Chapter XVIII

Factors Influencing Users' Adoption of Mobile Computing

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ABSTRACT

This chapter introduces a model that identifies factors influencing users' adoption of mobile computing. It extends the Technology Acceptance Model (TAM) by identifying system and user characteristics that affect the perceived usefulness and perceived ease of use of mobile computing, which are two key antecedents in TAM. Furthermore, it incorporates two additional constructs, trust and enjoyment, as determinants in the model, and proposes specific factors that influence these two constructs. The long-term goals of this work are to gain an increased understanding of adoption issues in mobile computing, and to explain how specific HCI design issues may affect adoption by users.

INTRODUCTION

The emergence of mobile computing, combined with the increased popularity of the Internet, is changing our daily lives. The increasing use of small portable computers, wireless networks and satellites unfolds the new technology of mobile computing, which allows transmission of data to computers that are *not* physically linked to a network. As a result, people can communicate "on the move."

Mobile devices with new input and output methods and form factors are dramatically different from traditional desktop computers (Rodden et al., 1998). These technological changes make increasing demands on both the quality of user interface and the functionality of mobile devices (Johnson, 1998). The questions of interest are: 1) what factors influence users' adoption of mobile computing; 2) how does the design of mobile devices and interface affect user adoption; and 3) to what degree do specific factors such as trust and enjoyment (in using mobile devices) play a role in adoption?

The objectives of this chapter are: 1) to review literatures on technology adoption and the various design dimensions of mobile devices; and 2) to propose a model for adoption of mobile computing.

BACKGROUND

Technology Adoption Models

In reviewing the literature on IT adoption, we found the Technology Acceptance Model (TAM) proposed by Davis (1989) to be most relevant to this research. TAM was derived from the Theory of Reasoned Action (TRA) proposed by Fishbein and Ajzen (1975). According to Davis (1989), perceived usefulness and perceived ease of use are two key factors influencing people's attitude toward IT usage intention and actual IT usage. Perceived usefulness is defined as "the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989, p. 320). Perceived ease of use is defined as "the degree to which a person believes that using a particular system would be free of effort" (Davis, 1989, p. 320). Davis and his colleagues (Davis, 1989; Davis et al., 1989; Davis et al., 1992) demonstrated that perceived usefulness had a strong direct effect on usage intentions, whereas perceived ease of use affected usage intentions indirectly via perceived usefulness. They also demonstrated that TAM had a higher explanatory power than TRA for predicting (word processing) software usage (Davis et al., 1989).

In an extension to TAM, Davis and his colleagues (Davis et al., 1992) examined the impact of enjoyment on usage intentions. They reported two studies concerning the relative effects of usefulness and enjoyment on intentions to use and usage of computers. As expected, they found that usefulness had a strong effect on usage

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