



# Explaining and predicting the adoption intention of mobile data services: A value-based approach



Mutaz M. Al-Debei<sup>a,\*</sup>, Enas Al-Lozi<sup>b</sup>

<sup>a</sup>The University of Jordan, Department of Management Information Systems, Amman 11942, Jordan

<sup>b</sup>Al-Zaytoonah University of Jordan, Department of Management Information Systems, Amman, Jordan

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## ABSTRACT

As mobile devices become more and more pervasive in our everyday life and their capabilities resemble more and more of those of desktop computers with the added advantage of mobility, examining intention for adoption seems relevant to consumers and mobile service providers alike. Existing research shows that despite this evolution on Mobile Data Services (MDS) development and use, the adoption of their full capabilities is yet to be realized. In this study we focus on the value consumers can potentially gain from using these services. We hypothesize that if we can examine the value that can be delivered to consumers through the use of MDS, then we can explain and predict consumers' intentions to use MDS. We also postulate that perceptions of consumers regarding the value that can be captured when using MDS is directly affected by technological, social, and informational influences. However, in this research, perceived value is used as a multidimensional construct that encapsulates utilitarian, hedonic, uniqueness, epistemic, and economic value dimensions. Our results show that utilitarian value is, according to previous studies, an important adoption factor. Additionally, economic value is also important and significant. Nevertheless, it seems that in our context, hedonic, uniqueness, and epistemic value dimensions are not as important for the use of mobile data services as utilitarian and economic value dimensions. The results of this study can be used by mobile service providers to get insights about consumers' needs and preferences in order to offer better and thus more popular services.

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## 1. Introduction

Since the launching of mobile phones and the world is constantly witnessing advances in mobile technologies. These revolutionary developments put telecommunication service providers (from now on shortened to telecoms) in a fierce competition (Seo, Ranganathan, & Babad, 2008). They can no longer primarily depend on voice market to increase their revenues and market shares; since this market has almost reached its saturation level, in line with the endless price war between service providers (Carlsson, Hyvonen, Repo, & Walden, 2005a; Carlsson, Hyvonen, Repo, & Walden, 2005b; Kim & Han, 2009). Thus, telecoms, with the advent of new technologies, now consider Mobile Data Services (MDS) an effective way to the future.

MDS are services performed over cellular media that add value to its users. Such services refer to the convergence of mobile communication technologies and data communication services (Hong, Thong, Moon, & Tam, 2008). Nowadays and with the rapid adoption

of Internet accessible mobile devices or smartphones, MDS has become an attractive sphere for telecommunication service providers to dig into and generate more revenues. MDS are varied and range from communication (e.g. SMS, chat room), transactions (e.g. e-banking, product purchasing), information content (e.g. location based services, news, stocks update) to entertainment (e.g. games, ringing tones) services. Hence, such services which offer mobility as the main value proposition (Mahatanankoon, Wen, & Lim, 2005) have the ability to provide telecoms with new opportunities that can be seen as potential revenue streams (Ahn, Ahn, Byun, & Oh, 2011; Kim, Chan, & Gupta, 2007). Nevertheless and despite the emergence of such wide-ranged services, related literature shows that the diffusion of MDS is not yet as expected (Yang, 2004; Carlsson, Carlsson, Hyvonen, Puhakainen, & Walden, 2006; Kim, Lee, & Koh, 2005). One reason could be that telecoms are supplying the market with services offering no or little value to consumers.

Therefore, this study comes to examine the adoption intention of MDS using a value-based approach and from the perspective of consumers as users. We postulate that technological, social, and informational influences positively affect the perceived value of MDS by consumers and the latter significantly affects the

\* Corresponding author.

E-mail address: [m.aldebei@ju.edu.jo](mailto:m.aldebei@ju.edu.jo) (M.M. Al-Debei).

adoption intention. However, in this research, perceived value is used as a multidimensional construct that encapsulates utilitarian, hedonic, uniqueness, epistemic, and economic value dimensions. Hence, we approach the adoption intention of technology in general, and MDS in particular from a novel standpoint that gives attention to perceived value dimensions. This is deemed useful due to the lack of understanding of MDS value as it is perceived not only by consumers but also by people in organizations (Al-Debei & Avison, 2011; Nah, Siau, & Sheng, 2005). In the mobile telecommunications sector, adding value depends on the ability of telecoms to provide customers with services that meet their preferences throughout their life cycle. This is vital since consumers seem to adopt MDS that provide them with value elements they appreciate. Value, in general, is basically created when the benefits associated with services are equivalent or exceeding the total price of the service where the latter includes (Slater and Narver, 2000): search, operating, and disposal costs in addition to the purchase price. The results of this study would be of great value to service providers in guiding them into building effective strategies and business models (see Al-Debei & Avison, 2010; Al-Debei & Fitzgerald, 2010) and developing innovative services meeting the desires and wants of customers. This in turn would lead to a better allocation of resources and a significant increment in the revenues.

The remaining sections of this paper will be as follows. In the next section, relevant literature is reviewed and then the research model and hypotheses are presented and discussed. In Section 3, research methods followed in this research are described. Data analysis and results are presented in Section 4, whilst in Section 5 a discussion of the results is offered. In Section 6, the implications of this research for theory and practice are offered. Finally in Section 7, the conclusions of this research are presented.

## 2. Literature review and research model

### 2.1. Previous research

In technology adoption research domain, the challenge is to understand and study consumers' behavior in decision making in order to understand why they adopt or do not adopt certain services or technologies (Carlsson et al., 2006) so as to decrease the risk of rejection or resistance (Dillon, 2001). In the last decade, many models have been introduced to address the acceptance or rejection of information systems. Models such as the theory of reasoned action (TRA) (Ajzen and Fishbein, 1980), the theory of planned behavior (TPB) (Ajzen, 1985, 1991) and the innovation diffusion theory (Rogers, 1995) were developed with the aim of explaining user beliefs, attitudes, intentions, and actual system use. Moreover, the widely known technology acceptance model (TAM) by Davis (1989) is used in many studies to explain the adoption decisions of information technology (Anckar, Carlsson, & Walden, 2003; Kim et al., 2007). However, it has been argued that those models should not be used in explaining non-organizational technologies such as MDS (Kim & Han, 2011; Kim et al., 2007; Pedersen, Nysveen, & Thorbjørnsen, 2002). This is because MDS differ in that they are not free; they are pay-per-use services. Thus, while individuals in organizations are seen as users of technology, users of MDS are considered consumers or customers (Kim & Han, 2009; Kim et al., 2007; Turel, Serenko, & Bontis, 2007; Venkatesh, Thong, & Xu, 2012).

Retrospectively, this research emphasizes the significance of using perceived value construct along with its dimensions in explaining and predicting the adoption intention of MDS. Indeed, results from Information Systems (IS) and Marketing literature reveals that one of the most salient determinants of adoption intention is perceived value (Anckar et al., 2003; Kim & Han, 2009; Shin, 2009). Perceived value, however, can be defined as a trade-off between total benefits and total sacrifices whether these sacrifices

are monetary or non-monetary (Anckar et al., 2003; Kim & Han, 2009; Al-Debei et al., 2013). Recognizing its importance in the context of MDS adoption, perceived value construct or some of its dimensions were utilized in previous research (Kim et al., 2007; Turel et al., 2007; Kim & Han, 2009). This was based on the argument that perceived value has a strong influence on users' adoption decisions for pay-per-use services (Kim & Han, 2009; Kim & Han, 2011; Kim et al., 2007; Lin & Lu, 2011). The results of such studies revealed that utilitarian (that relates to task accomplishment), hedonic (which involves the enjoyment and pleasure felt when using MDS), and economic (which concentrates on value for money concept) value dimensions have strong positive influences on the adoption intention of MDS. However, we postulate that other dimensions of perceived value such as uniqueness, and epistemic value dimensions should also be considered. Findings by Hong, Tam, and Kim (2006) showed that uniqueness value has a positive impact on MDS adoption intention. Previous research showed that epistemic value is also relevant given that MDS are often novel and thus satisfy the curiosity to learn new things amongst some consumers. Indeed, it has been reported that epistemic value has a positive influence on adoption intention (Bhatti, 2007; Pihlström and Brush, 2008; Rouibah & Hamdy, 2009).

After establishing the dimensions of perceived value as key determinants of MDS adoption intention, it is important now to look at the antecedents of the perceived value dimensions. This research postulates that perceived value dimensions are significantly affected by technological, social, and informational influences. The work of many scholars supports the fact that technology can be seen as a predictor of MDS perceived value (Carlsson et al., 2005a,b; Lu, Liu, Yu, & Wang, 2008). The effect of social influences construct on MDS perceived value has been also proven (Kim et al., 2007). Moreover, previous studies support the positive and significant influence that information has on MDS perceived value (Dwivedi, Khoubati, & Williams, 2007; Kim & Han, 2009). Indeed, when making a purchase decision, consumers always tend to gather as much information as they can before the final decision is made. Indeed, relevant information usually comes from different sources. Information can come from colleagues and friends or from mass media as TV, newspapers and the Internet. Therefore, this paper would also examine the effect of technological, social and informational influences on MDS perceived value dimensions.

Interestingly and by examining related literature, it becomes noticeable that there is a lack of universalism in terms of consumer preferences and perceptions of MDS value. Generally speaking, Sweeney and Soutar (2001) argued that the value dimensions might be differently weighted by different consumers in different cultural contexts. In the domain of MDS, previous studies established that user perceptions of MDS value differ considerably across different societies and cultures. For example, Bina and Giaglis (2007) found that Greek consumers opt for practical and business-related functions of MDS, whereas Korean consumers are more interested in the emotional and hedonic value elements of MDS. In their comparative study between Chinese and American mobile commerce consumers, Dai and Palvi (2009) found that the adoption decision of Chinese consumers is significantly and negatively affected by the perceived cost of such services, whilst the adoption decision of American consumers is not affected by the perceived cost. In fact, Dai and Palvi (2009) attributed this to the spending power of American consumers compared to Chinese consumers. Further, Kim, Lee, Lee, and Choi (2004) found that Hong Kong and Korean consumers opt more for hedonic mobile commerce, whereas Japanese consumers exhibit more utilitarian and functional mobile commerce usage patterns. In another comparative study between the UK and Hong Kong mobile commerce consumers, Harris, Rettie, and Cheung (2005) found significant differences between the two samples in regards to usage patterns and attitudes. Harris et al. (2005) found

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