

# INPLASY

## How to improve the mobile application user experience: a systematic literature review

INPLASY202470091

doi: 10.37766/inplasy2024.7.0091

Received: 23 July 2024

Published: 23 July 2024

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### ADMINISTRATIVE INFORMATION

**Support** - This work was supported by the Humanity and Social Science Youth Foundation of the Chinese Ministry of Education under Grant 18YJCZH114.

**Review Stage at time of this submission** - Completed but not published.

**Conflicts of interest** - None declared.

**INPLASY registration number:** INPLASY202470091

**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 23 July 2024 and was last updated on 23 July 2024.

### INTRODUCTION

**Review question / Objective** (1) P (Population): Population

Research Subjects: All relevant studies and literature related to the field of the mobile application user experience (MAUX).

(2) I (Intervention): Intervention

Interventions: Analyze and evaluate various design features, application scenarios, and research methods of MAUX.

(3) C (Comparison): Comparison

Comparison Group: Comparison between different design features, application scenarios, and research methods to identify and summarize major research themes.

(4) O (Outcome): Outcome

Outcome: Determine the major research themes, design features, common application scenarios, and commonly used research methods in MAUX.

(5) S (Study Design): Study Design

Study Design: Systematic literature review, meta-analyses, etc.

**Condition being studied** With the rapid increase in the number of smartphone users, the number of mobile applications has increased explosively across many fields. Therefore, enhancing the mobile application user experience (MAUX) is of practical importance. Despite the substantial volume of MAUX research, relatively few interdisciplinary systematic reviews exist. Reviews often focus on specific elements or application types and lack an overview of the MAUX. However, previous reviews have discussed related aspects, such as user reviews, usability, visual interaction, emotional and sensory dimensions, and user engagement. These have inspired our study. Owing to its interdisciplinary nature, strengthening the interdisciplinary connections in the MAUX is important.

## METHODS

**Search strategy** Our study constructed the themes, features, scenarios, methodologies (TFSM) framework and aimed to find reliable answers via the systematic literature review (SLR) methodology with the Web of Science (WoS) database from 2015 to 2023. The following combination of search strings: (user experience) AND (app OR mobile application OR mobile mini program).

**Participant or population** (1) General mobile app users: Individuals who use mobile applications for various purposes such as communication, social media, entertainment, productivity, health, and fitness.

(2) Specific user groups: Including but not limited to, elderly users, children, users with disabilities, and professionals using specialized mobile applications (e.g., healthcare professionals using medical apps).

(3) Diverse geographical and cultural backgrounds: Ensuring the inclusion of studies from different regions and cultures to provide a comprehensive understanding of MAUX across different contexts.

This comprehensive approach helped in identifying the major research themes, influential design features, common application scenarios, and commonly used research methodologies in the field of Mobile App User Experience (MAUX).

**Intervention** (1) Design Features: Evaluating different design elements of mobile applications such as user interface design, navigation structures, interactive elements, and visual aesthetics.

(2) Application Scenarios: Analyzing the contexts in which mobile applications are used, including daily life, professional settings, education, healthcare, and social interactions.

(3) User Feedback Mechanisms: Assessing methods for collecting and utilizing user feedback to improve MAUX, such as usability testing, surveys, and user reviews.

(4) Technological Innovations: Investigating the impact of new technologies on MAUX, including augmented reality (AR), virtual reality (VR), artificial intelligence (AI), and machine learning.

(5) Accessibility and Inclusivity: Reviewing interventions aimed at making mobile applications more accessible and inclusive for diverse user groups, including those with disabilities.

**Comparator** (1) Alternative Design Features: Comparing different design elements (e.g.,

minimalist design vs. feature-rich design) to assess their impact on user experience.

(2) Different Application Scenarios: Comparing user experiences across various contexts (e.g., professional vs. personal use, healthcare vs. entertainment applications).

(3) Varied User Feedback Mechanisms: Comparing the effectiveness of different user feedback collection methods (e.g., usability testing vs. user surveys) in improving MAUX.

(4) Technological Innovations: Comparing the impact of traditional mobile app technologies with newer technologies (e.g., standard mobile apps vs. apps incorporating AR/VR).

(5) Accessibility and Inclusivity Interventions: Comparing mobile apps designed with standard accessibility features against those with enhanced accessibility features for diverse user groups.

**Study designs to be included** Systematic Literature Review (SLR).

### Eligibility criteria

Inclusion Criteria:

IC1: The study should be focused on mobile applications, tablet devices, WeChat mini programs, etc.

IC2: The study reports on the common themes or concepts of the MAUX.

IC3: The study reports on influences on the MAUX.

IC4: The study reports on common user experience research methodologies for mobile apps.

Exclusion Criteria:

EC1: The study is written in a language other than English and published at a conference or as a book chapter.

EC2: The study only examines mobile application development without addressing UX.

EC3: The study uses mobile apps as experimental tools only, regardless of UX.

**Information sources** Web of Science (WoS) database (from 2015 to 2023).

**Main outcome(s)** Research themes: Usability research, user behavior and user-centered design.

Design features: Interface features, interaction features, and performance features.

Scenarios: Mobile health care, mobile learning, and mobile shopping.

Methodologies: Qualitative, Quantitative, and mixed methods.

**Data management** Zotero.

**Quality assessment / Risk of bias analysis** The credibility and validity of the chosen articles were

evaluated using a checklist. This checklist was designed to assess the clarity of several key aspects:

QA1: Are the objectives of the research clearly articulated?

QA2: Do the studies come from a WoS core journal?

QA3: Do the studies provide reliable results or supporting data?

**Strategy of data synthesis** We developed a detailed DEF to ensure an unbiased extraction process and reliable SLR outcomes. The DEF consisted of a spreadsheet featuring columns for various details, including the article title, abstract, study location, participants, content, design, subjects, methodology, instrumentation, scale, etc.

**Subgroup analysis** (1) Application Types: Categories of Mobile Applications: Comparing user experience across different categories of mobile apps (e.g., social media, gaming, health and fitness, education, productivity).

(2) Geographical and Cultural Contexts: Regions and Countries: Analyzing how MAUX varies across different geographical regions and cultural contexts.

(3) Accessibility Needs: Users with Disabilities: Exploring the user experience of mobile applications for users with various disabilities (e.g., visual, auditory, motor impairments).

(4) Technological Variations: Device Types: Comparing user experience on different types of mobile devices (e.g., smartphones vs. tablets). Operating Systems: Analyzing differences in MAUX between different operating systems (e.g., iOS vs. Android).

(5) Usage Contexts: Professional vs. Personal Use: Examining user experience differences in mobile applications used for professional purposes versus personal purposes.

### Sensitivity analysis

(1) Inclusion Criteria:

Varying Inclusion Criteria: Analyzing how the inclusion or exclusion of certain types of studies affects the overall results.

(2) Quality Assessment:

Impact of Study Quality: Evaluating the influence of including only high-quality studies versus including all studies, regardless of quality.

(3) Temporal Analysis:

Time Frame of Studies: Analyzing how the inclusion of studies from different time periods influences the results and conclusions.

**Country(ies) involved** China.

**Keywords** MAUX; mobile applications; user experience; SLR; Interdisciplinary.

### Contributions of each author

Author 1 - Guoying Lu - Conceptualization, validation, formal analysis, review and editing, project administration, and funding acquisition.

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**Language restriction** No.