Chapter 12
Usability Analysis of a Mobile Learning Application

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ABSTRACT

With the advances in mobile technology, mobile learning has gained importance and has spread widely especially among young people. In this study, a research model is developed to determine the factors affecting the usability of a mobile learning application belonging to one of the most popular MOOCs (massive open online courses) providers. The constructs—aesthetic graphics, color, control obviousness, entry point, fingertip-size controls, font, gestalt, hierarchy, subtle animation, and transition—adapted from the study of Hoehle et al. are included to reveal their effects on usability perception. Furthermore, the operating systems—iOS or Android—used in the mobile devices affect the usability of the mobile application is explored. A questionnaire is developed, and 223 surveys are collected from the users of the application. The results of the study show that gestalt, control obviousness, subtle animation, and aesthetic graphics are significant factors on the usability perception of the users.

INTRODUCTION

With the advancements in technology, mobile phone usage has increased in the last decade. According to statistics, there are currently more than 4.93 billion mobile phones around the world while the world population is 7.6 billion ("Number of mobile phone users", 2018; "Current world population", 2018). With the increase in mobile device ownership and usage, mobile devices have become part of our daily lives. People start to use these devices not only for daily mobile phone activities but also for

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sophisticated ones such as banking transactions, buying plane tickets, booking a hotel room and getting an online education. Getting online education by using mobile devices is called "mobile learning". In the literature, mobile learning is defined as "the delivery of learning to students anytime and anywhere through the use of wireless Internet and mobile devices, including mobile phones, personal digital assistants (PDAs), smartphones and digital audio players (Wang et al., 2009).

Mobile learning has advantages such as interactivity between students and teachers, portability of the mobile devices, collaboration between the students in an online education class, engagement of young users (Hashemi et al., 2011; Özdamli & Çavuş, 2011). Students could access learning contents anywhere and anytime with the help of their mobile devices. However, these advantages do not conclude that mobile learning is perfect and it takes the place of the traditional education in the near future. There are some disadvantages of mobile learning caused by the specifics of mobile devices such as small screen size, mobile context, connectivity, different display resolutions, limited processing capability and power, restrictive data entry methods etc. Furthermore, the design characteristics of the mobile applications such as complexity may cause usability problems that affect the user's intention to use negatively. As the system becomes sophisticated, people start to feel hesitation or anxiety while using the system. At this point usability of any system becomes essential for the acceptance and success. Usability may be defined simply as the ease of use. However, it includes other concepts like learnability, memorability, error-free or error prevention. Because of this, in this study, factors affecting the usability of a mobile learning application are examined.

In this study, the mobile application of one of the favourite MOOCs (Massive Open Online Courses) providers is examined. It is a mobile learning application published on the Apple's App Store on iOS platform and Google's Play Store on Android platform. It is currently one of the world's biggest online education platforms, and the platform currently has more than 80,000 different courses available online. These courses have a wide range of topics like programming, design, music or even sports in 10 different languages. In the platform, instructors prepare their lessons about the subjects they expertise with the help of the tools provided by the system and publish them.

In this study, a research model is developed in order to determine the factors affecting the usability of the mobile learning application. The constructs- aesthetic graphics, color, control obviousness, entry point, fingertip-size controls, font, gestalt, hierarchy, subtle animation and transition adapted from the study of Hoehle et al. (2016) are included to reveal their effects on usability perception. Furthermore, the operating systems- iOS or Android used in the mobile devices affect the usability of the mobile application is explored. A questionnaire is developed, and 223 surveys are collected from the users of the application. A three-step approach is used in the analysis: In the first step, the reliability analysis of each construct is checked. In the second step, significant factors affecting the usability of the mobile application is determined by using the technique-regression analysis and separately iOS and Android applications, the significant factors are also determined. In the third step, the t-test is applied to examine whether there is a difference between iOS and Android applications regarding usability constructs, and in addition, an item based analysis is done.

The remainder of this study is organized as follows: The second section provides background information about mobile learning, the usability of mobile applications and usability of mobile learning applications. In the third section, research methodology and the analysis results of this study are presented. In the fourth section, solutions and recommendations are discussed. Finally, future research directions and conclusions of the study are presented.