Adoption of M-Commerce Devices by Consumers

Humphry Hung
Hong Kong Polytechnic University, Hong Kong

Vincent Cho
Hong Kong Polytechnic University, Hong Kong

INTRODUCTION

The Internet has undoubtedly introduced a significant wave of changes. The increased electronic transmission capacity and technology further paves a superhighway towards unrestricted communication networks (Chircu & Kauffman, 2000; Cowles, Kiecker, & Little, 2002). It is estimated that by 2007, the total number of Internet users in the world will be over 1.4 billion and the percentage of wireless users is projected to take up about 57% of the vast number (Magura, 2003). Most people anticipate that the next-generation commerce will emerge from traditional commerce to PC-based e-commerce, and eventually to mobile commerce (Ellis-Chadwick, McHardy, & Wiesnhofer, 2000, Miller, 2002, Watson, Pitt, Berthon, & Zinkhan, 2002).

Mobile commerce (m-commerce) is an extension, rather than a complete replacement, of PC-based electronic commerce. It allows users to interact with other users or businesses in a wireless mode, anytime and anywhere (Balasubramanian, Peterson, & Jarvenpaa, 2002; Samuelsson & Dholakia, 2003). It is very likely that PC-based e-commerce will still prevail for a relatively long period of time in spite of the trend that more and more people will choose to adopt m-commerce for their purchases (Miller, 2002).

The focus of our article is on the consumers' adoption of m-commerce devices (MCDs), which are equipment and technologies that facilitate users to make use of m-commerce. MCDs include mobile phones, personal digital assistants (PDA), portable computer notebooks, Bluetooth, WAP, and other facilities that can have access to the wireless networks. We expect that the heading towards a world of mobile networks and wireless devices, which will present a new perspective of time and space, is definitely on its way.

Several basic questions about m-commerce devices will be addressed in this article. First, why should consumers adopt MCDs? What will be the influencing factors for consideration? Are these MCDs easy to use and proven to be useful? Second, how do the MCDs compare with the devices for other types of commerce, such as e-commerce or traditional mail order? Consumers will only adopt MCDs when there are some potential significant advantages when comparing to old devices for other types of commerce. There is still a lack of comprehensive framework within which the adoption of MCDs can be evaluated. Traditional viewpoints regarding this issue, especially those that are based on technology acceptance models, will need to be revisited and revised when consumers are considering such an adoption.

In this article, we propose a framework for identifying the various influencing factors of the adoption of MCD, as well as the antecedents of these influencing factors. Because of the need of the standardization of the application, interface, and inter-connectivity of all hardware and software relevant to the adoption and usage of MCDs, our proposed framework will have some global implications (Zwass, 1996). Our conceptual framework can, therefore, make significant contributions to a more in-depth understanding in the spread and acceptability of m-commerce through knowing why and how relevant MCDs are adopted.

While using technology acceptance models (TAMs) as our primary reference, we also incorporate the important implications of an options model into our basic framework of analyzing consumers' adoption of MCDs. Based on our theoretical framework, we identify four influencing factors—merits, maturity, maneuverability, and mentality—which we consider to be relevant to the decision of consumers in adopting MCDs. We also identify two generic antecedents of these influencing factors—mobility and matching. We plan to investigate the extent of influence of these influencing factors and their antecedents, which will affect consumers' adoption decisions of MCDs. Figure 1 is a graphical representation of our conceptual model of the adoption of MCDs by consumers.

INFLUENCING FACTORS BASED ON TECHNOLOGY ACCEPTANCE MODEL

The technology acceptance model is an information systems theory that models how users come to accept and use a new technology, with reference to two major considerations, perceived usefulness and perceived ease of use (Venkatesh & Davis, 2000). The former is about the degree to which a person believes that using a particular system will make

Figure 1. A conceptual model of the adoption of m-commerce devices
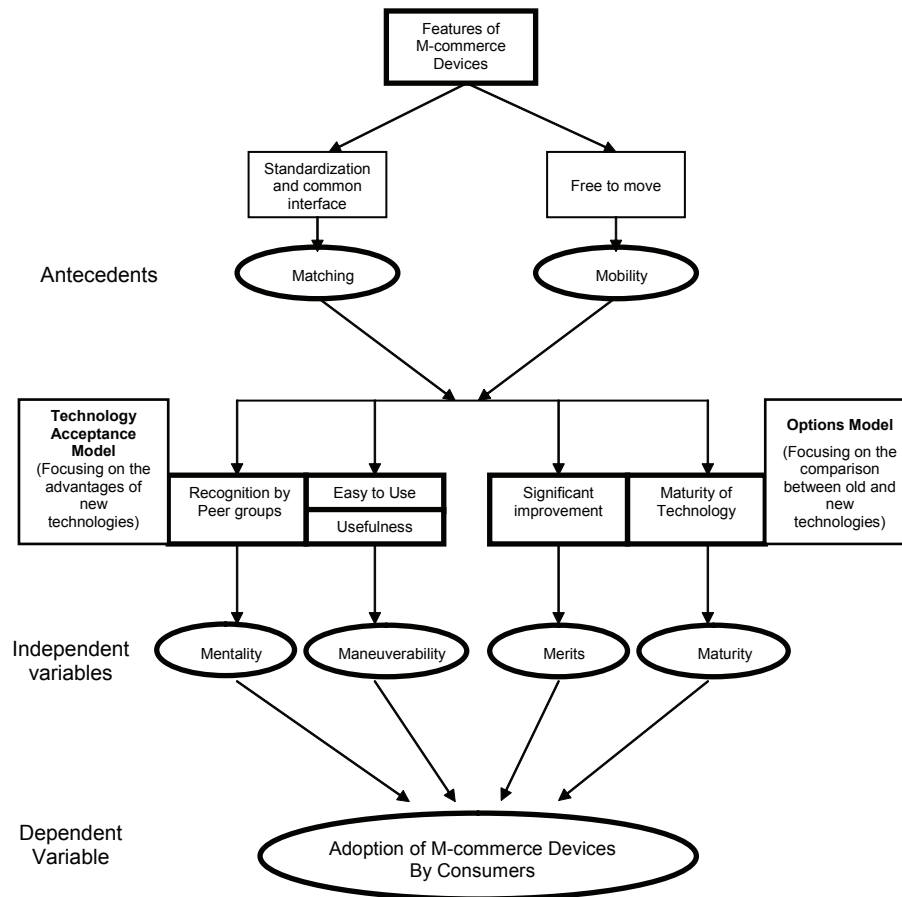
his or her life easier, for instance, by enhancing his or her job performance or reducing the workload, while the latter is the degree to which a person believes that it is not difficult to actually use a particular system (Venkatesh & Davis, 2000).

With reference to TAM, we consider whether the adoption of MCDs will bring advantages to consumers. We identify two Ms, maneuverability and mentality, for relating the acceptability of MCDs to users.

The first influencing factor, maneuverability, is related to the perceived usefulness in the adoption of MCDs and the degree to which a person can make the best use of such MCDs. Consumers will tend to adopt devices that are user friendly and do not require some intensive training of adoption (Prasanna et al., 1994).

The second influencing factor, mentality, is concerned with the match between the new technology and consumers' own mindsets, as well as the appropriate recognition of their peer groups (Bessen, 1999; Venkatesh & Davis, 2000). General acceptance by the consumers, especially by their peer groups, will be very important to consumers

when they consider using MCDs for matching the devices of other people.

INFLUENCING FACTORS BASED ON OPTIONS MODEL

While mainstream literature on the adoption of new technologies is primarily based on the technology acceptance model, we consider that, in the context of m-commerce, we also need to think about some other aspects.

The options model demonstrates that a new technology with a moderate expected improvement in performance can experience substantial delays in adoption and price distortions even in a competitive market (Bessen, 1999; Sheasley, 2000). Rather than adopting a new technology that demonstrates only marginal improvement, consumers have the option of not adopting until the new technology, in terms of performance, is substantially better than the old technology. Consumers contemplating the adoption of a new technology are, of course, aware of the possibility of

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