Mobile Portals as Innovations

Alexander Serenko
Lakehead University, Canada

Ofir Turel
California State University, Fullerton, USA

INTRODUCTION

The purpose of this chapter is to analyze mobile portals (m-portals) as an innovation. M-portals are wireless Web pages that help portable device users interact with mobile content and services (based on the definition by Clarke & Flaherty, 2003). Previous works in the area of mobile portals mostly concentrated on their technical aspects, implementation issues, classifications, and user acceptance (e.g., Gohring, 1999; GSA, 2002; Koivumäki, 2002). At the same time, these studies did not view mobile portals as innovations themselves, nor discussed the innovative potential of this novel technology. Analyzing technological artifacts as innovations is important for two reasons. First, such analysis can help m-portal developers and providers pinpoint the salient m-portal characteristics that drive service diffusion. Second, it can assist potential m-portal developers and providers understand the risks associated with entering this segment of wireless services.

This study attempts to contribute to the knowledge base by discussing various dimensions of the innovativeness of mobile portals and predicting the commercial success as well as potential risks of designing m-portals. Specifically, this investigation utilizes two innovation-based models as a lens of analysis. The first is the Moore and Benbasat's (1991) list of perceived characteristics of innovating (PCI), which is adapted to assess the innovation features of mobile portals. The second is the Kleinschmidt and Cooper's (1991) market and technological newness map. By applying these frameworks, the study attempts to develop a better understanding of individual innovation characteristics and the innovation typology of mobile portals that is important for both theory and practice.

Mobile portals are a fruitful area of growth and interest. Even though the technology has been in use for only several years, both researchers and practitioners have devoted substantial efforts to design m-portals that would meet end-user requirements. To ensure the success of this technology, it is important to further understand its innovative potential. However, little work has been done in this area. A discussion grounded on the existing innovation schools of thought would help to bridge that gap.

M-PORTALS AS INNOVATIONS

There are several works that have already discussed the importance of mobile data innovations. This line of research was inspired by the continuous breakthroughs in the mobile telecom sector (Berkhout & van der Duin, 2004). Several factors facilitate constant innovation in the telecommunications industry. *Bandwidth* is the first one. For the past years, the bandwidth of both wired and wireless networks has been continuously increasing by mostly following the Gilder's Law. It states that bandwidth grows three times as fast as the CPU speed. This trend facilitates the development of various innovative technologies, including wireless Internet access and mobile portals. *Industry structure* is the second factor inspiring innovation. Currently, the North American and European industries are, to some extent, de-regulated, restructured, and consist of numerous independent service providers (Turel & Serenko, 2006). There are certain advantages of this industry structure. It increases competition among individual players that have to constantly innovate to stay competitive. At the same time, there are innovations created by partnerships with organizations in the same or different sectors. In the case of mobile portals, this is transparent in alliances between infrastructure, technology, media, and content providers who combine their efforts to deliver a single innovative product on the market (Turel & Yuan, 2006). There are various new business models that may be implemented with the employment of mobile portals. For example, revenues from services accessed through a mobile portal are usually shared between a wireless carrier and service provider (ARC Group, 2001; MacDonald, 2003). *Agent-based technologies* are the third factor fostering innovations in the mobile services industry (Al agha & Labiod, 1999; Kotz et al., 2002). Especially, agent-based computing is an important tool to enhance the functionality of mobile portals and enable new business models (Chen, Joshi, & Finin, 2001; Panayiotou & Samaras, 2004). An agent is a software entity that is autonomous, continuous, reactive, collaborative; it constantly works in the background of a computer system, such as a mobile application, analyzes all user actions, develops user profiles, communicates with other agents or systems, and acts on behalf of the user by making recommendations (Detlor, 2004; Serenko, 2006).

Agent technologies are considered an important innovation that may contribute substantially in the development of new computer technologies, business models or human-computer interaction approaches (Serenko & Detlor, 2004; Serenko, Ruhi, & Cocosila, 2007). For example, an agent that learns a user's profile over time may design personalizable mobile portals tailored to the needs of each particular individual; as user behavior changes, the agent adjusts the content of a portal.

In order to better understand the innovating characteristics of mobile portals, Moore et al.'s (1991) list of perceived characteristics of innovating is employed. Their approach originates from diffusion of innovations theory introduced by Rogers (1983) and Rogers and Shoemaker (1971), and concentrates on technology innovation adoption research (Plouffe, Hulland, & Vandenbosch, 2001). A list of perceived characteristics of innovating applied to mobile portals is presented next:

- *Relative advantage* is the degree to which an innovation is superior to the ideas, practices, or objects it supersedes. In terms of mobile portals, a relative advantage of using this technology is evident in ubiquity, localization, and personalization. Ubiquity allows users to access mobile portals from anywhere at anytime given that a wireless connection is established. Localization is the generation of a portal targeted to the current location of a mobile device user, and personalization is the employment of user profiles to deliver portals tailored to the needs of each person individually (Clarke et al., 2003; Serenko & Bontis, 2004; Watson, Pitt, Berthon, & Inkhan, 2002). As such, this is a vital feature of m-portals.
- *Compatibility* is the degree to which an innovation is consistent with the existent values, previous experiences, and current needs of adopters. In the case of mobile portals, compatibility has two key dimensions: technical compatibility and needs compatibility. First, the m-portal technology should be compatible with various mobile devices, such as wireless PDAs or cell phones. At the same time, most existing WWW portals cannot be directly displayed on mobile devices. The concept of m-portals is not entirely new; it is assumed that the majority of mobile device users are familiar with WWW portals. Thus, m-portals are partially compatible with mobile devices. Second, m-portals should be compatible with life-styles and needs of many individuals in countries in which wireless phones have highly penetrated (e.g., Italy, Singapore, etc.). Users in these countries are accustomed to wireless applications, and learned to appreciate the ubiquity offered by wireless content and services (Turel, 2006).
- *Ease of use* is the degree to which an innovation is perceived as being relatively difficult to understand and use. There are two aspects of m-portal technologies relating to this characteristic. On the one hand, mobile portals are more difficult to navigate by using a mobile device than a regular WWW portal. On the other, m-portals improve the ease of use of the mobile Internet by organizing important content and making it easier to access.
- *Results demonstrability* is the degree to which the benefits and utilities of an innovation are readily apparent to the potential adopter. M-portals save time and money (airtime fees) by easing and accelerating the navigation to the desired mobile application or content. As such, m-portal users may quickly observe the benefits by locating information and services more effectively, economically, and efficiently.
- *Image* is the degree to which innovation usage is perceived to enhance adopters' image, prestige, or status in their social system. With respect to m-portals, this is not a major benefit of the technology. In developed countries, mobile device users are not currently perceived as highly innovative individuals by the other members of their social group. Recently, Turel, Serenko, and Bontis (2007) conducted an empirical study of short messaging services (SMS) adoption in Canada and concluded that social value of SMS, which was defined as the enhancement of one's social self-concept provided by the usage of SMS, does not have an impact of SMS usage intentions given that SMS is not perceived as a highly innovative technology. It is suggested that the same holds true in the case of mobile portals, and image is not the key reason for m-portal employment.
- *Visibility* is the degree to which the results of an innovation are visible to others. Given the low image enhancement associated with m-portals (see the previous paragraph), m-portal users are not likely to brag about the use of this service. Thus, the outcomes of the employment of this technology will be hardly visible to other wireless WWW users, colleagues, or friends. Indeed, it is up to m-portal users to communicate the visibility of portal usage to the others.
- *Trialability* is the degree to which a potential adopter believes that an innovation may be experimented with on a limited basis before an adoption decision needs to be made. Currently, there are both free and fee-based mobile portals. In the case of free portals, there is a limited financial risk associated with the service because users may try it out, pay a marginal airtime fee, and discontinue without consequences of any kind. At the same time, some users may not feel comfortable signing up for the usage of commercial mobile portals before having some exposure to the actual m-portal services. The latter type of portals presents a higher financial risk.