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An UX Evaluation Framework for Islamic Design and Content-Based Digital Therapeutics for Mental Health: A Proposed Approach

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Abstract:
With the rise in the occurrence of mental health issues among youths, especially students, an urgent need might has arisen for intervention strategies that respect cultural intricacies. Digital Therapeutics (DTx) quite interestingly serve as a frontier wherein technology is used to give evidence-based support for mental health. In an unfortunate case of neglect, however, there has been a lack of adaptation of these platforms to meet the needs of Muslim users in terms of accommodating Islamic principles and understanding. This paper takes a significant step forward in filling this gap by offering an innovative and thorough User Experience (UX) evaluation framework that holistically integrates Islamic design architecture featuring geometric patterns, calligraphy, and content imbued with spiritual significance. It also offers gateways to Islamic teachings, reminders to pray, and guided meditation. The framework looks very closely at and gives guidelines on important elements for Turkish developer to create DTx solutions within an Islamic framework such as usability, accessibility, engagement, and user satisfaction. Having developed through an exhaustive literature review and established frameworks, this model acts as a foundational tool for appraising and thereby improving systematically the user experience of digital therapeutics within Islamic contexts. This research contribution aimed to improve the mental health outcomes for Muslim youth through digital health technologies alongside cultural inclusivity to suggest the importance of culturally attuned mental health interventions in today's digital realm.

Keywords: Digital therapeutics; Mental Health; Islamic design and content; UX evaluation framework; Muslim user

1. INTRODUCTION

The rise in mental health challenges shows no sign of abating. Hence, it cuts across every demographic and every section of society, while digitization has brought about a momentous shift in mental healthcare delivery mechanisms. Increasingly, patients tend toward Digital Therapeutics (DTx) medicines for better access, privacy, and affordability. Thus, a promising avenue for enhancing health care is cost-effective, confidential, and accessible. These treatments occur via mobile apps and virtual platforms for evidence-based prevention, management, and treatment of any medical condition (1). Recently, DTx solutions have been shown to be important for addressing the worldwide mental health crisis, particularly after COVID-19 (2). While there are many DTx for mental health is available, however there are a few apps available that contain Islamic design and content. Thus , there is a significant gap in bridging DTx solutions with Islamic design and contents as well as evaluating the user experience and usability.

Islamic design is both rich and often featured in many representative designs; yet, it has never been associated with the field of User Experience (UX). Islamic tile patterns have a rich cultural and historical significance and are distinguished by their complex geometric designs. The Grand Mosque of Varamin serves as an example of how these patterns are commonly seen in historical architecture. Regular polygons are used in the designs to produce intricate tessellations that improve architectural spaces in addition to serving as decorative elements (3). Although these patterns have historically been used as ornamentation, their incorporation into modern design, particularly UX design, offers exciting opportunities. Islamic tile patterns could highlight usability and aesthetics, two essential elements of user experience, in UX design. By adding aesthetically pleasing design elements, Islamic patterns can add cultural and aesthetic diversity to interactive interfaces, which may increase user satisfaction and engagement.

Studies on technology user experience, like those in Massive Open Online Courses (MOOCs), highlight the impact of cultural preferences on interface design and user satisfaction, which contrasts with the aesthetic emphasis of Islamic patterns. For example, cultural factors have a big impact on how users interact with interfaces, demonstrating different preferences and performance in various cultural contexts (4). This demonstrates how Islamic patterns have the ability to enhance user interfaces by making them aesthetically pleasing to users who are accustomed to or appreciate such conventional designs. Additionally, incorporating Islamic geometric patterns into UX design can complement tactics seen in other fields, like wearable mixed reality technologies, which prioritise aesthetic elements and user interaction to provide

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a better experience (5). This alignment points to a way that modern technology and historical and artistic components can coexist to create one-of-a-kind experiences that respect cultural aesthetics and adhere to usability standards.

However, putting these designs into practice requires carefully weighing how they affect an interface's overall usability and visual comfort. A study on ceramic tiles emphasised the significance of visual comfort by showing how elements like tile texture and brightness have a significant impact on user satisfaction (6). The visual complexity of Islamic patterns must be balanced with obvious functionality in UX design to maintain the effectiveness and accessibility of user interfaces. Islamic traditional design involves complex patterns and calligraphy, unlike the modern principles of UX, which are simple and user-friendly. The challenge here is how best to fuse these two lines of design into an effective user experience, considering cultural appropriateness (7).

Similarly, the E-Ngaji app provides an Android-based application tool for Quran recitation learning with Islamic content, which applies the principles of UI/UX design (7). E-Ngaji is an example of an ecosystem of Islamic learning apps that integrate modern user experience (UX) design approaches — in particular User-Centered Design (UCD) practices. It focuses on making learning approaches more creative and engaging, which is also very economical in teaching children within the scope of Taman Pendidikan Al-Quran (TPQ). This integration is particularly significant when considering the various innovations in education, from the use of the Fuzzy Delphi technique to create Islamic course modules (8), to the combination of computational (or design) thinking with game design and design thinking to promote human-centered educational processes (8, 9). The E-Ngaji app demonstrates that technology can also be used for teaching Islamic materials through UX design that aligns with the educational goals. This is consistent with the overall global trend of technology integration in education to improve learning outcomes and engagement (10). By using UCD, it meets the users' needs, making learning more personalized and effective..

Nonetheless, several issues remain regarding the promising porch of DTx. Digital platforms offer cutting-edge resources for mental health, such as online communities, mental health applications, and virtual therapy (2). However, they still lack a meaningful database to support their effectiveness (11). With increased interest and funding, digital mental health technologies continue to raise almost the same fundamental question that has been raised against other health technologies: do they really improve mental health outcomes? (11). Furthermore, stigma, shame, and humiliation are barriers to seeking treatment, especially formal professional help (12). Such broad application of these tools may worsen health inequalities, particularly for already underserved populations (11). Finally, it should be pointed out that, although these technologies offer benefits, human interaction is still required in the mental health treatment paradigm. Some contend that these apps can potentially isolate those who need personal contact (13).

The application of Islamic design principles in the digital therapeutics (DTx) for mental health can help improve intervention effectiveness within an Islamic community. Digital platforms have shown promise in delivering DTx for mental health (14). Increasing engagement and outcomes can be as simple as tailoring these interventions to align with cultural and religious values. At times, the effectiveness of digital therapeutics falls short due to a mismatch between the intervention and appropriate behavior/behavior change. This challenge is addressed by digital micro interventions that seamlessly fit into daily life while being relatively low on burden (15). The integration of Islamic design principles may enable digital therapeutics to align with the culture and values of Muslim communities, thereby reducing engagement barriers. Models of user-centered design assess digital therapeutic content through an empirical lens for usability and feasibility, which has been demonstrated to be useful in health applications (16). This includes building prototypes using input from users and clinicians to address clinical and cultural needs.

Digital technologies in mental health care have improved accessibility (17) but interventions targeting cultural groups specifically are less common. This could also impact the need for culturally informed DTx which may be hampered by regulatory challenges (18). Though, the use of Islamic design could help engage and find acceptance among the base/user for which this is made. But ifor example, trying to develop mental health digital therapeutics for Islamic communities, they would need to work with a community leader to make sure even your content resonates with the psychology of these communities without going against Islamic principles. We believe this strategy can facilitate better mental health outcomes and create a blueprint for integrated, culturally sensitive digital interventions. Therefore, Islamic design principles must be applied to develop digital therapeutic content using the UX evaluation method.

This study intends to develop a UX evaluation framework for measuring DTx against the backdrop of mental health within the Muslim community. Based on the gaps in previous studies related to study objectives, this study is outlined by the following objectives:

1. Assess mental health needs among Islamic end users in terms of explicit design and digital content therapies. Once again, this fills a gap in determining the targeted content for Muslim populations.
2. Understand different design dimensions from the perspective of Islamic users, and how these dimensions determine user engagement and interaction. This raises the evidence gap regarding how Islamic principles would impact engagement in digital apps.
3. The developed UX evaluation framework integrates Islamic design principles into digital therapeutics to improve engagement and adherence. This is a response to the lack of structured UX frameworks pertinent to Islamic contexts.

Overall, decreases associated with accessibility and barriers to treatment can be favourably countered in the case of digital therapeutics. However, the challenge remains in balancing technology against the introduction of human connections, exacerbating health inequities, and providing evidence that cites effectiveness. Future research agendas will continue to consider the expansion of tools for inclusive, ethical, and evidence-driven digital mental health that supplements rather than supplants traditional methods of mental health intervention (19).

1.1 Existing DTx with Islamic Design and Content

The prospect of inheritance of Islamic art principles in contemporary digital forms is one of the very promising approaches for culturally grounded therapeutic applications. Haque *et al*. (20) and Harun *et al*. (21) emphasizes the application of such elements from traditional Islamic designs such as geometric patterns and calligraphy-to modern digital platforms. By integrating Islamic spiritual symbolism with therapeutic frameworks, user engagement or experience can be improved and make these interventions align with Islamic value of healing and well-being (22). Despite these advances, existing DTx solutions lack structured frameworks that offer systematic integration of Islamic design principles. Incorporating Islamic aesthetics into therapeutic applications would not only benefit the usage or engagement of users but also put the intervention in context with Islamic values for healing and well-being (23, 24). However, this framework doesn't address the specific niche requirements of a unique Muslim population, thereby revealing a significant research gap.

1.2 Islamic Perspective on Mental Well-Being

Islam offers unique mental health insights that can improve modern therapy. While increasingly recognised, its significance in Western mental health care remains understudied. Islamic prayers such as Salah, have been shown to help prevent and treat mental illness (25). The peace and spiritual connection from prayer's bodily movements and recitations help reduce anxiety and depression. Religious patients benefit from religious therapy (26). Thus, mental health therapy for Muslims should incorporate Islamic practices. These findings support culturally sensitive mental health therapy that integrates Islamic teachings for Muslim communities.

1.3 A Need of UX Evaluation Framework for Islamic DTx

Digital mental health interventions are now widely viewed as important tools for the treatment of mental health problems, especially in settings where access to conventional services is limited (27). The development of broader, culturally grounded frameworks is necessary, as emphasized by El Khodr *et al.* (28), who highlighted the value of personalized interventions for marginalized communities. Merino *et al*. (29) examined the influence of cultural norms and gender expectations on body image perceptions and mental health, thus reiterating the need for consideration in mental health interventions.

To develop an Islamic user experience (UX) evaluation framework, you need to include spiritual and cultural factors in digital health programs for Muslim users. The main focus of current user experience (UX) frameworks is on general usability and system-centered evaluations (30). Integrating UCD means incorporating end-users in the design process to ensure that products meet their demands. These frameworks, on the other hand, don't often deal with the religious and cultural differences that are unique to Muslim communities (31). There isn't enough UX research on personal health tools and cultural context. According to research, aligning patient decision aids with UCD approaches demands getting to know users and involving them in the process again and over again (32). A customized UX framework that respects Islamic principles should include cultural UX methods from other areas, such as cultural heritage, where frameworks improve the experience of visitors by being in line with cultural values (33).

1.4 Islamic Design Principles in Digital Therapeutics

Islamic design principles have much to contribute to the digital sphere, especially in the context of digital therapeutics. An example of such effective integration is where Islamic art and design principles have been implicated in the digital environmental activities of artists who fuse traditional Islamic aesthetics with digital techniques (21). These methods of digitisation and traditional were transformed into the so-called "digital Islamic art". It then calls for the appreciation of calligraphy, geometry, and arabesque patterns intended to be in digital format. Based on this observation, it is possible to say that Islamic design principles apply to digital therapeutics by enhancing user involvement and cultural relevance. It suffices to say that these principles have brought forth aesthetically beautiful and highly functional digital spaces.

The incorporation of culturally relevant and Islamic design components into the digital therapeutic developments and expansions across different geographies may contribute to improve user engagement or effectiveness. This is especially in Muslim majority regions or with regards to Muslim patients (34). As studies have revealed, examining such culturally sensitive design elements proves instrumental in overcoming impediments such as stigma, distrust, and hesitation to adopt mental health tools in a conservative or religious atmosphere (7). Privacy, integrity, and confidentiality of all user interactions with digital content are critical considerations.

Adaptation of visual and functional design have been discovered regarding the requirements of Muslims and non-Muslims, whereby using design features specifically for certain groups personalizes it in such a way that it fosters inclusion for all. For Muslims, it relates to content that must be aligned with Islamic values concerning modesty and ethical communication. For the design, it means universal access and usability in general for these people. Both arrangements are, therefore, intended to build an inclusive platform for the categories of people here concerning cultural diversity, as this backdrop of Islamic design principles and inclusive digital content is what all-encompass for establishing and discussing the twin themes of applying Islamic principles into the modern digital world.

1.5 Overview of Islamic Design Principles

Islamic design works by basing its lines on principles that are woven so deeply that they establish effective ways of imagining and creating the visible manifestation. It also establishes spiritual resonance of solutions to these myriad social and personal practices (e.g. face-to-face, digital). Islamic visual communication design combines spiritual and ethical values with aesthetics. Islamic design principles, including unity (tawhid), community (ummah), and ethical behaviour (amr

bi al-ma'ruf wa nahy'an al munkar), align visual communication with the divine unity of God (35). Islamic art goes beyond aesthetics to express and represent Islam's basic values. Geometric patterns and arabesques represent tawhid, the oneness and order of creation. Designs that adhere to amr bi al-ma'ruf notions demonstrate ethical considerations, aligning visual signals with Islamic moral and spiritual principles . Islamic design emphasises proportion and balance, symbolising a divine order. In historical periods like the Safavid and Ottoman eras, intricate patterns and structures conveyed religious and aesthetic values through architecture and art (36).

However, the prophetic amplitude of aesthetic importance, such as geometric symmetry and the golden proportion, is significant for Islamic graphic design (37), while moral and ethical implications remain the most visible. The combination of spiritual and material components is a hallmark of Islamic design, thus striking a balance between human interaction and divine values. Ethical responsibility and a community focus on the common good, rather than individualism, are a reflection of these principles. Therefore, this balance between ethical and visual elements provides an approach for defining meaningful digital interactions.

1.5.1 Integration of Islamic Design in Digital Therapeutics

An Islamic principle of design may be creatively integrated within digital therapeutics to enhance the very appeal and emotional gravity of the content. Geometry, calligraphy, and spiritual symbolism can be used either as content to engage users or as decorative elements to enhance the product experience, visual flow, and emotional engagement. Without such alignment with culture and spirituality, users are likely to use the platform in a very pragmatic manner yet still feel distanced from it. Research has shown that culturally resonant images, especially those depicting family values and natural settings, have potent effects in reducing anxiety and promoting calm (20, 38).

Holistic design solutions that combine Islamic traditions with modern technology have a lot of potential to improve educational and therapeutic results. Islamic education is very important for forming character, especially in the context of the Industrial Revolution 4.0, because it combines essential religious beliefs with modern technologies like AI and the Internet of Things. This integration enables pupils keep up with modern needs while still following religious morals (39). As a result, the effectiveness of digital therapeutics could be enhanced to better serve Muslim needs without compromising global applicability through the convergence of spiritual and functional values into designs.

1.6 User Experience (UX) Evaluation Framework

User experience (UX) evaluation refers to the methods, skills, and tools that a person uses to evaluate how users perceive a system, product, service, or noncommercial object before, during, or after the interaction has occurred. Evaluating the user experience is thus challenging, as they are subjective, context-specific, and dynamic phenomena. Consequently, careful selection of relevant variables, frameworks, and methodologies is necessary for effective UX studies, particularly in domains such as gaming, mobile technology, or digital therapeutics, which require different types of research.

A good UX evaluation method reveals how users perceive and interact with a product, providing clues to areas where improvements can be made to enhance the user experience. Nielsen's Heuristics (40) for instance, set the stage for evaluating interface usability depending on a number of features such as error prevention, consistency, and user control. The Honeycomb Model (41) involves the seven dimensions of UX usefulness, usability, findability, credibility, desirability, accessibility, and value in evaluating digital platforms in order. These principles have been adapted to healthcare settings to measure the functional, emotional, and experiential dimensions of digital therapeutics (42). The ambit of UX in mobile app development includes everything in the functional, experiential, emotional, and even beneficial dimensions of human-machine interaction. Moreover, for any Islamic digital therapeutic application, these domains should be in line with the cultural and ethical values of users to accept and engage with them effectively. In this way, performance appraisals with respect to UX would deliver high-impact, actionable insights that may improve the efficiency of such digital interventions and build trust in them, even among a diverse range of users.

Streamlining Technology uses alternative technical methods, such as music boosting programs for sound quality. It also involves personalizing technology with diversity in practice within school systems and integrating social media within School Institutions. Adopting dynamic assessments as opposed to traditional static assessments. Implementation of educational policies from governing bodies to technology-based learning classrooms. Meeting core academic standards in a learning institution after viewing hypothetical assessments. Offering past activities to solve present problems. Ensuring supplementary organizations within schools is to use technology effectively. The development of applications is viewed through users' behavioural analysis and their perceptions of a particular application while using it. Additional technological purposes of such an instrument include research, school contribution programs, and idea generation for projects through empowerment. The main area for improvement is simplifying navigation and providing users- students and other staff–with an orientation to where specific materials are used on the Internet. Evaluate bottom-up development, including sample ideas and initiatives.

1.6.1 Importance of UX Evaluation in Digital Therapeutics

User access and participation, as significant parameters in digital therapy effectiveness, are substantiated by research evidence that shows user engagement as a criterion upon which successful digital therapy hinges, whereby different definitions of engagement and intervention designs call for evaluation and retention (43). User engagement refers to a number of variables, such as clarity, confidentiality, or visual appeal of the design while time constraints, forgetfulness, and general perception regarding the ineffectiveness of interventions can hinder user involvement.

Incorporating spiritual and ethical dimensions into digital therapy for Muslim users recognises the influence of spiritual beliefs on mental health. Interventions grounded in Islamic principles can improve user satisfaction by addressing culturally

pertinent issues. Islamic ethical values inform the framework of digital health interventions via the concept of "maṣlaḥa," aligning actions with divine will through welfarist and duty-based principles. This facilitates a comprehensive framework for ethical decision-making in digital therapy (44). Spiritual support plays a vital role in online health communities. Platform designers ought to integrate spiritual beliefs and develop tools that facilitate the mobilisation of support networks grounded in spiritual dimensions (45). Therapeutic interventions for Muslim users should be consistent with Islamic perspectives on human nature. Evaluations of cultural identities enhance therapeutic efficacy by fostering an empathetic atmosphere (46). The incorporation of spiritual dimensions into digital therapy necessitates the acknowledgement of varied cultural values, the provision of pertinent support, and the enhancement of therapeutic relationships through trust.

1.6.2 Components of the UX Evaluation Framework

The components of the UX evaluation framework were deciphered from the literature review, mostly based on various critical factors from Islamic values, technical standards, and digital therapeutic requirements. They are meant to resolve usability barriers from cultural and ethical perspectives as follows:

1. Usability

Usability is the most critical element in UX evaluation. It focuses not only on how easy it is to navigate but also on consistency in how things are arranged and intuitive designs. For Islamic digital therapeutics, usability metrics should be developed concerning ethical guidelines, including the minimum cognitive load and accessibility for various user profiles are included (40, 42).

2. Accessibility

Concerning accessibility, these platforms are designed to provide cross-access and usability for people with diverse abilities and backgrounds. While it also integrates modesty and privacy standards in Islamic contexts, it also addresses all the technical needs of the population left behind.

3. Satisfaction of users

User satisfaction involves the emotional and experiential impact of a platform. For satisfaction with Islamic digital therapeutics, this includes the integration of culturally relevant materials, such as Quranic verses and spiritual guidance, to connect with users on a deeper level (20).

4. Acceptability

Acceptability refers to the extent to which users perceive the platform as trustworthy from their own perspective. This really matters to Muslims, as their consideration may be in the way it has been done ethically and the extent of spiritual alignment through digital interventions (7).

5. Islamic Contentedness

It is the measure of the commitment of the platform to Islamic principles, including the use of Geometric Patterns, Calligraphy, and spiritually meaningful themes amongst the most important aspects that improved cultural relevance and created a sense of belongingness (47).

Thus, the Framework on UX evaluation introduces a systematic way to evaluate and improve the user experience of Islamic digital therapeutics by incorporating such elements in the design of therapeutic programs. In addition to creating motivation and enhancing usability, the framework also protects the ethical and cultural dimensions of the digital platform and contributes to better therapeutic outcomes by building an interface with users. By addressing all of these aspects, the framework of evaluation in users' experience provides a well-structured framework for measuring and improving the user experience in Islamic digital therapies. The framework not only increases the scope of interaction with such platforms and their efficient usability but also implies that these platforms fit into ethical and cultural standards, which then lead to better therapeutic outcomes.

2. METHODOLOGY

A qualitative study has been performed through a literature review of existing designs and frameworks to achieve its objectives. These have been supplemented by scholarly articles, books, proceedings, and case studies, which are used to identify the key themes related to user experience (UX) design, digital therapeutics, and approaches sensitive to culture. Another area of research is that which analyses the UX evaluation frameworks and models in the digital health field, as well as user-centered design in terms of usability, accessibility, and cultural context. The insights that were gained from literature and framework analysis were synthesized into principles for use in culturally focused digital therapeutics. It is now a theoretical platform upon which future developers and researchers can design, implement, and evaluate digital solutions while emphasizing user engagement and inclusivity, as well as ethical compliance. Future research must validate and test the principles in practical applications.

This study employs a qualitative, theoretical approach to formulate a UX Evaluation Framework for the assessment of Muslim mental health applications that integrate Islamic design principles and content. The methodology is grounded in an extensive literature review, rather than primary data collection, to synthesize existing knowledge and frameworks pertinent to the research. The objective is to develop a culturally and contextually appropriate UX evaluation tool that addresses the specific needs of Muslim users engaging with digital therapeutics for mental health.

2.1 Research Design

The research methodology commences with an extensive review of academic and professional literature, concentrating on Islamic design principles, digital mental health interventions, and user experience (UX) frameworks. This review encompasses peer-reviewed articles, books, and reports that investigate the intersection of Islamic culture and digital health design, as well as studies focusing on the usability and cultural sensitivity of mental health applications. Keywords such as "Islamic design," "UX evaluation," "mental health apps," "digital therapeutics," "Muslim mental health," and "cultural sensitivity in UX" are used to guide the literature search. This approach ensures that the research draws from a wide array of sources to inform the development of a UX framework grounded in best practices from both digital health and Islamic design. The literature review focuses on several key themes, including the integration of Islamic design principles in digital environments, frameworks for evaluating UX in health technologies, and the role of content sensitivity in addressing mental health concerns within Muslim communities. The study also examines existing models and methodologies used to evaluate digital mental health applications, identifying gaps in which Islamic design principles and cultural nuances may have been overlooked. By synthesising the insights gathered from these sources, the research aims to highlight the strengths and weaknesses of current evaluation tools and offer a more comprehensive framework that better serves Muslim populations.

Building upon this synthesis, the study aims to develop a User Experience (UX) Evaluation Framework specifically designed for digital mental health applications targeting Muslim users. This framework will concentrate on critical domains such as usability, ensuring the application is accessible, user-friendly, and easy to navigate; cultural sensitivity, ensuring alignment with Islamic values and principles; content relevance, ensuring that mental health resources are appropriate and effective in addressing the concerns of Muslim communities; and engagement and accessibility, ensuring the application is engaging and respectful of cultural and psychological needs. The framework will offer practical guidelines for developers and evaluators, facilitating the creation and assessment of applications that are both effective and culturally pertinent. The selection of a literature review-based methodology ensures that the study is anchored in existing research, leveraging the extensive body of knowledge already available. By synthesizing this body of work, the study contributes to the development of a novel, culturally sensitive tool for evaluating mental health applications, obviating the need for primary data collection. Ethical considerations in this methodology focus on ensuring that all sources are credible and properly cited, adhering to academic standards of integrity. As there is no primary data collection or participant involvement, the ethical emphasis is on the accuracy and transparency of the review process. In conclusion, the study's methodology, grounded in an extensive literature review, provides a robust foundation for developing a culturally relevant and theoretically informed UX Evaluation Framework for Muslim mental health applications.

3. Findings: Proposed Approach for Islamic Design and Content-Based Digital Therapeutics

3.1 Integration of Islamic Design and Content in UX Evaluation

Digital therapeutics are computer programs based on proven medical treatment used for treating mental illnesses. There is an increasing demand for integrating patients' culture and beliefs in the content and design of digital therapeutics. Islamic beliefs and values have been shown to influence the way that users perceive the design and content of ICTs. Prior research on HCI and Muslims has investigated participants' reactions toward digital content that reflects Islamic values. In this section, we provide a comprehensive structured framework that advocates the principle of consultation. This framework attempts to create a dialogue and close collaboration between the Islamic digital therapist behind the system and the multidisciplinary curators oversight committee. This section suggests that stress management professionals and Islamic content experts should collaborate throughout the biopsychosocial-cultural-spiritual paradigm. Both content and aesthetics can underscore the overall message of digital intervention. Islamic design has been demonstrated to cultivate a pleasant emotional state.

Conducting a systematic evaluation of Islamic design and content necessitates a unified framework. Consequently, a proactive approach is suggested; rather than focusing solely on Islamic design for digital therapeutics, the holistic impact of Islamic aesthetic digital environments is collectively evaluated. Tools and evaluation techniques have long been used in HCI; however, seldom, if ever, are one's subjective content and the aesthetics evaluated collectively. Consequently, this section discusses design and content integration from a subjective standpoint, encouraging user feedback and usability testing. This consultation in design and content attempts to ensure that participating users can connect with the digital environment at a deep cognitive level. The process of design and content is continuously updated and assessed, taking into consideration user feedback and insights.

3.2 Step-by-Step Implementation Process

1. Community Engagement and Cultural Analysis: The first step should be to assess the therapeutic needs of the target group, which involve various stakeholders. Collaboration and shared authority methodologies are standard practices and are known to create mutual research benefits. This process would inform the potential designers about the overall characteristics of their potential users in terms of material culture, worldviews, emotional understanding, and their emotional world.
2. Basic Design Decisions: With a clear understanding of the needs of users, the design team can decide on the nature of the design of the digital therapeutic. What mode will it work in? What will it feature? This could be left deliberately open if designers intend to create with users so that users, their needs, and their culture heavily inform us of the basics and breadth of this step.
3. Build in User Testing and Feedback: User testing should be an ongoing aspect of product development.

4. Align Stages with Milestones and Ethical/Social Implications: The development team should create a set of milestones that can be delivered in steps and clearly communicate these ethical and social considerations at a planning meeting. These may need to change and can change in response to the feedback from user testing or wider contextual changes.

A step-by-step process of how to build the proposed result is important. A structured implementation process will enable regular user touchpoints at which testing can be carried out. This structure will make the delivery of the digital therapeutic transparent to all stakeholders and ensure that it is adaptable to the broad developments in the world that will affect the well-being and worldview of the target users. All the above will ensure that what we create is the appropriate thing to promote the mental health of the people we make it for.

The proposed approach will integrate Islamic design guidelines with culturally adapted content-focused criteria to develop a single comprehensive integrated therapeutic reality. This reality will resonate on the experiential, symbolic, conceptual, and contextual levels at once. By addressing the Islamic design, content and principles cohesion and not only the coherence but also the experience system, the projected approach also enhances the aspect. It tackles the association between design and content for therapeutic treatments and proposes an understanding of their holistic UX. Furthermore, the cultural empathic UX aspect will be considered by taking the lead from cultural-based insights as design principles. Designers and mental health practitioners will be supported to combine users' needs in content and aesthetics. Thus, there are implications for the design and evaluation of e-health and m-health applications of cultural design and therapy. In general, therapies ideally do not only aim at being accepted or effective; they also need to be meaningful to the specific socio-cultural context of the target group. To evaluate the user experience and the integration of Islamic design and content in digital therapeutics for mental health, an evaluation framework can be constructed that focuses on the key areas mentioned in Figure 1.

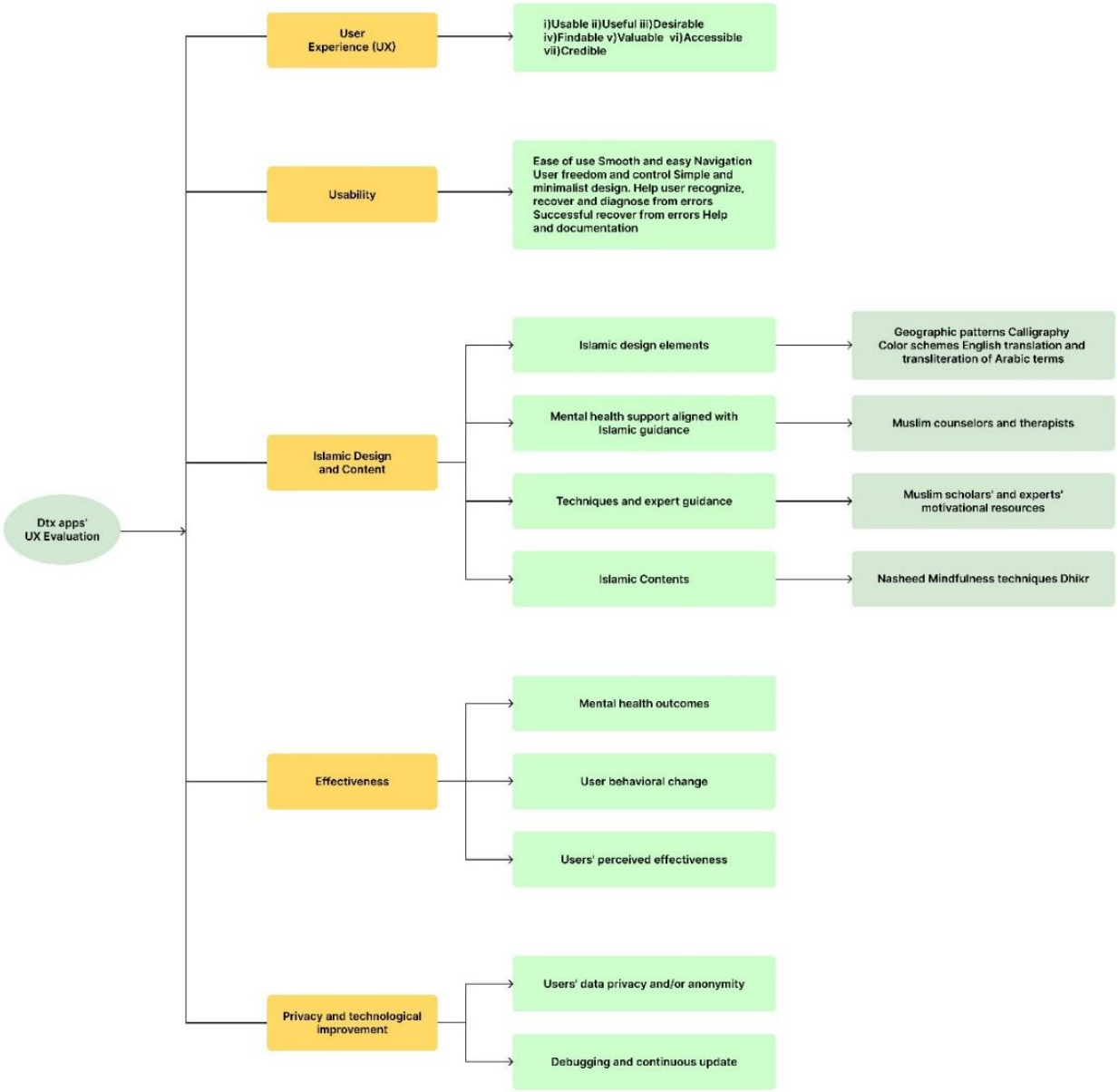

Figure 1. UX evaluation framework

The study presents and implements a UX Evaluation Framework for Islamic digital therapeutics-in terms of usability, accessibility, satisfaction, acceptability, and Islamic contentedness. Figure 1 presents the pictorial-view of this framework showing the main categories or subcomponents that guide the evaluation process. It combines Islamic-perspective elements with standard UX models to create a framework that is culturally grounded for digital therapeutic design and assessment. The framework includes important usability components (e.g., ease of navigation, intuitive layout), accessibility (for various user profiles), user satisfaction (emotional and experiential alignment with the users), and Islamic contentedness (design elements and content appropriate to faith). The framework is meant to be employed beyond scholarly analysis, acting as a practical reference for developers. Enumerating particular UX components such as usability, Islamic contentedness, and user satisfaction will allow app designers to assess and improve digital mental health tools in a manner that is suitable for culture and effective for therapy.

Figure 1 delineates the methodology for evaluating the DTx application. The development relied on heuristic evaluation, a method in which experts apply established criteria to assess user interface usability through separate evaluations and documenting of identified issues. Evaluators employ recognized heuristics, such as Morville-Molich, to provide insights that aid design teams in improving product usability throughout the initial phases of development (42). This UX evaluation framework for DTx, incorporating Islamic design and content, offers significant advantages to researchers and students. Through the assessment and improvement of user experience, researchers can create more engaging, Islamically compliant digital therapies that resonate with Muslim pupils. This approach enhances customization, usability, and accessibility, perhaps leading to more acceptance and compliance. This methodology provides data-driven insights for evidence-based design, aiding researchers in recognizing best practices and developing successful mental health interventions. This holistic approach for pupils includes mental health and spiritual well-being, potentially improving trust, comfort, and the efficacy of therapies. The framework in table 1 may potentially rectify shortcomings in digital mental health solutions for various demographics, hence improving mental health outcomes for students. The following subsections delineate each characteristic of the framework.

Table 1. Main and subcategories of proposed UX framework (Explanation on the UX framework components)

Main Categories	**Subcategories**
User Experience (UX)	Usable, useful, desirable, findable, valuable, accessible, credible
Usability	Ease of use, smooth and easy navigation, user freedom and control, sleek and minimalist design, help user recognize, recover and diagnose from errors, successful recovery from errors, help and documentation
Islamic design and content	Islamic design elements, mental health support aligned with Islamic guidance, techniques and expert guidance, Islamic contents
Effectiveness	Mental health outcomes, user behavioral change,
	Users' perceived effectiveness
Privacy and technological improvements	users' data privacy and anonymity, design and continuous updates

a) Usability: In this framework, authors have adapted Jakob Nielsen's heuristic framework concepts for improving user interface design. These include system status visibility, alignment with the real world, user autonomy and freedom, consistency and compliance with standards, and error prevention. Key usability features include ease of use, smooth and easy navigation, user freedom and control, simple and minimalist design, help users recognize and recover from errors, and clear help and documentation. These principles collectively promote the creation of intuitive, efficient, and user-centered interfaces.
b) User Experience: The Honeycomb Model, created by Peter Morville, is a framework in human-computer interaction (HCI) that delineates seven essential facets of user experience (UX). These include useful (the product fulfills a need), usable (user-friendly), findable (content is easily discoverable), credible (trustworthy and reliable), desirable (attractive design and interaction), accessible (usable by individuals with disabilities), and valuable (provides benefits to users and the organization). The model asserts that a successful product must have all these attributes to deliver significant and efficient user experience, directing designers to develop comprehensive interfaces.
c) Islamic Aesthetics and Substance: This framework will evaluate the extent to which the chosen DTx incorporates Islamic design and content. Islamic design exemplars include geometric patterns, calligraphy, and color schemes. Mental health resources should include spiritual guidance, online counseling or seminars led by Muslim scholars and professionals, and stress management techniques provided by specialists. Additionally, Islamic content such as nasheed, mindfulness techniques, and dhikr will be incorporated to align with Islamic values and provide users with motivational resources.
d) Effectiveness: This framework will assess the efficacy of the app's user mental health outcomes after usage, behavioral changes, and lastly user-perceived effectiveness.
e) Data Privacy and Technological Improvements: Evaluate how well the tool protects user's data and maintains confidentiality. This includes ensuring users' data privacy and anonymity, along with robust debugging processes and continuous updates to improve platform stability.
f) Security Measures: Review the security features that safeguard user information against unauthorized access.

3.3 Application of The Framework in Existing Digital Therapeutic

Therapeutics grounded in Islamic values have been developed and applied to digital infrastructure and evaluated through user-centered methods. A serious game targeted at university students was created and validated to increase awareness and help them reduce stress-related behavior based on Islamic teachings in health behavior. To do this, over 70 hadiths and Islamic educational statements were examined before being used as the foundation for eight categories of health behavior. Content was derived from illustrative healthcare behavior. During the game's design, the researchers enlisted the help of multiple experts, including game development specialists and psychologists. These experts helped to ensure that the game was scientifically and theologically valid. Following approval from the research team, an Islamic cleric assessed the game for the piety of its contents. Following that, the serious game was distributed to university students to serve as pilot test subjects seeking participant feedback. The game's design and content evolved after the pilot test, and a number of changes were made as a result.

The concept of Islamic art was expanded within the design of a mental health application named El Makaan, emphasizing that Islamic art reflects the essence of the individual and their yearning for spiritual identification. The researchers pursued the design of a mental health app created with Islamic art and have recently begun the initial stage of user engagement, encouraging feedback from this initial testing round. These examples are discussed to determine the extent to which these digital therapeutics are designed based on Islamic values and how these technical solutions are evaluated. The research made use of a series of pilot programs and feedback rounds to gauge response to the integration of Islamic behavioral health and Islamic artwork within their digital therapeutics. Both research thrusts indicated user satisfaction with the application because of its alignment with culture and beliefs. In the Islamic stress app, game metrics also pointed to increasing user retention, suggesting that user's stress has lessened given their continued use of the application.

This research has shown that the integration of Islamic design principles with UX evaluation is a requirement for the development of culturally relevant digital therapeutic interventions for mental health. This can be conducted through a meta-synthesis of mixed-method evaluations throughout the design process, where a diverse range of users and stakeholders, including service providers, can co-design and pilot the intervention for a tailored approach. This will help to ensure that the intervention is not only engaging and satisfying to use, but also culturally resonant. Preliminary findings have shown that digital therapeutics designed in this way have seen high levels of uptake, engagement, and satisfaction from within the Muslim community, which are essential steps for further therapeutic outcomes. Consequently, this limits the implications for researchers in knowing how to develop such interventions and reduces the potential to evaluate how and what worked in the approach. The results revealed in this study offer a rationale for the initial framework in the development of digital therapies, underscoring the significance of the approach proposed for the development of digital therapeutic interventions using Islamic design and culturally relevant content that shows promise for improvements in therapeutic outcomes.

4. DISCUSSION

The results suggest not only the feasibility but also the viability of infusing Islamic design paradigms in digital therapeutics. It has important ramifications for the future of culturally sensitive digital platform development. In fact, the most productive conclusions revolve around cultural relevance and emotional resonance. For example, Islamic design elements such as geometric patterns, calligraphy, and spiritual forms define how well aligned digital therapeutic applications would be culturally. These details, in turn, would increase user satisfaction, nurturing one's identity and belonging among Muslim users (47). Responses to the serious game and the El Makaan app also indicate that such feature culture alignment qualifies for achievement of continued engagement and positive affective states (7).

Hence, this becomes another key protrusion for understanding user engagement-trust in digital therapeutic success. Value-based opportunities of culture and spirituality in health would "open up multiple doors in breaking the barrier of stigma and mistrust really associated with the mental health approach". Islamic Stress App retention statistics, for instance, point out that such culturally aligned platforms would indeed influence comfort and involvement within users (48). Privacy and confidentiality shall be included as ethical parameters in developing users' trust (22). This type of coherency draws design along ethical lines so that digital therapeutics may functionally address and morally satisfy their target audience.

The differences between iterative feedback and usability testing during the development cycles greatly emphasize user-centered design in this formative process. Adopting Islamic values within the UX evaluation frameworks would, therefore, go a long way in addressing such twin issues of functionality and spiritual resonance within platforms (42). The structured implementation detailed in that proposed initiative- whose community engagement and ethical milestones further entrench the viability of a reproducible model for developers- also ensures that digital solutions stay flexible, user-friendly, and relevant in accord with changing user needs (48). The results further show that holistic approaches towards mental health need to be adopted. Bringing Islamic beliefs and values into the biopsychosocial-cultural-spiritual paradigm provides for psychological and spiritual wellness (21, 34). Therefore, these digital therapeutics are effective and relevant in the socio-cultural context of Muslim users. Such methods are matched with pre-existing investigations advocating for culturally sensitive and spiritually inclusive digital interventions.

Future research aims to substantiate the framework should scale up into larger studies with a more robust basis of evidence. Future studies collecting empirical data on user experiences and therapeutic outcomes may further refine the applicability and effectiveness of this framework. Moreover, further adaptation of Islamic design principles to serve non-Muslim or multicultural audiences could result in increasing utilization of such frameworks (7). That is how this would ensure continuous evolution to more inclusive and more effective digital therapeutic solutions.

5. CONCLUSION

The main objective of this research is to propose a UX evaluation framework that fills an existing research gap in culturally adapted digital therapeutics for Muslim users. For a digital mental health application to be effective and culturally resonant, the evaluation must incorporate Islamic design principles and content, including spiritual aesthetics and religious guidance. Thus, this framework theoretically contributes to the user experience design literature, whereas in practice, designers can draw from it in the design of culturally sensitive mental health solutions. A particular approach in this framework nurtures engagement, trust, and usability in Muslim contexts, in turn increasing the therapeutic relevance and acceptance of digital therapeutics from the user's perspective. Future studies can include empirical cross-validation of the framework across different Muslim populations and adjustments made for other cultural or religious settings. For an academic-purpose audience, the framework may serve as an underpinning for future research in culturally grounded UX design and evaluation. The framework will serve practitioners-primarily developers of mental health applications in Islamic contexts-with a series of actionable design principles and evaluation metrics that will ensure cultural, spiritual, and ethical consonance. By taking care of the theory and implementation simultaneously, the framework realizes more effective digital therapeutic tools that are culturally relevant. In other words, by embedding culture into the very heart of digital design, this study supports the landscape for the development of inclusive, ethical, and impactful digital mental health interventions.

AUTHORSHIP CONTRIBUTION STATEMENT

Nahreen Zannat: Writing, framework creation, resource collection; Murni Mahmud: Conceptualization, supervising, framework creation.

DATA AVAILABILITY

This study did not generate or analyze any primary data. All sources used were from publicly available literature and are cited accordingly in the references.

DECLARATION OF COMPETING INTEREST

The author(s) declared that there are no conflicts of interest regarding the publication of this paper.

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