system design is to ensure that the built application is well-planned and has a clear and comprehensive structure. While testing explains about functional testing where it aims to find out the application runs well according to the functions and features that have been planned.

Use Case Diagram

The purpose of system design with Use Case Diagram is to depict the system's functionality and the interaction scenarios between users and the system. Figure 1 uses case diagram provides an overview of the available features in the Zikirin application. There are 18 use cases, and among them there are 5 use cases that are influenced by the previous use case. The meaning of the use case is clear, for example the view category is a use case that is used to display the categories of dhikr that have been prepared in the application, for example, the dhikr in the morning and the dhikr in the evening.

Class Diagram

The purpose of system design with a class diagram is to visualize the class structure, identify relationships, organize attributes and methods, analyze the system, and provide a basis for

implementation. Figure 2 is class diagram depicts the overall relationships among classes in the Zikirin application. This class diagram design is made based on use cases, there are 24 classes.

The dhikr class has 10 attributes, consisting of Id, tagsids, categoryids, name, verse, latin, translation, repeat, source, and isFavorite. The Id attribute is used to store the Dhikr code, which will distinguish it from another Dhikr. The tagsids attribute can be retrieved from the tag class and this is the code for the tag. The categoryids attribute can be obtained from the category class, categoryids is a code that distinguishes it from other categories. The name attribute of the dhikr class is to store the names of the dhikr. The verse attribute is used to store a version of one dhikr name. The Latin attribute is used to store the Latin version of the zikr originally in Arabic. Translation attribute to store Arabic to Indonesian translation. The repeat attribute to store repetitions of dhikr that can be read how many times, usually is one time, 3 times or even some are 33 times and 100 times. The source attribute is used to store the source of the dhikr, usually taken from the Qur'an or hadith. The isFavorite attribute is used to store whether a dhikr is a favorite dhikr or not, and this dhikr can appear directly on the home page. In the dhikr class there is no operation. Classes that have operations are indicated by + and () signs.



Fig. 1 Use Case Diagram

Entity Relationship Diagram

The purpose of database design using an Entity-Relationship Diagram (ERD) is to model the appropriate data structure, ensure data integrity, and design an efficient database schema. The Zikirin application is developed using 5 tables in its database. The relationships between tables can be seen in Figure 3. There are 2 classes called strong entities which consist of zikr, and category. The other classes are weak entities. In the dhikr class, tagsid and categoryids are Foreign Key (FK) because they are taken from the category attribute, while the primary key (PK) is the id attribute.

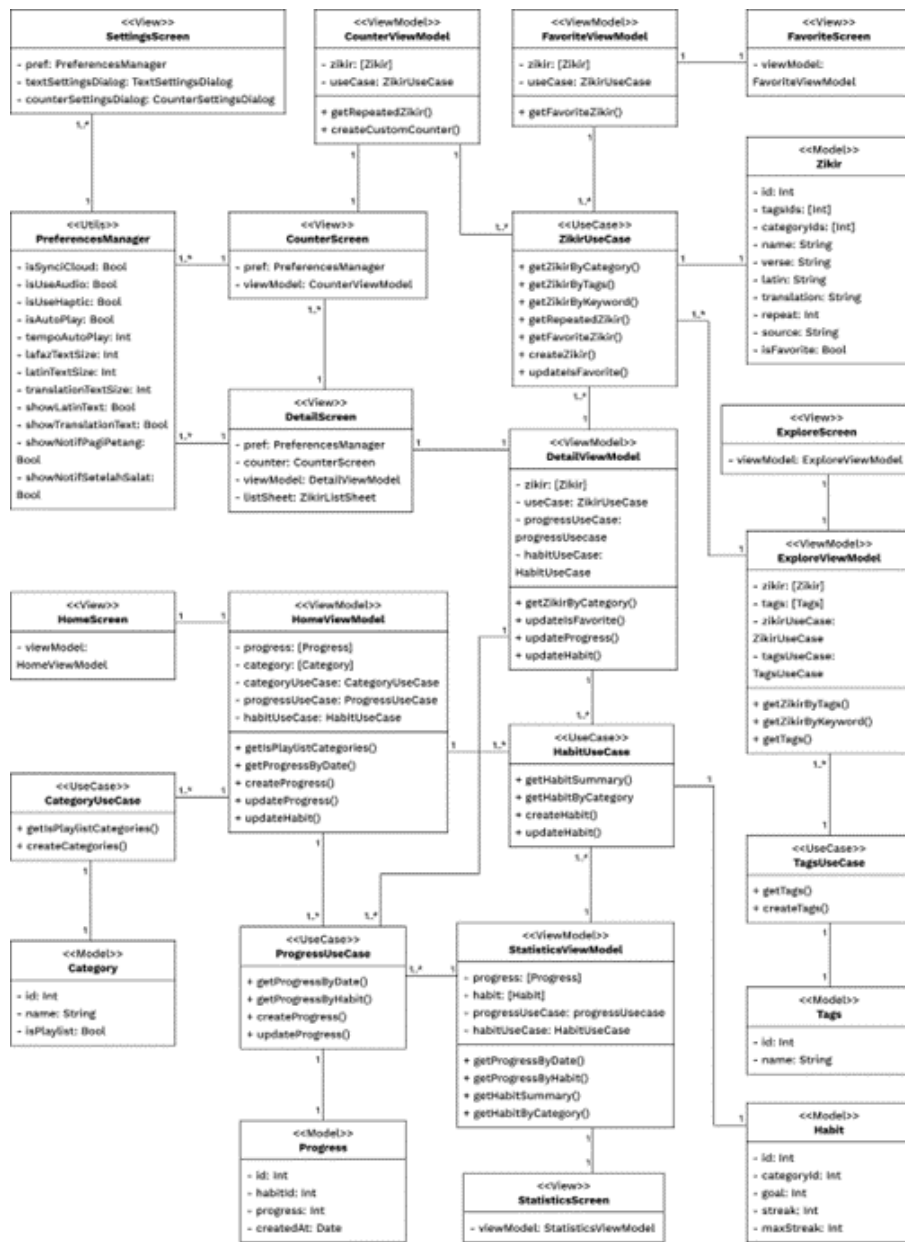


Fig. 2 Class Diagram

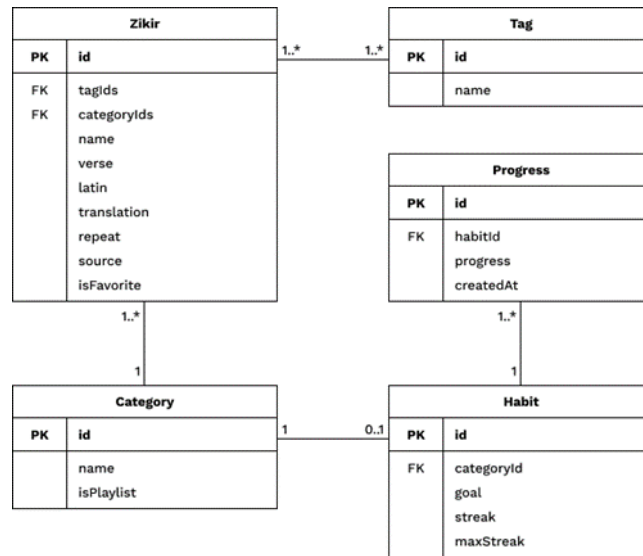


Fig. 3 Entity Relationship Diagram.

User Interface Design

Zikirin application can be implemented on smartphones with the iOS operating system. Here is an overview of the app's interface that has been created.

Home Page

On the first tab, there is the main page that displays a list of daily dhikrs that serves as a to-do list to be performed every day. When the user opens this page for the first time each day, the system will automatically create 3 to-do items consisting of morning dhikr, evening dhikr, and after prayer dhikr. In addition, at the bottom there are icons of the main menus in this application, the order from left to right is icon: home, search, counter, statistics, and settings.

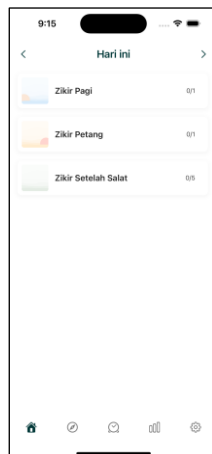


Fig. 4 Home Page

Search Page

Users can also explore other dhikr readings by using the search feature and entering keywords in the search bar. The system will search for dhikr readings with titles that match the user's entered

keywords. Additionally, the list of dhikr readings on the search page is presented based on tags. Users can tap on tag items to view a list of dhikr readings that are associated with the selected tags. In figure 5 is searching with marah or angry keywords, so that the results of the search appear two prayers related to these keywords.

Detail Page

When the user taps on an item from the dhikr list, they will be directed to the daily dhikr detail page. On this page, a series of daily dhikr will be displayed one by one. In figure 6, an example is morning dhikr. Morning dhikr is a dhikr performed in the morning after dawn prayers until the end of dhuha time. Morning dhikr consists of several prayers recited sequentially with a certain number.

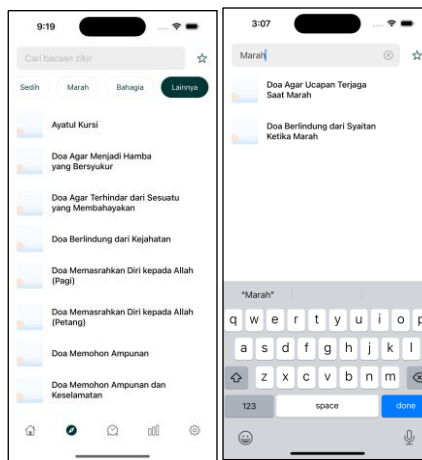


Fig. 5 Search Page.

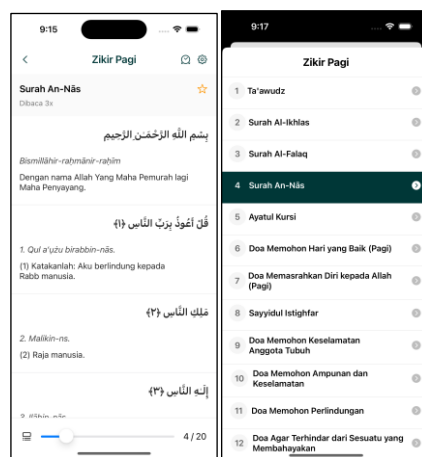


Fig. 6 Detail Page.

Counter Page

On the counter page, users can utilize the counter feature to assist in counting the number of dhikrs they have recited. For example, in figure 7 below is istigfar, which is read 3 times after finishing the salutation at prayer 5 times (shalat). Number 3 is the number of dhikrs that must be

read, and the number 0 is the initial or unread condition. So, when clicked after finishing reading 1 dhikr, the number will change until the completion of reading the dhikr.

Statistic Page

Users can view the results of their daily dhikr progress by accessing the statistics page. Figure 8 is a statistic of dhikr after prayer (dhikr setelah shalat) performed for one week from Saturday to the following Saturday. The bar graph below displays the number of dhikrs read in one day. The highest number is on Thursday and Friday as many as 5 times. So that the Total Done amounting to 2 because in 2 days the dhikr after the prayer is finished reading. Streak is the number of times the user completes the dhikr target in succession, if there is one day the target is not met then the value returns to 0 or is repeated from the beginning. While the best streak is the largest streak value, for example if the user has completed the target 4x in a row then the next day it fails it will be repeated from the beginning. But the best streak is still 4 because the best streak stores the largest streak value, it will change if the user succeeds in having a streak value greater than 4.



Fig. 7 Counter Page.

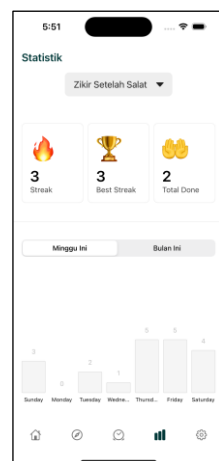


Fig. 8 Statistic Page.

Text Testing Page

In the zikr detail page, users can directly customize the text preferences by tapping on the settings icon and selecting the desired options from the menu. On this page there are 5 things that can be set, namely Arabic text font size, Arabic text font size with Latin writing (Indonesian writing), translation font size in Indonesian, Romanized text and translated text. Romanized text or Arabic text written in Latin or Indonesian script will make it easier for people who cannot read Arabic writing so that these people can still do dhikr. Latin writing can be set to the font size and can be set active or not, if it is not active then only Arabic fonts appear. Likewise with the translated text or the meaning of dhikr in Indonesian so that it is easy to understand.



Fig. 9 Text Setting Page.

Black Box Testing

Black Box Testing is used to provide a user perspective by simulating interactions without knowledge of the internal workings of the application. It conducts comprehensive testing of the overall behavior and features of the application while reducing bias by not being influenced by implementation details or assumptions. In table 1 are some test results data from the application.

Black box testing has been conducted, evaluating 106 functions consisting of 100 positive cases and 6 negative cases. In this testing, the system was tested with valid and appropriate inputs (positive cases) 100 times. The results showed that the system can handle valid inputs effectively and produce the expected outputs.

Additionally, testing was also performed using invalid inputs or inputs that violated the rules (negative cases) for 6 times. The results indicated that the system successfully detected and handled invalid inputs correctly, providing appropriate error messages or responses.

Therefore, the conclusion from this black box testing is that the system has passed the testing phase successfully and is capable of functioning effectively in handling both valid and invalid

inputs. This provides confidence that the system can perform well in real-world usage conditions and meet user requirements.

User Acceptance Test (UAT)

UAT was conducted by 10 people who fall into the target category of Zikirin application users, namely the age of 19-24 years who quite often do dhikr activities. There were 35 questions given to respondents.

TABLE I. BLACK BOX TESTING RESULT

No	Function	Expected Result	Obtained Result	Status
1	Opening the application	The user sees the main page interface	The user sees the main page interface	PASS
2	To display the main page	The user sees three daily dhikr items	The user sees three daily dhikr items	PASS
3	Pressing the right arrow icon [➡] on the main page	The user sees the text 'data not available'	The user sees the text 'data not available'	PASS
4	Pressing the left arrow icon [⬅] on the main page	The user sees the text 'data not available'	The user sees the text 'data not available'	PASS
5	Pressing one of the daily dhikr items	The user is directed to the daily dhikr detail page	The user is directed to the daily dhikr detail page	PASS
6	Swiping the screen to the right on the daily dhikr detail page	The user sees the next dhikr reading, and the position and value of the seek bar are updated according to the current dhikr order	The user sees the next dhikr reading, and the position and value of the seek bar are updated according to the current dhikr order	PASS
7	The user slides the seek bar	The user sees the dhikr reading corresponding to the position of the seek bar	The user sees the dhikr reading corresponding to the position of the seek bar	PASS
8	To view the dhikr reading at the last order	The user sees the dhikr reading at the last order and the 'Add' button	The user sees the dhikr reading at the last order and the 'Add' button	PASS
9	Pressing the 'Add' button on the daily dhikr detail page	The user will see the 'Add' button disappear and a toast message saying 'Daily dhikr progress successfully updated' will appear	The user will see the 'Add' button disappear and a toast message saying 'Daily dhikr progress successfully updated' will appear	PASS

No	Function	Expected Result	Obtained Result	Status
10	Press areas Outside of the sheet Counter	Users will View sheets dhikr counter disappear	Users will View sheets dhikr counter disappear	PASS

UAT aims to draw conclusions whether the Zikirin application can facilitate and meet the needs of users in carrying out dhikr activities. UAT is done by asking respondents to give an assessment using a scale from 1 to 5. Number 1 indicates that respondents strongly disagree with related statements, while number 5 indicates that respondents strongly agree with related statements.

Table 2 shows the spread of UAT frequencies on a scale of 1 to 5. The range of values is obtained by multiplying the total of the scenario by the weight of the values, and then categorizing that range of values. Below is a table showing the range of obtained values along with their categories.

TABLE 2. MAPPING RESPONDENTS' ANSWERS

No.	Statement	1	2	3	4	5
1.	Zikirin application runs smoothly and responsively when used.	0	0	1	6	3
2.	I find the user interface of Zikirin app intuitive and easy to understand.	0	2	3	4	1
3.	I was able to easily navigate the Zikirin app interface and find the features I needed.	0	0	0	4	6
5.	I feel the Zikirin app provides a pleasant and motivating user experience in dhikr.	0	0	0	4	6
6.	I can mark the completed dhikr in daily dhikr easily in the Zikirin app.	0	0	0	3	7
8.	I can easily find specific dhikr based on specific keywords in the Zikirin app.	0	0	2	4	4
9.	I received relevant and accurate search results based on the keywords I entered in the Zikirin app.	0	0	0	5	5
10.	I can search for dhikr based on Specific categories or tags with easy in Zikirin app.	0	0	1	2	7
11.	I can easily mark my favorite dhikr in the Zikirin app.	0	0	2	1	7
12.	I can easily remove dhikr from my favorites list in Zikirin app.	0	0	2	2	6
15.	I can easily count the number of dhikrs I have done using the dhikr counter feature in the Zikirin app.	0	0	4	4	2
16.	I can easily set or reset the remembrance counter to zero after finishing performing dhikr in the Zikirin app.	0	0	1	6	3
18.	I find the interface of the dhikr counter feature in the Zikirin app easy to understand and intuitive.	0	1	6	2	1
19.	I feel that the dhikr counter feature in the Zikirin apps works well and provides a satisfying experience in carrying out dhikr.	0	0	6	2	2

20.	I can easily see the full stats about my daily dhikr in the Zikirin app.	0	0	3	3	4
21.	I find the interface of the remembrance statistics feature in the Zikirin application easy to understand and provides relevant and useful information.	0	0	6	2	2
22.	I feel that the dhikr text setting feature in the Zikirin application makes it easy to adjust the appearance of dhikr according to my needs.	0	0	0	3	7

Based on the results of UAT, the total value obtained is 84.11%. When referring to the range of values in the table above, they are in the range of 80%–100%. Thus, it can be concluded that users are very satisfied with the Zikirin application.

TABLE 3. UAT FREQUENCY DISTRIBUTION

Value	Frequency	Total Value
1	0	0
2	5	10
3	75	225
4	113	452
5	157	785
Overall Value		1472
Percentage		84,11%

TABLE 4. PERCENTAGE RANGE

Categories	Percentage Range
Very dissatisfied	0% - 19,99%
Not Satisfied	20% - 39,99%
Usual	40% - 59,99%
Satisfied	60% - 79,99%
Very satisfied	80% - 100%

After the test is done, the respondent gives several suggestions, including:

1. Add an intro or mini tutorial when opening the app or using a feature the first time.
2. Add searches based on the content of dhikr (meaning, lafaz, etc.), not just from the title alone.
3. Provides additional explanation to the "iCloud Sync" settings.
4. Provides additional explanation to the "Auto Start Tempo" setting.

5. Provide additional explanation regarding when notifications are activated in the settings menu.
6. Added audio media of dhikr readings.

Application evaluation based on Five Measurable Human Factors

The theory of five measurable human factors is used in the evaluation of Zikirin application interfaces to understand human interaction with the system. This evaluation helps identify problems and improve the user experience. The following are the results of application evaluation based on five measurable human factors using the self-assessment method:

Time to learn

The Zikirin application makes it easy for users to explore various available features without spending a long time. This is because the user interface provided in the Zikirin application is designed simply and intuitively. By using a user-friendly design, users can easily understand the navigation and functionality of the application without the need to get confused or spend excessive time learning it. Evidence for this can be seen from the results of the User Acceptance Test (UAT) on questions number 2, 3, 6, 8, 10, 11, 12, 15, 16, 18, 20 and 21.

Performance speed.

The Zikirin application has proven to have very responsive performance and features that meet user expectations. The smooth and seamless user experience allows users to quickly move between pages and explore app features without any significant lag or lag. In addition, well-designed features, such as a customizable search function and remembrance settings, make it easy for users to find the remembrance they are looking for, as well as the type of remembrance according to personal preference. Evidence for responsive performance and features that meet user expectations can be seen from the results of the User Acceptance Test (UAT) in statements number 1, 9, and 32.

User error rate.

The Zikirin application has succeeded in minimizing errors that may occur by providing careful warnings to users, thus avoiding fatal errors in using the application. Alerting is an important step to ensure that users do not inadvertently take actions that could have a negative or detrimental impact. In this application, alerts are clearly presented and related to the action the user will take. For example, if a user plans to turn on notifications for the first time, if the user accidentally denies notification access the app will provide an alternative to grant notification access again. These steps aim to enable users to use the application confidently and comfortably in carrying out their remembrance. Fig. 10 is an example of a warning notification.

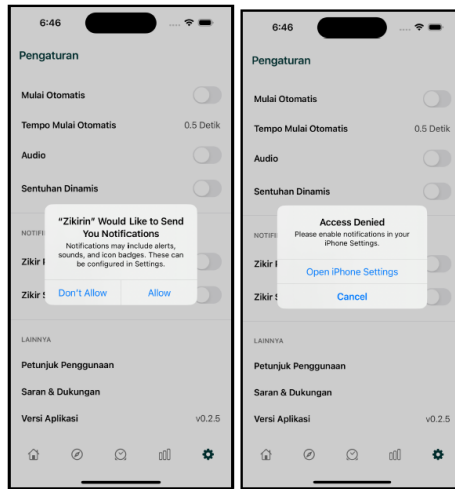


Fig. 10 Alert notifications.

Memory duration

The menus and icons in the Zikirin application are designed with high simplicity so that users can easily remember the available menus and can use the features in the Zikirin application easily. Proof of this simplicity is based on the results of the User Acceptance Test (UAT) on questions number 2 and 3.

User Subjective Satisfaction

Zikirin app provides a satisfying experience to users with some good reasons. Firstly, the simple and easy-to-use user interface allows users to quickly explore the available features without any difficulties. The intuitive and user-friendly design makes users feel comfortable and adaptable to this application. In addition, the icons used in the Zikirin application are carefully selected to make them easily recognizable and familiar to users. Users can easily understand the meaning of each icon and use the features of the app without any confusion. The presence of clear icons related to the functions of the application helps to create a smoother and more efficient user experience. With a simple interface and intuitive icons, the Zikirin application provides ease of use and helps users in carrying out their dhikr more smoothly and comfortably. Evidence for this can be seen from the results of the User Acceptance Test (UAT) in statements number 5 and 19.

Conclusion

After analyzing, designing, and evaluating the Zikirin application, several conclusions can be drawn. Here are some conclusions that have been derived from the analysis:

1. The Zikirin application can help users enjoy the activity of dhikr by providing a more comfortable and enjoyable experience.
2. The Zikirin application can assist users in finding appropriate zikir recitations in accordance with Islamic teachings (syariat), allowing them to perform dhikr correctly and derive optimal spiritual benefits.
3. The Zikirin application can help users develop a habit of dhikr (dhikr) by providing convenience and support in consistently and regularly practicing dhikr.
4. The Agile Scrum methodology is suitable and helpful in the development of the Zikirin application as it enables quick adaptation, effective collaboration, and better responsiveness to user needs.
5. The use of Entity Relationship Diagram (ERD), Unified Modeling Language (UML), and storyboards in the development of the Zikirin application helps in planning and visualizing features in a structured manner and ensures the alignment of the application's design and implementation.

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