

An Overview on the Potential Commercialization of Muslimah Menses Apps

Mashanum Osman¹, Maslita Abdul Aziz², Szalinsyah Razali³, Nurul Akmar Emran⁴, Norun Najjah Ahmat^{5*}

^{1,2,3,4,5}Fakulti Pengurusan Teknologi dan Teknousahawanan, Universiti Teknikal Malaysia Melaka (UTeM)

*Corresponding Author

DOI: <https://dx.doi.org/10.47772/IJRISS.2025.92800046>

Received: 10 November 2025; Accepted: 16 November 2025; Published: 29 December 2025

ABSTRACT

It is really a big problem because some of them are uncertain on how to decide which is haidh and which is istihadhah that eventually effect their religious practices performance. That is why research must be done to develop a green technology gadget known as an app to help the Muslimah to end their misery regarding menstruation problem. A hypothesis tends to see that this interactive and informative app will reduce the certainty problem relate to menstruation (haidh) and hyper menses (istihadhah) among Muslimah. The clear status will enable the Muslimah to perform solat or fast and to do any permissible deeds. It is important to have a kind of app that Muslimah can use in order to perform ibadah with yaqin (confident or certainty). But there is a lack of mobile application for haid and istihadah, which targets specifically for muslimah on fiqh basis. A good quality mobile application must be look at both its functional and non-functional characteristics. The research is done to help the Muslimah around the world who has menstruation problem.

Keywords: Overview, Potential Commercialization and Muslimah Menses Apps.

INTRODUCTION

Menstruation happens to all women and some of them experience symptoms of Premenstrual Syndrome (PMS). In some instances, the mood symptoms and emotional components of PMS are the most troubling. Common symptoms include irritability, depressed mood, anxiety, or mood swings. Mood symptoms do emerge one to two weeks before menses and resolve completely with the onset of menses. And some women experience mood symptoms due to heavy and prolong menses. The term of menstruation for the Muslim women is known as *haidh*. Whatever terms used, the mood symptoms during PMS or onward are still like any women. And it is not uncommon that the emotional symptoms of depression anxiety and irritability can seriously interfere with normal functioning and relationships. However, bigger headache that affect the emotion of Muslimah besides menses mood, is Istihadah. It is the blood discharged from the vagina of women not during their menstrual periods nor nifas. In the medical terms, istihadah is one of the problems of menstruation for women called Hypermenorrhea – a condition occurs when there is an overflow of menstrual blood production. It is a big problem because some of them are uncertain on how to to decide which is haidh and which is istihadhah that eventually effect their religious practices performance. In this case, Muslimah emotional wellbeing are not only disturbed by menses related problem but also their difficulties to ascertain the status of haidh and istihadhah due to various factors arise. Then, research to develop a gadget known as an app is needed to help the Muslimah to end their misery regarding to menstruation problem.

The rapid advancements in mobile devices and technologies necessitate that mobile applications comply with the functional and non-functional quality parameters. This project proposes the development of a quality mobile app designed for Muslim women in implementing a Software Quality Standard approach. The objective is to identify the requirements needed for testing the mobile application in compliance with Software Quality Standards, focusing on both functional and non-functional aspects, to adapt and implement Software Quality Standards in the application ensuring it meets usability requirements and to evaluate the significance of applying Software Quality Standards in the development of the application. Functional requirements encompass the functions that the app offer which includes, menses cycle tracking and categorization of menstruation and abnormal bleeding (istihadhah) according to Syafi'iyah Fiqh.

Non-functional requirements however, include the quality offered by the app such as the efficiency, security and the ability of the application to function in many environmental conditions. These non-functional aspects will be evaluated with automation testing tools UXtweak, with the emphasis on user satisfaction and effective application behaviour. The standards reinforce that the development process includes not only designing a functional application, but also addressing essential non-functional aspects such as performance, usability, and security. Such standards are crucial in mobile applications development, as the time to deliver the application in the market ‘kills’ the quality of the application if testing is not enough. With the help of these standards, the application seeks to apply fast and reliable solutions that will address the needs of Muslim women for their fast-changing environment. Youth Care Melaka, an NGO focused on youth empowerment, has expressed interest in collaborating on this project. The app aligns with their mission to engage and support the youth community. This project aims to set a new benchmark high-quality mobile application for Muslim women.

LITERATURE REVIEW

Mobile devices and technologies are frequently updated. Developers need a reusable and cost-effective environment for testing the mobile applications. A good quality mobile application must be look at both its functional and non-functional characteristics [1][2][3]. Functional is about what the application does. Whereby the non-functional focus on how it behaves. The term mobile testing refers to different types of testing, such as native mobile app testing, mobile device testing, and mobile Web app testing. Mobile app testing to refer to "testing activities for native and Web applications on mobile devices using well-defined software test methods and tools to ensure quality in functions, behaviours, performance, and quality of service, as well as features, such as mobility, usability, interoperability, connectivity, security, and privacy." To ensure that a mobile application meets these high standards, Software Quality Standards play a crucial role throughout the development and testing processes. These standards provide a framework that guides developers in delivering reliable, secure, and user-friendly applications. By adhering to Software Quality Standards, developers can systematically address both functional and non-functional aspects of an application, ensuring it performs optimally under various conditions and delivers a seamless user experience.

According to [2] there are several automation testing’s tools such as Uxtweak to assess functional and non-functional requirements, which is usually for usability and security. [3] further elaborated for non-functional requirements, the testing is more confined to load usability and stress testing. For mobile apps, understanding user personas are not only important for usability, but also for performance. Author in [5] defined personas as ‘fictitious, specific, concrete representations of target users. A persona represents an aggregate of target users who share common behavioural characteristics. User personas influence the types of transactions a user will carry out. For mobile apps, understanding user personas are not only important for usability, but also for performance. It is crucial to understand user persona for Muslimah menses apps in order to produce a quality integrated solution for Muslim women wellbeing.

There are two types of mobile application: native mobile app and mobile optimized website on a mobile which is a device browser. Companies usually may provide the user an application, a mobile – enhanced site, and/or their full site. Developers and testers will need to deal with the challenges, goals and success criteria in each of these three situations.

Nowadays, many people use mobile application daily or even hourly, and some for-business purposes. User expect the mobile app to provide non- stop availability, trivial usability and instant response. Mass-market mobile applications that fail to deliver rapidly will lose market share, as there is always another option for popular devices. Rapid change and tough competition characterize the mobile application business. Developers and testers must design, build and test for functionality, but also reliability, performance and usability (user experience or UX).

Functional and non-functional quality characteristics exist for all applications, including mobile apps. Not all quality characteristics apply equally to all apps. For this study, we want to study the adaptation strategies for user persona in user experience testing tools and how does user persona be tested in user experience testing and usability testing for quality mobile applications development for Muslimah menses apps.

Menstruation is an important indicator of possible pregnancy as well as the reproductive health of women. There are studies on the possible relationship between exposure to various diseases and irregular menstrual cycles or

early-onset menopausal symptoms among menopausal women. The most important cause of menstrual cycle irregularity is functional hypothalamic amenorrhea associated with decreased gonadotropin-releasing hormone secretion and hypothalamic–pituitary–adrenal (HPA) axis dysregulation that may lead to the development of various chronic diseases, including, infertility, heart disease, and type 2 diabetes [6].

Normally, the menstrual cycle begins and ends with menstruation and is divided by ovulation into the follicular and luteal phases. The fertile window, during which there is a probability of conception from unprotected sex, is defined as the day of ovulation and the 5 days preceding it (the time window for sperm survival). Clinical guidelines state that a woman’s median cycle length is 28 days with most falling in the 25–30 days range and that the luteal phase is almost always 14 days long, but there is much greater variation than this. The variation in cycle length is attributed mainly to the timing of ovulation. Nevertheless, the length of the luteal phase may also deviate significantly from 14 days. Then, the apps were used to record detailed menstrual cycle data presents a new opportunity to study the menstrual cycle.

1.1. The Available Apps

The widespread adoption of menstrual tracking applications has garnered much attention with recent research focusing on inclusive design. However, existing literature has yet to explore the impact of religious practices on menstrual tracking behaviour. An investigation on the menstrual tracking practices of Muslim women of faith in the United States, a population whose personal reproductive health behaviour are deeply influenced by their faith, values, and religious laws A study was conducted with three-phase study consisting of preliminary surveys, semi-structured interviews and a post-Roe v. Wade survey. It is found out that several reasons why Muslim women in the United States are motivated to track their menstrual cycles. They tracked their monthly menstrual cycles to increase their understanding of how their periods affect their mood, fertility, and menstrual health. They were motivated to keep records for the practical purposes of improving their communication with healthcare providers and ensuring they were prepared with sanitary products for their period. For the most part, and unsurprisingly, the findings on tracking motivations and methods align with previous work investigating menstrual tracking in western populations [8], indicative of the commonalities in tracking methods and motivations that transcend cultural or faith beliefs. Faith is an added motivation for menstrual tracking because it support their adherence to religious practices and guidelines that exempt them from practicing certain religious rituals, e.g., fasting and prayer, consider implications for times when the duration of the period is unusually long and plan social activities that do not clash with timings for religious rituals.

There are several Islamic menstrual (menses) apps have been developed and designed specifically for Muslim women to cater the religious and cultural needs of Muslim users such as Afifa app (<https://afifaapp.com/>), claimed the first health app for Muslim women. It is a health and menstrual cycle tracking app tailored to Muslim values. It includes features such as logging periods (including istihadah), predicting ovulation, tracking missed Ramadan fasts, and offering religiously-aligned guidance in collaboration with scholars [9].

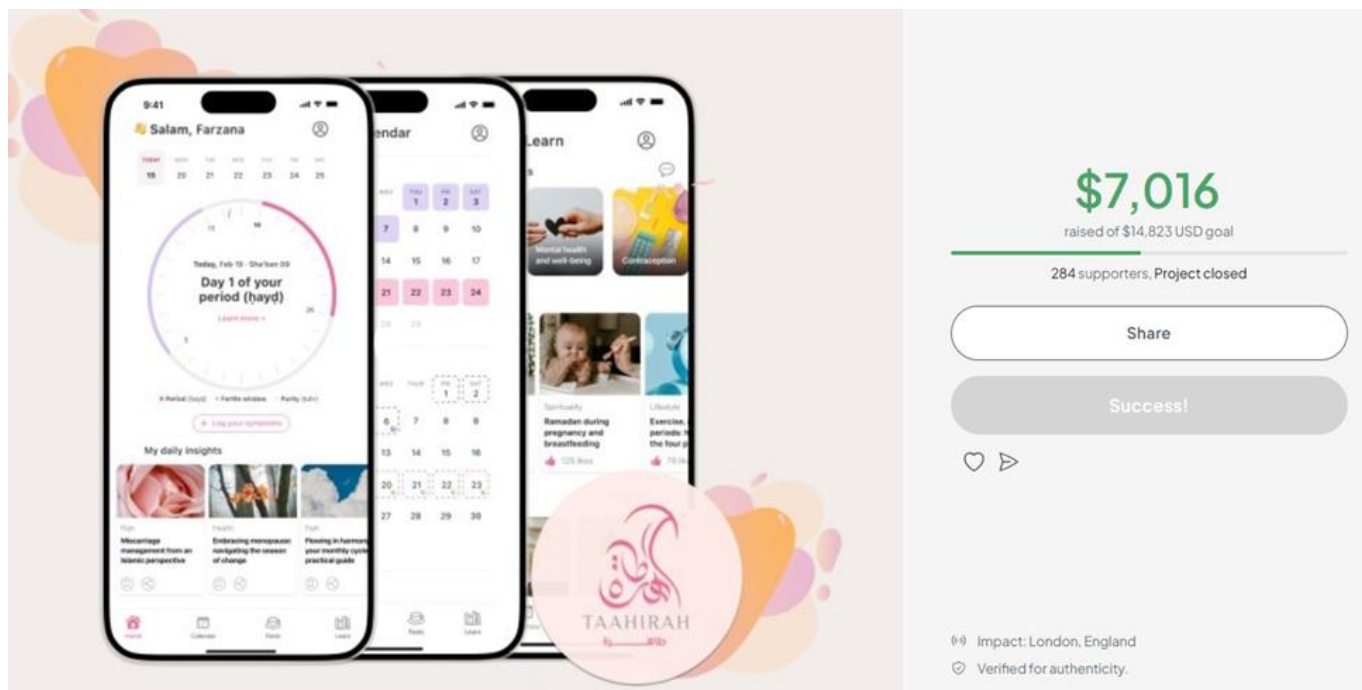


Secondly is myhayd.com or My Hayd app (<https://www.myhayd.app/>), developed under the supervision of male and female scholars (Hanafi Madhhab), that provides precise cycle tracking alongside religious guidance

on worship obligations like prayer and fasting. It also includes educational resources and community engagement [10].



Next is Taahirah app https://www.launchgood.com/v4/campaign/taahirah_app?src=internal_giving_stream which positioning itself as a “faithful period pal,” and this app enables users to log cycle data, symptoms, missed fasts, and access fiqh-informed articles, FAQs, and a women-only community—all designed to harmonize health tracking with Islamic teachings [11].



Then, AYDA app (<https://apps.apple.com/sa/app/ayda-period-tracker/id6745415462>) is marketed as the first Muslim-made period tracker, it blends science-based menstrual insights with Islamic rules. Features include symptom logging, integration with Apple Health, fasting trackers, spiritual reflections, and clear guidance on purity laws like distinguishing between hayd and istihadah. Plus, it emphasizes privacy, ad-free usage, and minimalist design [12].



METHODOLOGY

This research employs a systematic four-phase software development lifecycle approach that integrates Software Quality Standards for developing a high-quality Muslimah menses tracking application. The methodology combines quantitative performance metrics with qualitative user experience data, following ISO/IEC 25010 quality characteristics to ensure both functional and non-functional requirements are thoroughly addressed.

Phase 1: Requirements Analysis and Stakeholder Engagement

The initial phase begins with a comprehensive literature review and gap analysis of existing Islamic menstrual tracking applications, including Afifa, MyHayd, Taahirah, and AYDA, to identify current limitations and feature gaps. Primary stakeholders include Muslim women aged 18-45, Islamic scholars specializing in fiqh jurisprudence, healthcare professionals, and the NGO partner Youth Care Melaka. Data collection involves semi-structured interviews with 20-25 Muslim women to understand current tracking practices and religious concerns, complemented by three focus group discussions with 6-8 participants each to explore cultural sensitivities and feature preferences. Expert consultations with Islamic scholars validate religious accuracy requirements, while online surveys with over 100 participants provide broader requirement validation. The functional requirements encompass menstrual cycle tracking, haidh versus istihadhah classification based on Syafi'iyah fiqh, prayer and fasting obligation notifications, and privacy-compliant data management. Non-functional requirements address performance benchmarks, usability standards, security protocols, and cultural sensitivity compliance. This phase produces a comprehensive requirements specification document and detailed user persona profiles representing different segments of the target population.

Phase 2: User-Centered Design

The design phase focuses on creating culturally sensitive and religiously appropriate interfaces through systematic user-centered design processes. User personas are developed based on the requirements analysis, representing young Muslim professionals, Muslim mothers, Muslim students, and mature Muslim women. Information architecture is optimized through card sorting exercises with 15 participants to enhance app navigation and user journey mapping. The design process involves creating low-fidelity wireframes using Figma, developing interactive high-fidelity prototypes, and conducting cultural and religious sensitivity reviews with Islamic scholars. Design validation includes heuristic evaluation by three UX experts using Nielsen's usability principles and cognitive walkthroughs with ten representative users. Critical interface elements undergo A/B testing to ensure optimal user experience. The deliverable from this phase is a validated high-fidelity interactive prototype ready for implementation.

Phase 3: Implementation and Development

The implementation phase involves developing the application using cross-platform React Native framework with Node.js backend and MongoDB for secure data storage. Development follows sprint-based methodology with two-week iterations covering core tracking functionality, religious compliance features, user interface refinement, and security implementation. Quality assurance during development includes unit testing with minimum 80% code coverage, integration testing for API functionality, preliminary UX testing using UXtweak tool, and security vulnerability scanning using OWASP ZAP. The development environment incorporates

OWASP Mobile Security Guidelines and maintains continuous integration pipeline with Git version control. This phase produces a beta version of the mobile application ready for comprehensive testing.

Phase 4: Testing and Evaluation

The final phase conducts comprehensive testing covering both functional and non-functional aspects of the application. Functional testing employs black-box testing, boundary value analysis, state transition testing, and user acceptance testing with 30 target users. Performance testing utilizes Apache JMeter for load testing with concurrent users ranging from 100 to 1000, stress testing to determine breaking points, and battery consumption analysis across various devices. Usability testing includes moderated sessions with 20 participants, System Usability Scale evaluation, task completion rate analysis, and think-aloud protocols for qualitative insights. The UXtweak tool facilitates A/B testing for interface variations, heatmap analysis of user interactions, user journey analytics, and accessibility testing for inclusive design. Security testing involves penetration testing by certified professionals, data encryption verification, privacy compliance audits, and religious data sensitivity validation.

RESULTS AND DISCUSSION

The research maintains high ethical standards through ethics approval from University Teknikal Malaysia Melaka Research Ethics Committee, informed consent from all participants, data anonymization protocols, and religious sensitivity validation by Islamic scholars. Research validity is ensured through triangulation of data collection methods, member checking with participants, diverse participant recruitment, and standardized testing protocols. The 18-month timeline includes quarterly milestone reviews with continuous stakeholder feedback integration, producing conference papers on requirements analysis and peer-reviewed journal articles on testing outcomes and user experience evaluation. Then, the field testing includes a three-month beta release to 50 Muslim women with continuous usage analytics, weekly feedback collection, and expert validation by Islamic scholars. Evaluation employs both quantitative metrics such as performance benchmarks, user engagement rates, and SUS scores, alongside qualitative metrics including user satisfaction interviews and thematic analysis of feedback. Statistical analysis uses descriptive statistics for performance metrics and Mann-Whitney U tests for non-parametric comparisons.

Based on the finding from the library research, observation and interview session, it reflects that the available menses apps either Muslim bases or not have the commercial values. In that case the same aspect and could produce more commercial entity since it covers the local affairs.

CONCLUSION

Then, the Muslim women who have extra concern on menstrual cycle issue may use the apps because it relates to the religious requirements. They have obligation to perform certain compulsory religious practices such as solat and fasting but were disturbed with these problems related to haidh and istihadhah. What they need is a tool to help them to determine how to differentiate between haidh and istihadhah based on fiqh and comparative jurisprudence. The research done by Jonathan R. Bull showed the importance of apps in investigating the menstrual cycle characteristic for health and well-being purposes, Then, an apps also is needed to help the Muslim women to perform religious practices with certainty and deprived of doubt. In that case, the specific Muslimah Menses Apps which covers the local issues and affair has better commercial potentiality in Malaysia.

ACKNOWLEDGEMENT

We would like to acknowledge CRIM, UTeM that approved a grant entitled PJP/2024/FTMK/PERINTIS/SA0045 that support this study and research.

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