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

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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.

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

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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, & Thorbjornsen, 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, Khoumbati, & 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

that in general mobile commerce services are used more extensively in the UK than in Hong Kong. They have also found that voice services are used more frequently in Hong Kong than in the UK and that attitudes to browsing the Internet via mobile devices are significantly more negative in the Hong Kong than in the UK. Importantly, Harris et al. (2005) found that although the mobile commerce services are more expensive in the UK than in Hong Kong, price appears to deter Hong Kong mobile consumers, but not the UK mobile consumers. In general, Harris et al. (2005) attributed these differences to the levels of collectivism and power distance in both cultures and to other structural differences between the two examined markets. It is now clear, especially through the aforementioned examples, that social, cultural, and environmental factors play a significant role in shaping consumer perceptions in regards to MDS value.

However, our analysis of previous research revealed that despite the importance of perceived value dimensions in explaining and predicting the adoption intention of MDS, very little effort has been allocated to comprehensively identify the perceived value dimensions of MDS and examine their effect on adoption intention (Hong et al., 2008). As such, this paper comes to contribute in this domain by coherently and comprehensively identifying the relevant dimensions of perceived value along with their effects on adoption intention of MDS. Furthermore, this research also contributes to the existing body of knowledge by taking into account the antecedents of perceived value dimensions. As such, this article is novel as according to the best of our knowledge it is the first research paper that (1) inclusively defines perceived value in a multidimensional manner; (2) identifies the antecedents of perceived value dimensions; and (3) examines the effect of perceived value dimensions on adoption intention of MDS. Furthermore, conducting this research in the Arab world also adds to the contributions of this paper given the scarcity of research conducted in this context. Indeed, local socio-cultural factors and environments play a critical role in explaining the adoption of MDS along with its diffusion patterns in different countries (Bina & Giaglis, 2007). This fact adds to the importance of examining the adoption of MDS along with its drivers from a value-based perspective and within the context of Jordan as this course of action would reveal the differences (if any) in terms of value perceptions along with their antecedents and consequences between Jordan and other countries.

2.2. Research model and hypotheses development

Research in the area of MDS has been flourished with the increasing number of people relying on mobile devices and the services accompanied with. Scholars aim to build models that explain why and how people intend to adopt those services and define factors affecting their decisions. According to the theory of reasoned action (TRA), individuals often consider the consequences of their actions before intending to perform them (Van der Heijden, Ogertschnig, & van der Gaast, 2005). Applying this concept into our research topic, we assume that consumers will evaluate the consequences of using mobile services and build their intentions to adopt accordingly. Indeed, consumers always seek the value that can be derived from a certain product or service before making the final decision.

As this study approaches the adoption intention of MDS from consumers' perspective, the study examines the effect of technological, social, and informational influences on the dimensions of perceived value (i.e. utilitarian, hedonic, uniqueness, epistemic and economic) and also examines the effect of the latter on the adoption intention of MDS (see Fig. 1).

2.3. Utilitarian value

Utilitarian value refers to the extent of effectiveness and efficiency that is perceived by consumers when using information systems (Kim & Han, 2009). Utilitarian value can also be described as the effective achievement of a utilitarian goal which is often suitable for customers classified as problem-solvers (Pura, 2005). For example, to overcome the time and place constraints, video phone services can be seen as the greatest benefit of MDS (Carlsson et al., 2005a,b; Kim, 2005). Location-Based Services (LBS) represent another example of MDS that can provide utilitarian value elements to consumers such as finding the nearest petrol station, although such services can also provide location-based games which deliver hedonic value elements. Most studies in the IS domain have strongly supported utilitarian value as a crucial determinant of prompting behavioral intention to adopt and use IS because customers usually make rational and calculated assessments of the functional benefits and sacrifices of using IS. The results of many studies indicated that utilitarian value has a positive and significant influence on intention to adopt MDS (Anckar et al., 2003; Van der Heijden et al., 2005; Carlsson et al., 2006). Hence, we hypothesize that utilitarian value derived from services such as mobile banking, buying tickets, and LBS will have a positive effect on adoption intention of MDS.

H1. Utilitarian value has a positive and significant influence on adoption intention of MDS.

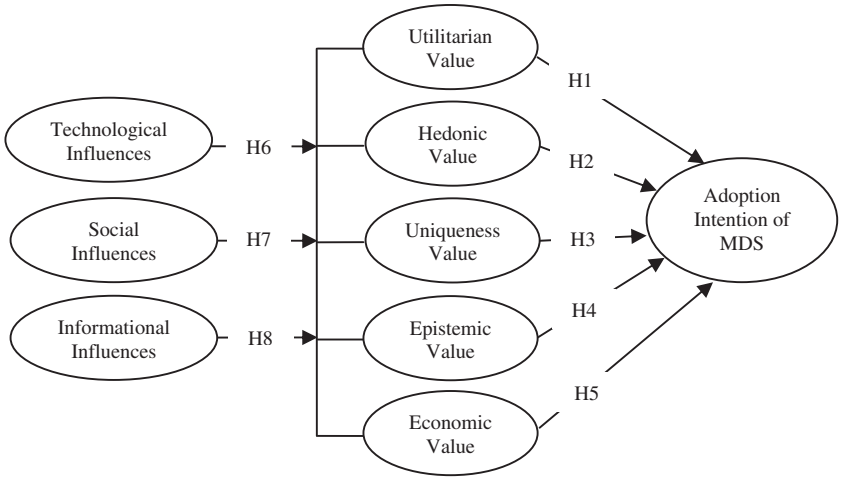

Fig. 1. The research model.

2.4. Hedonic value

Hedonic value is defined as the level of pleasure and joy users experience when using a certain technology. In the context of MDS, hedonic value is delivered when mobile services successfully provide users with fun and enjoyment. Previous research revealed that intrinsic motivations (i.e. level of enjoyment) which refer to the satisfaction sensed when performing an activity have a direct and positive influence on users' behavior (Hong et al. 2008; Kwon & Chidambaran, 2000). Entertaining mobile services that incorporate fun elements such as games, ringing tone, MP3 player are preferred by customers looking for satisfying their emotional needs than enhancing their performance (Kim et al., 2005). Such services enable their users to better communicate with their friends and kill time when there is nothing to do while amusing themselves and feeling relaxed at the same time. Previous studies conducted by Kim et al. (2007) and Kim and Han (2009) had shown the positive effect hedonic value has on adoption intention of MDS. Yang and Jolly (2009) found that emotional value (which we refer to it as hedonic value within the context of this research), amongst four different dimensions of value, plays the most significant antecedent role in the adoption of MDS in both South Korea and United States. Hence, we postulate that there is a direct and positive relationship between hedonic value and adoption intention of MDS.

H2. Hedonic value has a positive and significant influence on adoption intention of MDS.

2.5. Uniqueness value

Uniqueness value refers to the sense of differentiation or distinctiveness from others (Tepper & Mckenzie, 2001). Individuals who quest uniqueness normally value their sense of self-importance and seek whatever ways that will lead them to their quest. Possession and usage of a unique product or service can help users obtain the perception of dominance and leadership in their hierarchy. Mobile devices are used as a symbol to create a better social image but with the increasing number of holders of advanced mobile devices (i.e. smartphones); services offered by such enhanced technology are also used nowadays to shape a distinctive social image (Nicolas, Molina-Castillo, & Bouwman, 2008). It has been indicated that young people in many Asian countries use their smartphones as new fashion items to show off in public (Lu, Yao, & Yu, 2005). Accordingly, it seems that MDS those characterized as observable and have the ability to draw the attention of others would be widely adopted by individuals looking for distinguishing themselves from others (Heinonen & Anderson, 2003; Hong et al., 2006). However, it must be also noted that once a mobile service becomes popular amongst many users, it loses its uniqueness. Thus, innovative and outstanding services must be provided in a constant and timely manner. However and according to the findings of Hong et al. (2006), uniqueness value has a direct and positive effect on MDS adoption intention. As such, we hypothesize that uniqueness value will have a direct effect on intention to adopt MDS.

H3. Uniqueness value has a positive and significant influence on adoption intention of MDS.

2.6. Epistemic value

Epistemic value refers to the knowledge gained upon trying new things (Pihlström and Brush, 2008). Pagani (2004) indicated that the more innovative the service is, the more interested the consumers are to adopt it. In the context of information technology, individuals who are willing to try out new technologies are called personal innovators. It has been believed that individuals who have high personal innovativeness tend to be more risk-taking than others. Therefore, personal innovators are considered to be amongst the first to try out new technologies and recognize their usefulness and ease of use (Lu et al., 2005; Yang, 2004; Nicolas et al., 2008). It has been also indicated that those innovators are more influenced by the information received from external sources (e.g. media and Internet) than the information gathered from friends and colleagues (Lu et al., 2005). However and although the process of experimenting new mobile services will not always lead to continuance adoption of those service, it has been revealed that epistemic value described as the curiosity to learn new things and gain new knowledge amongst innovators has a positive effect on the adoption intention of various technologies (Bhatti, 2007; Pihlström and Brush, 2008; Rouibah & Hamdy, 2009). Therefore, we hypothesize that epistemic value positively and significantly affect the adoption intention of MDS.

H4. Epistemic value has a positive and significant influence on adoption intention of MDS.

2.7. Economic value

People usually think twice before spending their money on a product or service that they have never tried before. This is especially true when it comes to MDS, since unlike many services on stationary Internet which is provided for free, MDS are pay-per-use services (Kim et al., 2007). MDS are usually used for personal needs and thus the cost is borne mainly by individuals. As such, if the value received is not satisfactory, consumers would feel guilty for spending money irrationally. Indeed, it has been found that financial costs (initial cost and operating cost) are amongst the main barriers for using MDS (Anckar et al., 2003; Carlsson et al., 2005a,b). Further, Agarwal, Wang, Xu, and Poo (2007) discovered that price represents one of the main barriers for consumers to adopt 3G services. Wu and Wang (2005) also found that perceived cost of mobile commerce services significantly and negatively affects the adoption intention. Kuo and Yen (2009) also probed into the effect of perceived cost on the adoption intention of 3G mobile value-added services and found that the cost of such services significantly and negatively affects Taiwanese consumers' adoption intention of 3G services. Further, Chong, Chan, and Ooi (2012a), Chong, Ooi, Lin, and Bao (2012b), in their comparative study between Malaysian and Chinese mobile commerce consumers, found that cost is a major factor that significantly and negatively affects consumers' adoption of mobile commerce in both countries. Hence, we assume that the value derived from using MDS will cease its effect if there are significant monetary sacrifices associated with MDS usage (Heinonen & Anderson, 2003). According to that, we can expect that people will be willing to use MDS only if the associated costs are reasonable (Phan & Daim, 2011). Thus, we hypothesize that economic value has a positive and direct effect on intention to adopt MDS.

H5. Economic value has a positive and significant influence on adoption intention of MDS.

2.8. Technological Influences

Technological advances bring about novel services and applications. Recent studies showed that there is a strong relationship between the mobile technology deployed by telecoms and the provided mobile services along with their capabilities (Al-Debei & Avison, 2011). Mobile services are dependent on mobile technology and the more advanced the mobile technology is, the more

options and services are offered to consumers (Carlsson et al., 2005a,b). For example, with the advent of third generation (3G) technology, services like multimedia messages and video clips have become available. Indeed, such services were not available with the second generation (2G) technology that only supports text (Al-Debei & Avison, 2011; Kim et al., 2005). Another example is related to the digital mobile broadcasting services which are enabled by the recent 3G + technologies. These services allow users to watch their TV programs on their mobile devices in a timely manner (Hong et al., 2006). It is clearly obvious that many services such as mobile banking, mobile email, mobile stock updates, mobile avatar services, just to name a few, are powered by the advances in mobile technology. Although the availability of technology does not necessarily mean that offered services will be accepted by end users (Carlsson et al., 2006), advances in mobile technology are significant to MDS given that serious barriers for MDS adoption are related to technological features, such as limited capacity of mobile devices and slow connection speed (Anckar et al., 2003). Previous research (e.g. Al-Debei & Avison, 2010, 2011) argues that MDS as a value proposition are significantly enabled by mobile technology as a value architecture. Hence, we hypothesize that mobile technology positively and significantly influences the perceived value dimensions of MDS.

H6a. MDS technology has a positive and significant effect on utilitarian value of MDS.

H6b. MDS technology has a positive and significant effect on hedonic value of MDS.

H6c. MDS technology has a positive and significant effect on uniqueness value of MDS.

H6d. MDS technology has a positive and significant effect on epistemic value of MDS.

H6e. MDS technology has a positive and significant effect on economic value of MDS.

2.9. Social influences

No one can ignore the role social pressure plays in people's behavior. Social influences can be defined as the pressure from social networks to conduct or not to conduct a certain behavior (Al-Lozi & Al-Debei, 2012; Lu et al., 2005). Social influences have a great manipulating power that can change the opinion one hold about a certain product or service. For example, individuals sometimes face pressure to use MDS just because most of their peers are doing so; hence, they feel that such usage becomes obligatory in order to stay within their social circle. From a broader perspective and according to Theory of Reasoned Action (TRA) and Theory of Planned Behavioral (TPB), people's intentions and behavior are significantly influenced by social factors such as attitude and subjective norms. Previous studies have shown that people believe that they would (i) gain higher social status; (ii) enhance their social image; and (iii) improve their sense of involvement by using advanced mobile services given that such services are generally accepted and welcomed by the global community (Hsu, Lu, & Hsu, 2007; Kim & Han, 2009; Kwon & Chidambaran, 2000). It has also been found that social influences have a significant effect on the value dimensions that can be derived from the use of MDS (Phan & Daim, 2011). Furthermore, it is argued in the literature that perceptions of people about MDS along with the value such services offer to consumers are likely to be affected by the information received from members of their social networks (Kim & Han, 2009; Lu et al., 2005). Social influences are even much more noticeable in the context of developing countries given the high level of collectivism in such cultures (Hofstede, 1980). Therefore, we hypothesize that social influences have a significant effect on the value dimensions that can be derived from the use of MDS.

H7a. Social influences have a positive and significant effect on utilitarian value of MDS.

H7b. Social influences have a positive and significant effect on hedonic value of MDS.

H7c. Social influences have a positive and significant effect on uniqueness value of MDS.

H7d. Social influences have a positive and significant effect on epistemic value of MDS.

H7e. Social influences have a positive and significant effect on economic value of MDS.

2.10. Informational influences

People accumulate their knowledge about certain products or services through what they hear and see from others or what they read from formal and informal sources. Informational influences refer to the extent to which information from TV, newspapers, Internet and relevant others can influence behavior. Innovators often rely on media; as it plays an important role in providing information about new technologies. Individuals in general tend to reduce the risk and uncertainty associated with their decisions by collecting as much useful information as they can (Lu et al., 2005). Some people who prefer to receive objective opinion rather than subjective one from social networks, often rely on external sources of information (Kim & Han, 2009), and if those sources communicated negative feedback with regard to a certain product or service, people will not see any reason to use such a product or service (Lin & Lu, 2011). Realizing the immense effect of mass media on people's perceptions about MDS, telecoms invest heavily in terms of time, effort, and money on their marketing campaigns (Hong et al., 2008). Telecoms also rely on mass media to convey the value dimensions of their services to the public (Kim & Han, 2009). Thus, we hypothesize that informational influences positively and significantly influence people's perceptions about the value dimensions that can be captured when using MDS.

H8a. Informational influences have a positive and significant effect on utilitarian value of MDS.

H8b. Informational influences have a positive and significant effect on hedonic value of MDS.

H8c. Informational influences have a positive and significant effect on uniqueness value of MDS.

H8d. Informational influences have a positive and significant effect on epistemic value of MDS.

H8e. Informational influences have a positive and significant effect on economic value of MDS.

3. Research method

3.1. Research context: Mobile telecommunications sector in Jordan

The Hashemite Kingdom of Jordan, or simply Jordan, is located at the heart of the Middle East. The latest estimate of its population in 2011 was 6,249,000 inhabitants. Jordan covers an area of 89,342 square meters, its capital is Amman and the official language of Jordan is Arabic. English language, however, is also widely spoken as a second language. Jordan is a developing, middle income country with limited natural resources. However, it is considered as a liberal and modern economic regional model for developing countries. This is due to its highly educated population, strong leadership and active private sector, which interact to embrace novelties in many fields, especially Information and Communication Technologies (ICTs).

Jordan is a highly developed country in sense of telecommunication infrastructure. This comes from its recognition of the power of ICTs in improving business and public services. The telecommunications sector importance is augmented due to its contribution towards the enhancement and improvement of the effectiveness and efficiency among different economic and social sectors. The various deployed technologies in this sector plays a major role in facilitating communication and knowledge transfer on both local and international levels, which positively contributes in creating an appropriate environment to the transition into a knowledge-based economy. All of which remarkably influenced the national economy through creating new investment opportunities, enhancing competition, and increasing job opportunities, in addition to improving the productivity of other sectors. As economic figures illustrate that the Jordanian telecommunications sector participated with (12%) in the gross domestic product during the last few years.

In order to absorb the accelerating moves in the telecommunications sector, the Telecommunications Regulatory Commission (TRC) was established in 1995 as an independent body responsible for creating an open regulatory environment which promote investment in ICTs and encourage fair competition. The achievements of TRC in Jordan include presenting the opportunity for telecommunications companies to use necessary frequencies to provide Fixed Broad band Wireless Access (FBWA) services and exempting these companies, providing (FBWA) services, from customs duties on equipment used in the network infrastructure. With regard to mobile telecommunications, which considered a vital sub-sector, TRC established the appropriate regulatory environment for operators wishing to provide Mobile Virtual Network Operator (MVNO) services through allowing companies, wishing to invest in this field, to resell public mobile wireless services, under their own name, using the network of licensed mobile network operators. In addition, TRC attempted to increasing Internet penetration rate by granting a new 3G + licenses to Mobile Network Operators (MNOs); thus enhances the availability and choice of diverse services to all beneficiaries and increase the Quality of Service (QoS) offered by service providers by enhancing competition in the market.

The emergence of mobile and Internet communication media opened opportunities for new services and Jordanian government understands that investment in technology is not a one-time investment; it is rather an incessant investment. In line with this, investment in telecommunication sector, according to TRC, leaded Jordan to be the most competitive mobile market in the Arab world in 2010. As in 2011, the investment reached $202,857,142. Additionally, according to a survey conducted by Arab Advisors Group in 2011, Smartphones constitute 41.6% of total mobile handsets in Jordan, and in 2012 active mobile penetration rate reached 120.4%. And in terms of the internet subscriptions the mobile broadband comprised the majority with about (64%) of the total internet subscriptions at the end of the third quarter of 2012 with a growth rate reaching about 59% from the beginning of the same year. These statistics indicate that people in Jordan are keen to keep up with technology.

In Jordan, three MNOs: Zain, Orange and Umniah, are competing in the mobile telecommunications sector and offering a wide range of mobile services. As such, people in Jordan are open to a number of offers from which they can choose what suits them. Despite the aggressive competition amongst the three MNOs, Zain continues to maintain its leading position in Jordan with a market share of 38% and nearly 3.35 million subscribers as of the end of the third quarter of 2012 (Table 1 shows facts about the three operators). Zain was a pioneer in providing multiple services; it was the first to launch MMS and other MDS, and the first to form mobile banking partnerships with leading banks in Jordan. Moreover, and according to customer demands, it has launched the latest versions of Apple iPhone starting from 2011; allowing customers to even have a broader bundle of services.

Orange is the second mobile operator to enter the Jordanian market and also the 2nd MNO in terms of market share. Orange, previously known as MobileCom, is a subset from Jordan Telecom Group, that offer fixed, mobile and Internet services. Orange officially has started offering its varied services in year 2000 and was the first to be granted an exclusive one-year 3G + license in year 2009. Having the license to offer 3G + services exclusively for one year gave Orange a competitive advantage over other operators and by the summer of 2010, Orange 3G + network covered about 70% of all populated areas in Jordan. The highly liberated telecommunications market in Jordan encouraged the rise of a third mobile operator; i.e. Umniah. Umniah launched its operations in 2005, and since then it succeeded in positioning itself as a strong competitor with over 2 million subscribers. Umniah was the first to introduce per second billing concept and the first to implement 2.75G network. Further, Umniah has launched its 3G + services in 2012.

The published reports by the TRC in regard to the quality of mobile telecommunications services offered by MNOs provide significant measurements on the bases of predefined Quality of Service (QoS) indicators. Examples of these indicators include percentage of successful calls as well as the quality of voice during the call among other quality measurement indicators. The examination of the results of the main QoS indicators concerning the three MNOs in Jordan shows an improvement in the operators' performance during the years 2011–2012. This comes in consistence with the findings of the conducted survey by TRC in 2011 to measure the awareness and the satisfaction of the beneficiaries from telecommunications services in Jordan. It seems that the three competing operators in Jordan completely realize that in order to get ahead in this race, more emphasis must be given to innovative technologies that enable introducing new levels of services to customers. Indeed, Innovative mobile technology is a key factor affecting the

Table 1
Facts regarding the three MNOs in Jordan as of -End Q3 2012.

Facts	MNOs		
	Zain	Orange	Umniah
Number of subscribers (000s)	3.35	3.21	2.17
Market share	38%	36.6%	24.7%
Launching 3G + services	March, 2011	March, 2010	Quadrant 2, 2012

provision of innovative mobile data services which nowadays represent a valuable revenue stream for MNOs.

3.2. Data collection

This study utilized a survey questionnaire as the main instrument for data collection where participation was completely voluntary. Hence, a self-completion, well-structured questionnaire was developed based on previous studies. A total of 285 questionnaires were distributed from October 16, 2011 to February 9, 2012. Amongst the 275 returned questionnaires, eight were excluded due to multiple skipped questions and missing values. In total, 267 responses ($n = 267$) were usable for data analysis. We believe that Jordan is an excellent candidate for this study given that mobile penetration rate has surpassed 100% due to the high demand and the fierce competition between service providers.

3.3. Measures

The constructs of interest in this study are Technological Influences (TI), Social Influences (SI), Informational Influences (II), Utilitarian Value (UV), Hedonic Value (HV), Uniqueness Value (UNQV), Epistemic Value (EV), Economic Value (ECV), and Adoption Intention of MDS (AI). The developed questionnaire in this study adapted questionnaire items from previous literature. Table 2 lists the questionnaire items. Measurements for technological influences construct were adopted from Lu et al. (2008). Measurements for social influences (SI) construct were adopted from Mathieson (1991). Measurements for informational influences (II) were based on the work of many scholars like Brown and Venkatesh (2005), Lin (2008) and Hung and Chang (2005). As for the value dimensions derived from using MDS, utilitarian value (UV) measures were adopted from Davis (1989) and Sirdeshmukh et al. (2002). Hedonic value (HV) measures were based on the work of Davis et al. (1992) and Sweeney and Soutar (2001). Measurements for uniqueness value (UNQV) were borrowed from Tepper and McKenzie (2001) and Hong et al. (2006). Measurements for epistemic value (EV) were adopted from Lu et al. (2008). Measurements for economic value (ECV) were borrowed from Dodds et al. (1991). Finally, measurements for adoption intention of MDS were adopted from Davis (1989). All items were measured using a five-point Likert-type scale with anchors from "Strongly disagree" to "Strongly agree".

3.4. Sample profile

The sample's descriptive statistics showed that 36.3% of the respondents were male and 63.7% were female. Respondents aged

Table 2
Summary of measurement scales.

Constructs	Items	Measures	Sources
Adoption Intention of MDS (AI)	AI1	I intend to use MDS in the future	Davis (1989)
	AI2	I expect that I would use MDS in the future	
	AI3	I plan to use MDS in the future	
Utilitarian Value (UV)	UV1	Using MDS would increase my chances of achieving things that are important to me	Davis (1989) and Sirdeshmukh et al. (2002)
	UV2	Compared to the effort and time I need to put in and spend, the use of MDS would be beneficial and worthwhile to me	
	UV3	Using MDS would help me accomplish things more quickly	
	UV4	MDS would be useful in my daily life	
Hedonic Value (HV)	HV1	I expect that using MDS would be enjoyable	Davis et al. (1992) and Sweeney and Soutar (2001)
	HV2	I expect to have fun using MDS	
	HV3	Using MDS would make me feel good	
	HV4	MDS would be the services that I feel relaxed about using	
Uniqueness Value (UNQV)	UNQV1	I often think that using MDS would shape a more unusual personal image about myself	Tepper and Mckenzie (2001) and Hong et al. (2006)
	UNQV2	I am often on the lookout for new MDS that will add to my personal uniqueness	
	UNQV3	I actively seek to develop my personal uniqueness by using special MDS	
	UNQV4	Using MDS is interesting and assisting me in establishing a distinctive image	
Epistemic Value (EV)	EV1	If I heard about a new MDS, I would look for ways to experiment with it.	Lu et al. (2008)
	EV2	I always look forward to a new MDS so as I can get new knowledge about new technologies and services	
	EV3	Among my peers, I am usually the first to explore new MDS	
	EV4	In general, I am hesitant to try out new MDS	
Economic Value (ECV)	ECV1	I expect that MDS would be reasonably priced	Dodds et al. (1991)
	ECV2	MDS would offer a good value for money	
	ECV3	I believe that at the current price, MDS would provide a good value	
Technological Influences (TI)	TI1	I expect that MDS can be used on a wide range of available devices	Lu et al. (2008)
	TI2	I suppose that MDS would provide highly personalized services	
	TI3	I expect that MDS would provide a wide range of services for different purposes	
	TI4	I expect that MDS speed would be convenient	
	TI5	I believe that MDS would be designed nicely	
	TI6	I expect that I would be able to use MDS anytime, anywhere	
Social Influences (SI)	SI1	People who influence my behavior think I should use MDS	Mathieson (1991)
	SI2	My friends think I should use MDS	
	SI3	I would use MDS if I see people important to me using it before trying it myself	
	SI4	I would use MDS if my family members and friends did	
Informational Influences (II)	II1	Information from mass media (advertisements, newsletters, TV, reports, etc.) would suggest that I should use MDS	Brown and Venkatesh (2005), Lin (2008); Hung and Chang (2005)
	II2	I would use MDS due to the recommendations of relevant others	
	II3	Based on what I have heard from people or seen on mass media, I am encouraged to use MDS	
	II4	The information I gathered about MDS makes me positive towards MDS	

Table 3
Sample profile of the survey.

Measure	Item	Frequency	Percentage (%)
Gender	Male	97	36.3
	Female	170	63.7
Age	18–24	213	79.8
	25–30	33	12.4
	31–35	12	4.5
	36–40	4	1.5
	Above 40	5	1.9
Educ. Background	High School	3	1.1
	College/University	248	92.9
	Postgraduate	16	6
MNOs	Zain	173	64.8
	Orange	24	9.0
	Umniah	26	9.7
	Zain + Orange	15	5.6
	Zain + Umniah	23	8.6
	Zain + Orange + Umniah	1	0.4
	Orange + Umniah	3	1.1

Table 4
Descriptive statistics and reliability.

Constructs	Cronbach alpha (α)	Mean	Standard deviation
Adoption Intention	0.827	4.041	0.804
Utilitarian Value	0.839	4.107	0.714
Hedonic Value	0.763	3.935	0.647
Uniqueness Value	0.779	3.264	0.824
Epistemic Value	0.751	3.520	0.670
Economic Value	0.782	3.367	0.875
Technological Influences	0.783	4.181	0.494
Social Influences	0.810	3.370	0.796
Informational Influences	0.864	3.689	0.642

between 18 and 24 years formed the largest age group and represented 79.8% of the sample. Respondents aged between 25 and 30 years represented 12.4% of the sample, whilst respondents aged between 31 and 35 years represented 4.5% of the sample. Respondents aged between 36 and 40 years represented only 1.5% of the sample. Finally, respondents aged above 40 years represented 1.9% of the sample. The majority respondents (i.e. 92.9%) were pursuing undergraduate degrees in different areas, and only 6% of the respondents were pursuing their postgraduate degrees. Respondents pursuing their high school degrees represented only 1.1% of the sample. In terms of mobile service providers, the statistics show that most respondents (i.e. 64.8%) are customers of Zain. However, many respondents are subscribed with more than one provider. The details are shown in Table 3.

4. Data analysis and results

4.1. Reliability and validity

The scales' reliabilities were measured and the Cronbach's alphas of all scales as in Table 4 were ranged between 0.751 and 0.864; indicating good reliabilities of the scales (Nunnally and Bernstein, 1978). The means and standard deviations of all study constructs are also reported in Table 4.

4.2. Hypotheses testing

The simple correlation amongst all study constructs was conducted using Pearson correlation analysis as shown in Table 5. As constructs showed significant correlations ($p \leqslant 0.01$), we then utilized the regression model to test multicollinearity by examining collinearity statistics; i.e. Variance Inflation Factor (VIF) and tolerance. This is significant given that variables with high collinearity pose a problem to regression analysis. The VIF value of any construct should not exceed 10; otherwise the construct is considered highly collinear (Hair et al., 1998). Collinearity statistics showed that the values of tolerance for all constructs range between 0.618 and 0.846 and the values of VIF range between 1.181 and 1.672; indicating that multicollinearity is not a likely threat to the parameter estimates in this study.

Moreover, regression analysis requires data to be normally distributed as a prerequisite so as to ensure the validity and reliability of the results. This research employs Jarque–Bera (skewness–kurtosis) test to make sure that all the variables are within the acceptable limit of the skewness–kurtosis ranges. This test provides a comparison of the distributions of the study data and the normal distribution. Skewness values indicate the symmetry of the distribution. If skewness value is positive, then data are clustered to the left of the distribution; otherwise data are clustered to the right of the distribution. Kurtosis values indicate the height of the distribution. Positive kurtosis values indicate a peaked distribution, while negative kurtosis values suggest a flatter distribution (Hair et al., 1998). Skewness–kurtosis acceptable values have been suggested by scholars such as Tabachnick and Fidell (2007) to be within the range of ±2.58 at the 0.01 significance level. As in Table 6, almost all Skewness–kurtosis values of all constructs are within the recommended range and thus normality as a condition for successful regression analysis is assured in this study.

After making sure that necessary conditions are all satisfactorily met, the study hypotheses were tested using multiple regression analyses. First, value dimensions (i.e. "utilitarian value", "hedonic value", "uniqueness value", "epistemic value", and "economic value" were regressed on "adoption intention". As in Fig. 2, it was found that "utilitarian value" ($\beta = 0.434$, $p < 0.001$) and "economic

Table 5
Correlation analysis amongst the variables.

	TI	SI	II	UV	HV	UNQV	EV	ECV
TI	**1.00**							
SI	0.162**	**1.00**						
II	0.347**	0.331**	**1.00**					
UV	0.491**	0.271**	0.348**	**1.00**				
HV	0.232**	0.280**	0.332**	0.420**	**1.00**			
UNQV	0.162**	0.347**	0.300**	0.314**	0.391**	**1.00**		
EV	0.246**	0.276**	0.338**	0.305**	0.372**	0.508**	**1.00**	
ECV	0.235**	0.134*	0.216**	0.273**	0.127*	0.200**	0.215**	**1.00**
AI	0.395**	0.264**	0.299**	0.547**	0.329**	0.310**	0.307**	0.287**

TI: Technological Influences, SI: Social Influences, II: Informational Influences, UV: Utilitarian Value, HV: Hedonic Value, UNQV: Uniqueness Value, EV: Epistemic Value, ECV: Economic Value, AI: Adoption Intention.
* $p \leqslant 0.05$.
** $p \leqslant 0.01$.

Table 6
Normality test.

Variable	Skewness	Kurtosis
Adoption Intention	−1.039	1.849
Utilitarian Value	−1.615	4.266
Hedonic Value	−0.459	0.126
Uniqueness Value	−0.478	−0.065
Epistemic Value	−0.186	−0.669
Economic Value	−0.536	−0.230
Technological Influences	−1.463	4.875
Social Influences	−0.198	−0.689
Informational Influences	−0.319	0.417

value" ($\beta = 0.126$, $p < 0.05$) are significantly and positively related to "adoption intention" of MDS (*Adjusted* $R^2 = 0.334$). Thus, H1 and H5 are supported. However, results show that "hedonic value" ($\beta = 0.070$), "uniqueness value" ($\beta = 0.081$), and "epistemic value" ($\beta = 0.080$) are not significant at $p \leqslant 0.001$, $p \leqslant 0.01$, or $p \leqslant 0.05$ levels. Hence, H2, H3, and H4 are not supported.

Thereafter, each of the three antecedents (i.e. "technological influences", "social influences", and "informational influences") were individually regressed on value dimensions (i.e. "utilitarian value", "hedonic value", "uniqueness value", "epistemic value", and "economic value"). Results concerning the effect of technological influences on value dimensions, as in Fig. 3, indicate that "technological influences" is positively and significantly related to "utilitarian value" ($\beta = 0.413$, $p < 0.001$), "hedonic value" ($\beta = 0.123$, $p < 0.05$), "epistemic value" ($\beta = 0.137$, $p < 0.05$), and "economic value" ($\beta = 0.179$, $p < 0.05$). However, the effect of "technological influences" on "uniqueness value" was not found to be significant. Thus, H6a, H6b, H6d, and H6e are supported, whilst H6c is not.

On the other hand, results concerning the effect of social influences on value dimensions, as in Fig. 4, indicate that "social influences" is positively and significantly related to "utilitarian value" ($\beta = 0.153$, $p < 0.01$), "hedonic value" ($\beta = 0.185$, $p < 0.01$), "uniqueness value" ($\beta = 0.275$, $p < 0.001$), and "epistemic value" ($\beta = 0.177$, $p < 0.01$). However, the effect of "social influences" on "economic value" was not found to be significant. Thus, H7a, H7b, H7c, and H7d are supported, whilst H7e is not.

Finally, results concerning the effect of informational influences on value dimensions, as in Fig. 5, indicate that "informational influences" is positively and significantly related to "utilitarian value" ($\beta = 0.154$, $p < 0.01$), "hedonic value" ($\beta = 0.228$, $p < 0.001$), "uniqueness value" ($\beta = 0.191$, $p < 0.01$), "epistemic value" ($\beta = 0.232$, $p < 0.001$), and "economic value" ($\beta = 0.133$, $p < 0.05$). Thus, H8a, H8b, H8c, H8d, and H8e are all supported.

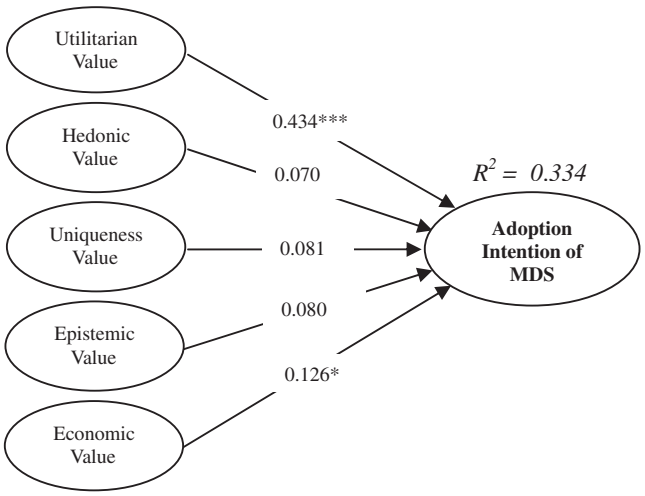

Fig. 2. Results: value dimensions and adoption intention. $^{*}p \leqslant 0.05$; $^{**}p \leqslant 0.01$; $^{***}p \leqslant 0.001$.

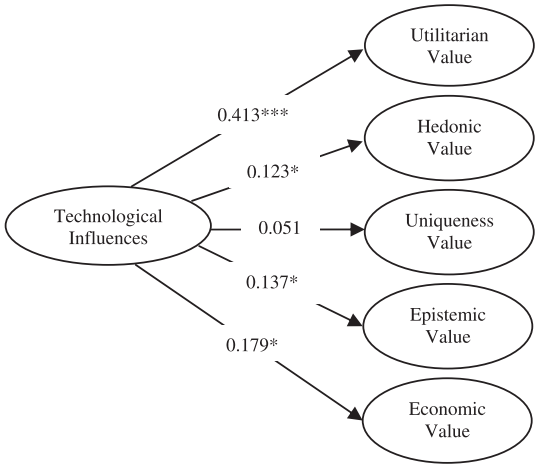

Fig. 3. Results: technological influences and value dimensions. $^{*}p \leqslant 0.05$; $^{**}p \leqslant 0.01$; $^{***}p \leqslant 0.001$.

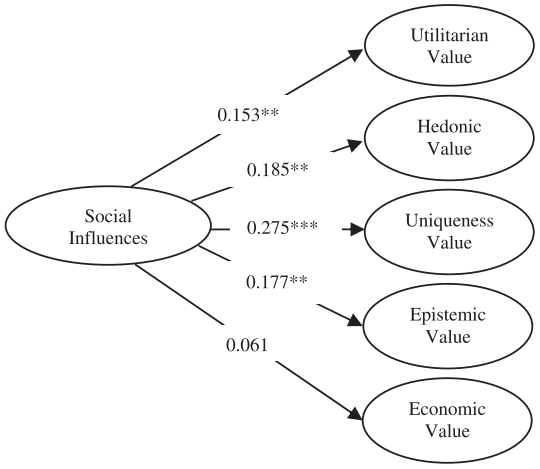

Fig. 4. Results: social influences and value dimensions. $^{*}p \leqslant 0.05$; $^{**}p \leqslant 0.01$; $^{***}p \leqslant 0.001$.

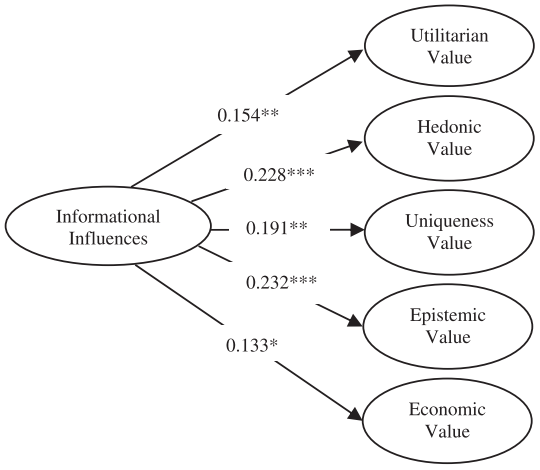

Fig. 5. Results: informational influences and value dimensions. $^{*}p \leqslant 0.05$; $^{**}p \leqslant 0.01$; $^{***}p \leqslant 0.001$.

5. Discussion

The main aim of this study is to determine the factors affecting the adoption intention of mobile data services using a value-based approach. Based on an extensive literature review conducted in both IS and marketing fields, we have developed a value-based model that includes not only the traditional utilitarian and hedonic value dimensions, but also uniqueness, epistemic and economic value dimensions. Moreover, we have also postulated that those value dimensions are influenced by technological, social, and informational influences. The findings of this study reveal that utilitarian value strongly influences adoption intention of MDS. This indicates that people in Jordan desire goal fulfillment or task accomplishment services when it comes to MDS. The importance of the utilitarian value, as shown in this study, for the adoption of MDS is consistent with the findings of Kim and Han (2009) and Lu et al. (2008) although those studies have been conducted in countries other than Jordan. However, previous studies have shown that perceptions of value dimensions differ across different societies and cultures. For example, both Lee, Kim, Lee, and Kim (2002) and Kim et al. (2004) found that consumers in South Korea are more likely to perceive emotional and hedonic value, whilst consumers in Japan are more likely to perceive functional or utilitarian value. As Jordanian people can be characterized as professionals and business-oriented, it seems logical that their decisions in regard to MDS adoption are more derived by the utilitarian value dimension than hedonic, epistemic, or uniqueness value dimensions. Moreover, for a Jordanian consumer, it seems that finding a rational justification for spending money on mobile services that contribute to his/her effectiveness or efficiency is easier than finding a proper justification for spending money on other types of mobile services, especially in the current modest economic situation of Jordan.

Economic value has also been found to positively predict adoption intention of MDS in Jordan. This indicates that Jordanian consumers have high concerns for the prices of MDS services. Although consumers in general are usually concerned about the prices of such value-added services (Kim et al., 2007), a plausible additional explanation for the importance of the prices of MDS services for Jordanian consumers, in particular, is the low income level of the consumers in Jordan. Jordan faces many economic challenges which not only include chronic high rates of poverty, unemployment, and inflation, but also involve high budget deficit and public debt. Moreover and following the global economic and financial crises, Jordan has witnessed a noticeable slowdown in its economy. This may explain why the economic value dimension is a major factor affecting the intention to adopt MDS by Jordanian consumers. From another perspective, it was suggested that the higher the collectivism index in a culture, the higher the price sensitivity in that culture is likely to be (Kim et al., 2004). Accordingly and given that high level of collectivism is one of the main characteristics of the Jordanian culture, we are not surprised to find out that economic value plays an important role in consumers' adoption decisions of MDS.

Research conducted by Van der Heijden et al. (2005), Kim et al. (2007) and Kim and Han (2011) revealed that hedonic value is a weak predictor of adoption intention; a finding that is supported by our results. Strahilevitz and Myers (1998) argued that hedonic value is often associated with some guilt feeling and people often seek to justify their choices (Dhar & Wertenbroch, 2000). In the case of mobile data services that contribute to personal pleasure, finding a proper justification might be difficult for Jordanian consumers. This is mainly due to the poor or modest economic situation of the country besides the fact that most of the users of MDS in Jordan are young age individuals with low level of spending power. Therefore, the pattern of money spending for a Jordanian consumer in general and more specifically within this young age group is usually rational following the order of priorities.

Our results also indicate that uniqueness value has no significant effect on the adoption intention of MDS. This result is consistent with that of Carlsson et al. (2005a,b) who argued that the use of mobile data services to emphasis social status is considered a small benefit. We have also found that epistemic value has no significant effect of the adoption intention of MDS in Jordan. A plausible explanation is that novelty seeking and curiosity about new services are characteristics of innovators as those individuals can cope with uncertainty in order to gain new knowledge. But as the culture in the Middle East, including Jordan, is represented by high levels of uncertainty avoidance, risk avoidance, novelty resistance (Hofstede, 1980; Hofstede, 1991; Kandari & Gaither, 2011), it is expected to find out that there is no significant effect between epistemic value and adoption intention of MDS. This is consistent with suggestions of Hofstede (1980) and Hofstede (1991), whereby Jordanian consumers are less likely to take risks when compared to their western counterparts.

The effects of both social and informational influences on the adoption of innovative technologies were examined in previous research (e.g. Brown & Venkatesh, 2005; Kim & Han, 2009; Rao & Troshani, 2007) in which almost all studies confirmed the significant effects they have on adoption intentions whether the reliance was more on the information received from mass media in case the decision has not been made yet or on the information gathered from relevant others as they are seen as more trustworthy. The findings of this study demonstrate that, in general, Jordanian consumers' perceptions of value are importantly influenced by social influences. Usunier and Lee (2005) and Harris et al. (2005) argued that in collectivist and in-group-oriented societies, people usually have enhanced reliance on word-of-mouth communication and personal recommendation as an influencer on adoption decisions due to the strong bonds and the high degree of dependence amongst people in such cultures. As the Arabian culture has a relatively high collectivism orientation (Hofstede, 1980), it is therefore expected that consumers in this part of the world are more sensitive to the social pressures, and have a tendency of accepting their peers' opinions and comply with expectations of important others (e.g., family and friends). Our results also revealed that the strongest effect of the social influences is on the uniqueness value amongst all value dimensions of MDS. This indicates that adopting an innovation such as MDS by an individual would elevate the person's standing, status, and image amongst the Jordanian consumers. It seems that nowadays mobile devices are no longer perceived by Jordanian consumers, amongst others, as ordinary communication tools, but rather as fashion items and trends which add to one's image and status amongst their peers and society at large (Chong, Chan et al., 2012a; Chong, Ooi et al., 2012b). However, the findings of this study found that social influences as a construct has no influence on the economic value. A plausible explanation is that cost is a subjective concept (Vaughn, 1980) and thus; if someone perceives a product or a service as being reasonably priced that does not necessarily mean others will share the same opinion.

A Finding by Lu et al. (2008) revealed that technology is a vital predictor of the value dimensions of MDS, especially in terms of functionality. This indeed concurs with our results which indicate the significant effect technological influences have on value dimensions; especially utilitarian and economic value dimensions. This implies that people in Jordan perceive advances in technology as a potential for having advanced value-added services that would enhance their effectiveness. It also implies that people in Jordan perceive advances in technology as a potential for monetary

savings as those advances would enable them to use free applications that would replace their correspondent pay-per-use services.

6. Implications for theory and practice

This study comes to broaden our understanding of the factors behind adopting mobile data services especially in Jordan. Although some studies have been conducted in this area, the influence of value dimensions on the intention to adopt mobile data services has been rarely examined (Hong et al., 2008). Even when a value-based approach was followed in previous studies, one can simply notice that the focus usually was on utilitarian and hedonic value dimensions as the salient predictors of MDS adoption; whilst other value dimensions such as the ones included in this study were mostly ignored. Indeed, there is a call for a multidimensional view of value in the research area of MDS adoption (Pihlström and Brush, 2008) and our study comes as a response to this call. On the other hand, previous studies were mainly conducted within the context of developed countries; thus our knowledge about the effects of value dimensions on the adoption of MDS within the context of developing countries along with the differences of those effects between developed and developing countries is extremely lacking. Hence, this study also contributes in this domain.

This study comprehensively identifies the most relevant value dimensions along with their effects on the adoption intention of MDS in Jordan. The results of this study revealed that utilitarian and economic value dimensions are the best predictors of MDS adoption in Jordan. This study further contributes to MDS literature by examining the effects of technological, social, and informational influences on people's perceptions toward the value that can be captured when using MDS. Our study indicates that those influences exert diverse but mostly significant effects on value dimensions of MDS. The results also revealed that amongst the three antecedents, technological influences have the strongest effect on utilitarian and economic value dimensions which, according to the findings of this study, are the main predictors of adoption intention of MDS in Jordan.

In addition to its implications for theory which are discussed previously, the present study also provides implications for MDS practitioners. Based on the results, Jordanian consumers are more interested in goal-oriented services that would enable them to accomplish their tasks effectively and efficiently than other types of mobile data services. Consequently, service providers must focus their efforts on providing this type of services. For marketing strategies to be effective in the Jordanian market, telecoms need to pay high attention and to mainly focus on the utilitarian and functional aspects of mobile data services. Further, it is also suggested that tailored services should be offered to specific groups based on their common characteristics. Further, monetary value should not be overlooked as it was found in this research that MDS subscription fee and prices may hinder the Jordanian consumers' adoption intentions. Therefore, offering utilitarian mobile data services in Jordan may not yield the expected results if they were not associated with reasonable prices. This is especially important given that the users of mobile data services in Jordan are mainly the young generation including students at universities and schools and such users usually have low level of income and very limited budgets. Thus; to successfully promote their added value services in Jordan, providers must stress on the utilitarian aspect of their services along with the cost savings gained by using such services especially with the intensified competition in the Jordanian mobile and telecommunications industry.

As seen from the results, value dimensions that drive adoption intention are influenced by mobile technology. Hence, telecoms need to continuously invest in their technological infrastructure. It is of high importance that telecoms adopt topical technological innovations in order to increase their competitiveness in the market. This is significant as Jordanian consumers perceive technological advancements in the telecommunication industry as enablers of greater utility with lower prices. In addition, other influences such as informational and social ones are also important. When it comes to technological innovations such as MDS, informational influences play a fundamental role in conveying the value consumers can get through the use of such services. Thus, telecoms need to make sure that their advertisements and promotions are communicated effectively to consumers through the most appropriate media sources in the country (e.g. TV, newspapers, Internet). As social influences was also found to have a strong influence on consumers' perception of value, decision makers and marketers of MNOs in Jordan, and perhaps other Arab countries with similar social structures, should carefully manage the peer influence and the social pressure. This is because MDS mainly function as part of networks where attitudes of consumers and patterns of usage are best described as collective rather than individual phenomena. Hence, attitudes and usage are influenced more strongly by socio-cultural factors than they would be if they were truly individual-level phenomena (Harris et al., 2005). Therefore, an understanding of the socio-cultural dimensions of a market can significantly help telecoms in developing appropriate MDS services, marketing these services effectively, and in setting realistic adoption targets.

Interestingly, the results of this study also show that epistemic value has no significant effect on the adoption intention of MDS in Jordan. A plausible explanation is the uncertainty-avoidance culture of Jordan. Indeed, people in high uncertainty-avoidance cultures, such as Jordan, are uncomfortable with uncertainty and can be characterized as risk avoiders (Lee, Kim, Choi, & Hong, 2010). In view of that, we recommend that telecoms should provide Jordanian consumers with more uncertainty-avoidance features when it comes to MDS such as free trials and services. This would introduce such services along with their benefits and capabilities to the Jordanian consumers in financial risk-free settings and subsequently would encourage them to use MDS in the future.

7. Conclusions

This study contributes to the existing body of knowledge about the factors affecting the adoption of MDS, especially in Jordan. A value-based model was developed to investigate the effect of technological, social and informational influences on mobile value dimensions, and the effect of the latter on the adoption intention of MDS. In light of our results, utilitarian and economic value dimensions are the best predictors of MDS adoption intention in Jordan, and mobile technology forms the strongest influence on people's perception about utilitarian and economic value dimensions. Social and informational influences were also found significant but at a lesser degree than technological influences.

Despite its importance and significance, this study does not come without limitations. First, due to the size of the sample in addition to the fact that the majority of the research subjects were university students, it is difficult to generalize the findings of this research. Second, the developed model examines key value dimensions as determinants for intention to adopt mobile services in general without specifying the type of services. Future work is encouraged to study the relationship between those key value dimensions and different categories of mobile data services in order to determine how consumers' perception about those value dimensions can differ across different types of MDS. Third, this study only covers Jordanian geographical context. Future research testing the research model in different geographical context may

be necessary in order to help enhancing the generalizability of the results.

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