

Chapter 16

Usability Software Engineering Testing Experimentation for Android–Based Web Applications: Usability Engineering Testing for Online Learning Management System

Hina Saeeda

National University of Sciences and Technology, Pakistan

Fahim Arif

National University of Sciences and Technology, Pakistan

Nasir Mehmood Minhas

Pir Mehr Ali Shah Arid Agriculture University, Pakistan

ABSTRACT

For success of android applications working in cloud environments usability testing is vital as the user usability satisfaction is the leading point in market. Authors are testing usability of the learning management system of (National university of science and Technology Pakistan)ten usability factors system content visibility, system learn ability, accessibility, operability, consistency, feedback, error message production, error prevention, and ease to remember system operations are chosen on the basis of these key factors proper experimentation on users who access LMS by their smart phones using android applications in cloud environments is conducted.Pre-test was conducted for measuring the initial requirements of experimentation process after that the detailed experimentation was performed to measure the usability factors presence in android based web applications operated in cloud environment. The results are statistically summarized against.

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INTRODUCTION

The success of a web application has its roots deep into the usability analysis and testing. Access to a web application from Android devices is another key issue of usability. Android web applications are providing ease to users. On the other hand they are also creating difficulties for users in a usability sense, as a new user cannot easily pick and understand the interface of Android apps and web apps, and their way of operating. If the Android apps, and specifically web apps accessed through Android devices, are tested for usability prior to launching to the market, and even after the launching, many of the conflicts regarding usability issues of these apps can get resolved beautifully.

Android devices are providing the ultimate way of accessing web applications from cell phones using cloud environments. Users of Android applications and smart phones are increasing, as people are more attracted toward mobile computing devices use, due to the benefits these devices are providing, such as mobility, ubiquity, etc.

In current market scenarios where the technology enhancement and innovation is on peak and competition is really tough, the success of any software application depends a lot on its usability factors as the usability factors may be used to confirm that the user is feeling that it is easy to operate the application, the user is feeling that the steps of the application operability are easy to remember, in short that the user or customer is satisfied with the ease of operate that application is providing to user during operation in all senses. Usability factors not only help ensuring that the user is mentally comfortable while operating the application, but also that, physically, the user is not in any trouble while operating the application. For success of Android applications and web applications in Android devices, the surety of usability is vital and not ignorable as the customers' or end users' usability satisfaction is the leading point in market business.

So it is not only recommended to test the Android web applications for usability before launching them to the market but also after launching, for gaining valuable feedback from market and end users.

In this chapter, the authors are covering some important usability testing techniques for Android based web applications while working in cloud environments.

Usability engineering is a branch of software engineering. Usability is about the human and computer relations and friendly interactions.

Usability enhances task accomplishing power of users by providing user friendly interfaces. Usability engineering is applicable mostly everywhere in the software and computer science (Blandford, Keith, Connell, & Edwards, 2004).

Web applications are a vastly growing area in software and computer sciences. Success criteria of web based applications depend on satisfaction of the end user.

The end user rates a web application as satisfactory if he feels that it is easy to understand, learn remember and to operate (Amalfitano, D., Fasolino, A., & Tramontana, P, 2011). All these properties are available in a web application if its usability is tested verified and validated. Nowadays, usability is considered very important for the web interfaces.

The concept of usability emerged at the end of 1970s. In the documents of ISO 9241-11 specification, this term is defined officially as following (Andreasen, M. S., Nielsen, H., Schrøder, S., & Stage, J, 2007): "extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use". In this definition, effectiveness

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