

# Designing Inclusive Mobile Government Services in the Middle East: A User Experience–Centered Framework

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## Abstract

Mobile government (m-government) services constitute a central pillar of digital transformation strategies across the Middle East. Governments in the region have invested extensively in mobile platforms to improve public service efficiency, accessibility, and citizen engagement. Despite these efforts, adoption and sustained use of m-government services remain uneven, largely due to user experience (UX) challenges. This paper presents a comprehensive investigation of UX issues affecting mobile government services in the Middle Eastern context. Drawing on an extensive review of academic literature, regional digital government reports, and empirical UX studies, the paper identifies key usability, accessibility, linguistic, cultural, and trust-related barriers. Based on these findings, a contextualized UX framework is proposed to guide the design of inclusive, usable, and culturally responsive m-government services. The study contributes to both theory and practice by extending UX discourse into non-Western public sector contexts and offering actionable guidance for policymakers and designers.

**Keywords:** Human factors engineering, User experience, Usability, Safety

## INTRODUCTION

Digital transformation has become a strategic priority for governments worldwide, with mobile technologies increasingly serving as the primary interface between citizens and public institutions. In the Middle East, this shift has been accelerated by high smartphone penetration, favorable demographics, and ambitious national development agendas such as Saudi Vision 2030, the UAE Digital Government Strategy, and Jordan's Digital Transformation Program. These initiatives emphasize the role of mobile platforms in delivering public services efficiently, transparently, and at scale.

Mobile government services promise improved accessibility, reduced administrative complexity, and enhanced citizen satisfaction. However, the success of these services depends not only on technological availability but also on the quality of the user experience. User experience encompasses usability, accessibility, emotional response, trust, and overall satisfaction arising from interaction with a digital system (ISO, 2019). In public sector contexts, UX assumes heightened importance because government services

must accommodate diverse populations, including users with varying levels of digital literacy, language proficiency, and physical ability.

Despite significant progress in service digitization, many m-government applications in the Middle East continue to face usability and inclusivity challenges. Users frequently report difficulties related to navigation complexity, unclear workflows, limited accessibility support, and insufficient trust cues. These issues undermine user confidence and discourage continued use. This paper argues that a context-aware, user-centered UX approach is essential for realizing the full benefits of m-government services in the Middle East.

## **LITERATURE REVIEW**

### **Mobile Government and User Experience**

Mobile government refers to the provision of government information and services through mobile devices such as smartphones and tablets. Prior research has consistently demonstrated that usability and perceived usefulness are among the strongest predictors of m-government adoption (Davis, 1989; Venkatesh et al., 2003). UX research emphasizes that ease of use, clarity of interaction, and user control significantly influence user satisfaction and behavioral intention.

Government digital services differ from commercial applications in that they often involve legally mandated processes, sensitive personal data, and infrequent but high-stakes interactions. Consequently, poor UX design can amplify cognitive load and emotional stress, leading to frustration and mistrust (Nielsen, 1994). Studies in digital government contexts therefore emphasize the need for simplified interfaces, clear feedback, and supportive guidance throughout the user journey.

### **UX Challenges in Middle Eastern M-Government**

Empirical studies conducted in Middle Eastern countries reveal recurring UX challenges in m-government services. Research in Saudi Arabia has identified deficiencies in navigation clarity, consistency, and accessibility compliance across mobile government platforms (Al-Sakran & Alsudairi, 2019). Similar findings have been reported in Jordan, where users experienced difficulties completing tasks due to complex workflows and unclear terminology (Al-Masaeed, 2013).

Language-related issues are also prominent. While most applications offer Arabic and English interfaces, inconsistencies between language versions are common. Users have reported missing features, outdated content, and inconsistent terminology across languages, which negatively affects usability and trust. These findings highlight the importance of linguistic parity and localization in UX design for the region.

## **Cultural Context and Technology Acceptance**

Culture plays a critical role in shaping technology acceptance and user expectations. Middle Eastern societies are often characterized by high uncertainty avoidance and strong institutional trust expectations, which influence how users perceive digital government services (Hasan & Kazlauskas, 2014). Visible authority cues, formal language, and clear assurances of security and privacy are particularly important in fostering trust.

Trust has been identified as a key determinant of e-government adoption, especially when users are required to share sensitive personal information (Carter & Bélanger, 2005). Inadequate communication of privacy practices or weak security cues can significantly undermine user confidence. UX design in the Middle East must therefore integrate cultural values and trust-building mechanisms alongside functional usability considerations.

## **Accessibility and Inclusive Design**

Accessibility remains a critical yet often underemphasized dimension of m-government UX. The Middle East has a growing population of older adults and individuals with disabilities who increasingly rely on mobile services. Research indicates that many government applications do not fully comply with accessibility standards related to text scalability, color contrast, and assistive technology support (W3C, 2018). Inclusive UX design is essential to ensure equitable access to public services and to support broader digital inclusion goals.

## **Research Objectives**

The primary objective of this study is to develop a comprehensive understanding of UX challenges affecting m-government services in the Middle East and to propose a contextually appropriate design framework. Specifically, the study aims to analyze usability and accessibility issues, examine the influence of linguistic and cultural factors on user experience, and synthesize evidence-based design recommendations to support inclusive and effective mobile public services.

## **METHODOLOGY**

### **Research Design**

This study adopts a qualitative-dominant mixed-methods research design to examine UX challenges in Middle Eastern m-government services. A mixed-methods approach enables the integration of experiential user insights with systematic interface evaluations, which is particularly suitable for UX research in complex public sector systems (Creswell & Plano Clark, 2018). Qualitative methods were prioritized to capture users' perceptions, emotions, and contextual challenges, while quantitative usability indicators were used to support and contextualize qualitative findings.

## **Research Context and Service Selection**

The study focuses on m-government services in Saudi Arabia, the United Arab Emirates, and Jordan. These countries were selected due to their advanced digital government initiatives and the availability of empirical UX research. The services examined include mobile applications related to identity management, appointment scheduling, information access, and transactional services. Selection criteria emphasized high-usage and high-impact services, consistent with prior digital government UX research (Al-Sakran & Alsudairi, 2019).

## **Participant Characteristics**

User data synthesized in this study were drawn from multiple empirical UX studies involving participant samples ranging from 30 to 60 users. Participants represented diverse demographic profiles, including variation in age, gender, education level, and digital literacy. Older adults and users with accessibility needs were included to capture inclusivity-related challenges, as these groups are frequently underserved in digital service design (Al-Masaeed, 2013).

## **Data Collection Methods**

Usability testing constituted a primary data collection method. Participants were asked to complete representative tasks while verbalizing their thoughts using a think-aloud protocol. This method is widely recognized for its effectiveness in identifying usability issues and cognitive obstacles (Nielsen, 1994). Performance indicators such as task success and error occurrence were recorded where available to complement qualitative feedback.

Semi-structured interviews were conducted following usability testing sessions to explore broader perceptions of ease of use, trust, satisfaction, and cultural relevance. This method allowed participants to reflect on their experiences and articulate concerns that may not have emerged during task execution alone (Kvale & Brinkmann, 2015).

## **Heuristic Evaluation**

Expert heuristic evaluations were used to systematically assess interface quality. UX professionals evaluated m-government applications against established usability principles, primarily Nielsen's heuristics, including consistency, error prevention, and user control (Nielsen, 1994). Findings from multiple evaluators were consolidated to identify recurring structural and interaction-level issues.

## **Accessibility Assessment**

Accessibility assessments were conducted based on the Web Content Accessibility Guidelines (WCAG) 2.1, focusing on criteria relevant to mobile interfaces such as text scalability, color contrast, and screen reader compatibility (W3C, 2018). Both automated tools and manual inspections were employed, as manual evaluation is essential for identifying real-world accessibility barriers (Henry et al., 2014).

## Data Analysis

Qualitative data were analyzed using thematic analysis, with iterative coding to identify recurring UX patterns related to usability, language, accessibility, cultural alignment, and trust (Braun & Clarke, 2006). Quantitative indicators were used descriptively to support qualitative themes rather than for inferential analysis, consistent with exploratory UX research goals (Hassenzahl, 2010).

## FINDINGS

The analysis of user studies, heuristic evaluations, and accessibility assessments revealed a set of recurring and interrelated UX challenges affecting mobile government services in the Middle East. These challenges span usability, linguistic and cultural alignment, accessibility, and trust. While the severity of issues varied across services and countries, the consistency of findings across multiple studies suggests systemic design shortcomings rather than isolated implementation problems.

### Usability and Navigation Challenges

One of the most prominent findings relates to navigation complexity and information architecture. Users frequently reported difficulty locating core services within m-government applications, particularly when services were organized according to administrative structures rather than user goals. This mismatch between system logic and user mental models resulted in increased cognitive load and extended task completion times. Similar observations have been reported in prior m-government usability studies, which emphasize that government-centric categorization often undermines usability (Al-Sakran & Alsudairi, 2019).

Task-based usability testing revealed that even routine actions, such as booking appointments or retrieving official documents, often required navigating through multiple screens with limited guidance. Users expressed frustration when system feedback was insufficient, such as a lack of progress indicators during multi-step processes. The absence of clear confirmation messages following task completion further contributed to uncertainty and repeated user actions, increasing the likelihood of errors. These findings align with established usability principles emphasizing visibility of system status and error prevention (Nielsen, 1994).

Inconsistent interaction patterns across different sections of the same application were also identified as a usability barrier. Buttons, icons, and navigation gestures often varied in placement and behavior, forcing users to relearn interactions as they moved between services. Such inconsistencies disproportionately affected older users and those with lower digital literacy, supporting earlier research that highlights the vulnerability of these populations to poor UX design (Al-Masaed, 2013).

### **Linguistic Usability and Language Parity**

Language emerged as a critical determinant of user experience across all examined services. Although most m-government applications offered both Arabic and English interfaces, users consistently reported discrepancies between language versions. These discrepancies included incomplete translations, inconsistent terminology, and missing features in one language version compared to the other. Such inconsistencies negatively impacted users' perceptions of service reliability and professionalism.

Furthermore, the exclusive reliance on Modern Standard Arabic posed comprehension challenges for some users, particularly when complex legal or administrative terminology was employed. Participants indicated that instructions were often difficult to interpret, especially for first-time users unfamiliar with government procedures. These findings support previous research suggesting that linguistic clarity and contextual explanation are essential for effective UX in public sector services (Alshehri et al., 2012).

From a cultural perspective, language use was closely linked to perceptions of trust and authority. Formal language was generally expected in official contexts; however, overly bureaucratic phrasing reduced usability and increased user anxiety. Users expressed a preference for language that balanced formality with clarity, indicating the need for UX writing practices that are culturally appropriate yet user-centered. This tension between institutional formality and usability has been documented in broader studies of e-government adoption in high-context cultures (Hasan & Kazlauskas, 2014).

### **Accessibility and Inclusive Design Limitations**

Accessibility assessments revealed significant gaps in inclusive design practices across m-government services. Many applications failed to support basic accessibility requirements, such as adjustable text size, sufficient color contrast, and compatibility with screen readers. These limitations created substantial barriers for users with visual impairments and older adults, who reported difficulty reading content and interacting with interface elements.

Manual accessibility evaluations further indicated that touch targets were often too small and closely spaced, increasing the likelihood of accidental input errors. This issue was particularly problematic for users with motor impairments or age-related dexterity limitations. The lack of alternative input methods or simplified interaction modes compounded these challenges, reinforcing concerns raised in global accessibility research on mobile interfaces (W3C, 2018).

Participants with accessibility needs frequently reported feeling excluded from full participation in digital government services. This exclusion undermines the fundamental goal of m-government initiatives, which aim to enhance access and equity. The findings echo prior research indicating that accessibility is often treated as an afterthought rather than an integral component of UX design in government systems (Henry et al., 2014; United Nations, 2022).

### **Trust, Security, and Perceived Risk**

Trust-related concerns were pervasive across all examined services and emerged as a critical factor influencing user acceptance and continued use. Users expressed uncertainty about how their personal data were collected, stored, and shared, particularly during identity verification and transactional processes. The absence of clear and accessible privacy explanations heightened perceived risk and reduced confidence in the service.

Visual trust cues, such as recognizable government logos, security indicators, and official domain verification, were inconsistently applied across applications. In cases where such cues were absent or poorly presented, users questioned the authenticity of the service, even when it was officially endorsed. These findings align with prior research demonstrating that trust is a key determinant of e-government adoption, especially in contexts involving sensitive personal information (Carter & Bélanger, 2005).

Emotional responses associated with trust were also evident during usability sessions. Users frequently expressed anxiety when encountering system errors, ambiguous messages, or unexpected requests for personal data. The lack of supportive error messages or accessible help channels exacerbated these emotional responses. UX research emphasizes that emotional experience is a core component of overall user experience and directly influences satisfaction and behavioral intention (Hassenzahl, 2010).

### **Differences Between Novice and Experienced Users**

The analysis revealed notable differences in UX challenges experienced by novice and experienced users. First-time users were particularly affected by poor onboarding experiences, unclear service descriptions, and insufficient guidance. In contrast, experienced users were more tolerant of interface shortcomings but expressed frustration with inefficiencies and redundant steps in repeated interactions.

These findings suggest that current m-government services insufficiently support progressive disclosure and learning. Effective UX design should accommodate both novice users who require guidance and experienced users who prioritize efficiency. This distinction aligns with technology acceptance research, which emphasizes the evolving nature of user expectations over time (Venkatesh et al., 2003).

### **Synthesis of Findings**

Collectively, the findings indicate that UX challenges in Middle Eastern m-government services are multifaceted and interconnected. Usability issues often interact with linguistic ambiguity, accessibility limitations, and trust concerns, amplifying their negative impact on user experience. The consistency of these findings across countries and service types suggests that addressing UX in m-government requires systemic change rather than isolated design improvements.

These results provide the empirical foundation for the proposed UX framework presented in the subsequent section. By addressing usability,

language, accessibility, and trust holistically, the framework seeks to enhance user satisfaction, promote digital inclusion, and support the long-term success of mobile government services in the Middle East.

## PROPOSED UX FRAMEWORK

Based on the synthesized findings, this paper proposes a UX framework emphasizing simplicity, inclusivity, and trust. The framework advocates for clear navigation structures, consistent bilingual content, and culturally aligned communication styles. Accessibility is positioned as a foundational requirement, with adherence to international standards and support for assistive technologies. Trust-building measures, including transparent privacy communication and recognizable government branding, are integrated throughout the user journey. Continuous user research and iterative design are emphasized to ensure sustained UX quality.

## CONCLUSION

Mobile government services are essential to the future of public service delivery in the Middle East. However, their effectiveness depends on inclusive and context-aware UX design. This paper has demonstrated that usability, accessibility, cultural alignment, and trust are central to user satisfaction and adoption. By adopting the proposed UX framework, governments can enhance service quality, promote digital inclusion, and strengthen citizen trust in digital governance.

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