Chapter XI

Mobile Commerce and Usability

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ABSTRACT

This chapter analyzes the critical issues confronting usability for mobile commerce (m-commerce) applications. Limited bandwidth and multiple form factors pose constraints for user interface design in terms of the amount and format of content presentation, navigation, and site structure. Mobile tasks performed on handheld devices—such as wireless PDAs, Pocket PCs and WAP phones—challenge developers to adopt new methods and design guidelines that take into account contextual variations in a mobile environment. At this early stage of mobile commerce, careful mapping of e-business strategies, mobile tasks, and technology characteristics will be critical for wireless interface design. Future research in these areas is needed to improve the usability of mobile commerce.
INTRODUCTION

Usability refers to how well an application is designed for users to perform desired tasks easily and effectively. Usability issues involve user interface design, methods for development, testing, and deployment. The current wireless technology poses many constraints for effective interface design. These constraints include limited connectivity and bandwidth, diverse yet simplistic devices, the dominance of proprietary tools and languages, and the absence of common standards for application development. Many of these problems are similar to early Web developments (Ramsay & Nielsen, 2000). However, users of m-commerce are likely to have already experienced e-commerce technology (Anckar & D’Incau, 2002) and therefore may have heightened expectation for data and services.

The convergence of mobile Internet and wireless communications has not yet resulted in expected growth in mobile commerce. Many factors may influence the adoption of m-commerce (Zhu, Nah, & Zhao, 2002). Consumer adoption of m-commerce has been slow, even in countries that have broadly adopted wireless technology (Anckar & D’Incau, 2002). The enterprise and business use of wireless technology holds greater promise for business growth and increased competitiveness, but it demands the transformation of business processes and infrastructure (Kalakota & Robinson, 2001). Poor usability of mobile Internet sites and wireless applications for commerce activities stands out as a major obstacle for the slow adoption of mobile solutions. Such difficulty discourages users from accessing mobile Internet sites (Chan, Fang, Brzezinski, Zhou, Xu, & Lam, 2002) or choosing m-commerce as a distribution channel (Shim, Bekkering, & Hall, 2002). Even with the latest 3G phones in Japan, consumers still find the small screen display and small buttons on these devices difficult to use (Belson, 2002).

Researchers suggest that interface developers need to consider the interaction among the interface design of user tasks, form factors, and purposes of applications (e.g., Chan et al., 2002). Application developers should also consider the interaction between the context of the environment and the device (Johson, 1998). Some researchers question whether the existing user interface design guidelines for e-commerce are still applicable for mobile application development, or if new ones should be created (Tarasewich, Nickerson, & Warkentin, 2002). A comprehensive methodological and comparative framework for evaluating the usability of m-commerce applications is also necessary (Siau, Lim, & Shen, 2001).

The main objective of this chapter is to provide a critical analysis of usability issues confronting the interface design, development, deployment and adoption of m-commerce applications. We focus primarily on Internet-based solutions in North America that use WAP (Wireless Application Protocol) phones, wireless PDAs (Personal Digital Assistants), Pocket PCs, and wireless two-way pagers. In addition, we examine the unique characteristics of mobile technology that affect user interface design, discuss the incorporation of user interface in the development of m-commerce applications, and suggest topics for future research and development.
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