

A Review on the Application of UTAUT2 in Mobile Learning

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Abstract: Emerging as the most comprehensive theory in understanding individual technology acceptance, Extended Unified Theory of Acceptance and Use of Technology (UTAUT2) has seen growing applications across various domains. This study summarizes the limitations of existing research by sorting out the literature on UTAUT2 in the field of mobile learning and proposes future research directions: First, more empirical research is needed to examine the effects of use behaviour and moderating variables. Second, a great diversity of respondents is encouraged so that deeper insights can be gained from students and teachers at different educational stages. Third, longitudinal research can be effective in tracking users' usage and capturing changes in users' technological acceptance at different stages.

Keywords: Mobile learning; Technology acceptance; UTAUT2

1. Introduction

The spread of mobile technology and the surge in personal ownership of mobile devices have had a transformative impact on all sectors of society globally. At the same time, mobile technology has also penetrated the education market. Mobile learning includes all learning activities that can be carried out includes all learning activities that can be carried out anywhere and anytime via mobile devices, such as handheld PDAs, mobile phones, and smartphones^[1].

2. The development of UTAUT2

To predict user acceptance and use of a certain technology, scholars developed a series of technology acceptance models. Based on the eight most influential models, Venkatesh et al. (2003) integrated and tested a comprehensive model, UTAUT, namely the Unified Theory of Acceptance and Use of Technology. The UTAUT model consists of four constructs: performance expectancy, effort expectancy, social influence, and facilitating conditions. Among them, facilitating conditions are the directly determining factors of use behaviour while the other three are the direct determinants of the individual's behavioural intention. four moderating variables including gender, age, experience and voluntariness of use are adopted to explain user differences^[2]. To better understand the acceptance of technology from the perspective of the individual consumer, Venkatesh et al. (2012) proposed the Extended Unified Theory of Acceptance and Use of Technology (UTAUT2). It adds three new constructs: hedonic motivation, price value and habit and delete the use of voluntariness of use. UTAUT2 has shown significant improvement by explaining 74% and 52% of the variation in behavioural intention and use behaviour, respectively^[3]. It is considered to be the most comprehensive model to explore the acceptance and usage of personal technology^[4].

3. Application of UTAUT2 in Mobile Learning

This review was conducted from four databases: Web of Science, Scopus, ERIC, and ProQuest. Only English literature was included. This paper aims to understand the current research trends of UTAUT2 in mobile learning. To achieve this, a number of representative studies are summarized.

3.1 Studies on Adding and Removing Variables to the UTAUT2 Original Model

Most existing literature is based on the UTAUT2 model, either incorporate new variables or delete irrelevant ones, tailoring the model to address specific research objectives.

Arain et al. (2019) shed light on m-learning acceptance at the tertiary level in developing countries. They identified ubiquity, satisfaction, habit, performance expectancy, and hedonic motivation as predictors of intention. Moreover, the mediator role of satisfaction between appearance quality, information quality, system quality, and intention was supported in their findings [5]. In a similar vein, by incorporating five new constructs into UTAUT2, Tarhini et al. (2021) examined Omani University students' intention to use social media for academic purpose. Their findings revealed that performance expectancy, hedonic motivation, habit, emotional attachment, collaboration, communication, resource and material sharing have a positive effect on intention with 67.7% explained variance. However, trust and effort expectancy were found insignificant in their study [6].

3.2 Comparative studies

While most existing studies focus on only a single group of respondents, minority scholars investigated the technology acceptance of students across different countries to make a comparative analysis.

El-Masri and Tarhini (2017) incorporated trust into UTAUT2 and compared the determinants of the selection of e-learning systems between developing and developed countries. Interestingly, facilitating conditions were found to be a determinant only in respondents from developed countries while social influence and effort expectancy only affected respondents in developing countries [7]. Another comparative study was conducted by Al-Azawei and Aloyayr (2020), who investigated 246 Saudi students and 223 Iraqi students. The results revealed that performance expectancy, hedonic motivation and trust significantly affect the intention in both samples, while effort expectancy does not in either sample. Another noteworthy finding is that price value was a determinant of m-learning only in Iraqi samples, while social influence was found to have a significant effect only on Saudi students' acceptance [8].

3.3 Technology Acceptance Studies Among Faculty

Although most existing literature focused on students' perspective, some scholars explored the acceptance of faculty.

Mtebe, Mbwilo and Kissaka (2016) studied factors influencing teachers' adoption of multimedia-enhanced teaching content based on UTAUT2, excluding price value and moderators from the original model. The findings indicated that all the constructs included had a significant impact on teachers' adoption except one construct, performance expectancy [9]. Another similar research is Zwain's (2019) study which covered 228 faculty members and 553 students. Their findings revealed that hedonic motivation, facilitating conditions, technological innovativeness, information quality and habit significantly affect the acceptance of both faculty and students. Besides, the predictors of students' acceptance also include learning value and performance expectancy, while determinators among faculty include social influence [10].

3.4 Studies on the moderating variables of UTAUT2

An analysis of the compiled research on the acceptance of mobile learning technology using the UTAUT2 framework, reveals that a notable feature is the absence of moderating variables in most research models.

Nikolopoulou, Gialamas and Lavidas (2020) adopted the complete UTAUT2 model in their study, including the three moderators. Their investigations showed that habit was the strongest predictor of university students' use of mobile phones as a learning tool, followed by performance expectancy and hedonic motivation. However, all three moderators were found no moderating effect [11]. Ameri (2020) studied pharmacy students' acceptance of an educational app. The findings revealed that habit, social influence and performance expectancy significantly affected students' intentions. In addition, they found that the influence of habit on use behaviour in males was stronger than in females [12].

4. Conclusion

This review paper sheds light on the current research trend of UTAUT2-based empirical studies of mobile learning acceptance. Specifically, this study presents the following three main findings.

First, nearly half of the studies focus solely on behavioral intention, neglecting to examine actual usage. Future studies will try to investigate the actual use of users. Furthermore, there is a lack of research on the effect of moderating variables in existing literature. Secondly, from the educational level, the findings show that most studies are conducted in higher education environments, with only one exception in secondary school. Most of the respondents are university students, only one group of university staff and one group of secondary school teachers. Therefore, future studies can try to explore students at different levels of education to gain in-depth insights. Third, in the research methodology, all the literature we included is cross-sectional research based on a questionnaire survey. Given this, future research can consider exploring longitudinal research by investigation users' acceptance at different phases such as adoption, initial use, or post-adoptive use.

In conclusion, this paper provides a comprehensive analysis of the current state of research on UTAUT2 model in mobile learning.

By identifying its limitations and offering specific recommendations, this study serve as a valuable reference for future research on the acceptance and use of mobile learning.

Nevertheless, this review is limited to a selection of key studies from four databases, analyzing only a subset of the total number of studies. Future studies could address this limitation by expanding its scope to encompass a wider range of databases and including a more comprehensive analysis of existing research. Adopting this approach would provide a deeper understanding of UTAUT2's application in mobile learning.

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