User Acceptance of Mobile Services

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ABSTRACT

Personal mobile devices are increasingly being used as platforms for interactive services. Ease of use is important, but the services should also provide clear value to the user and they should be trustworthy and easy to adopt. These user acceptance factors form the core of the Technology Acceptance Model for Mobile Services introduced in this article. The model has been set up based on field trials of several mobile services with altogether more than 200 test users. This article presents the technology acceptance model and introduces two case studies of implementing the model as a design and evaluation framework in practice.

Keywords: case study, evaluation criteria, IT evaluation methods, user expectations, user satisfaction, wireless technologies

INTRODUCTION

Research on mobile services has thus far mainly concentrated on the usability of alternative user interface implementations. Small mobile devices pose significant usability challenges and the usability of the services is still worth studying. However, more attention should be paid to user acceptance of the planned services. The reason for many commercial failures can be traced back to the wrongly assessed value of the services to the users (Kaasinen, 2005b).

User evaluations of mobile services often have to be taken into the field as the service would not function properly otherwise or it would not make sense to evaluate it in laboratory conditions. This would be the case, for instance, with GPS systems and route guidance systems. In long-term field trials with users, it is possible to gather feedback on the adoption of the service in the users’ everyday lives. Such studies gather usage data beyond mere usability and pre-defined test tasks (Figure 1). Field trials help in studying which features the users start using, how they use them and how often, and which factors affect user acceptance of the service.

Business and marketing research already have approaches whereby new technology is studied on a wider scale. The technology acceptance model by Davis (1989) defines a framework to study user acceptance of a new technology based on perceived utility and perceived ease of use. Each user perceives the characteristics of the technology in his/her own way, based for instance on his/her personal char-
acteristics, his/her attitudes, his/her previous experiences and his/her social environment. The technology acceptance model has evolved and been applied widely, but mainly in the context of introducing ready-made products rather than in designing new technologies.

The technology acceptance model for mobile services is an extension to the technology acceptance model. The model is based on a series of field trials and other evaluation activities with different mobile Internet and personal navigation services and over 200 test users (Kaasinen, 2005b). The technology acceptance model for mobile services constitutes a framework for the design and evaluation of mobile services.

**BACKGROUND**

Technology acceptance models aim at studying how individual perceptions affect the intentions to use information technology as well as actual usage (Figure 2).

In 1989 Fred Davis presented the initial technology acceptance model (TAM) to explain the determinants of user acceptance of a wide range of end-user computing technologies (Davis 1989). The model is based on the Theory of Reasoned Action by Ajzen and Fishbein (1980). TAM points out that perceived ease of use and perceived usefulness affect the intention to use. Davis (1989) defines perceived ease of use as “the degree to which a person believes that using a particular system would be free from effort” and perceived usefulness as “the degree to which a person believes that using a particular system would enhance his or her job performance”. Perceived ease of use also affects the perceived usefulness (Figure 3). The intention to use affects the real usage behavior. TAM was designed to study information systems at work to predict whether the users will actually take a certain system into use in their jobs. The model provides a tool to study the impact of external variables on internal beliefs, attitudes and intentions.

TAM deals with perceptions; it is not based on observing real usage but on users reporting their conceptions. The instruments used in connection with TAM are surveys, where the questions are constructed in such a way that they reflect the different aspects of TAM. The survey questions related to usefulness can be, for instance: “Using this system improves the quality of the work I do” or “Using this system saves my time”. The survey questions related to ease of use can be, for instance: “The system often behaves in unexpected ways” or “It is easy for me to remember how to perform tasks using this system”.

TAM was originally developed for studying technology at work, but it has often been
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