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## The adoption of mobile commerce services by individuals: A Current State of the Literature

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### Abstract

*The lack of strong market growth in most Mobile Commerce markets indicates that improved functionality, affordability, and availability of mobile technology do not lead automatically to wide-spread adoption of these services. Therefore, developing an understanding of the factors that influence end-user (consumer) behaviour and acceptance of new mobile services is important at this early stage of the mobile evolution because consumer acceptance is a critical foundation for the continued expansion of the market for mobile services. In this paper we analyse and synthesise the existing literature which focuses on the factors that impact the adoption of mobile commerce services by individuals. We develop an innovative framework to guide this analysis and review 100 studies. Results show a clear imbalance in the existing literature and bias towards some types of adoption factors in favour of other equally important factors.*

### Keywords

Mobile commerce, consumer, adoption factors, literature review, analysis framework

### INTRODUCTION

The emergence of mobile telephony devices with increasingly powerful Internet capabilities has created the foundation for a new market: mobile commerce services. Improvements in mobile technologies, the increased affordability and availability of these technologies, and the rapid uptake of mobile phones worldwide have facilitated the emergence of, and strong growth in, some successful mobile commerce markets, notably Korea and Japan (Sharma 2007). However, the lack of strong market growth elsewhere indicates that improved functionality, affordability, and availability do not lead automatically to wide-spread adoption of mobile commerce services (Constantiou et al. 2006). Indeed, numerous studies show that mobile services have so far failed to attract the hearts and minds of potential consumers; and that revenues have fallen far short of expectations (Carlsson et al. 2006; Mylonopoulos and Sideris 2006).

Many authors, for example Harris et al. (2005), Matthew et al. (2004) and Scornavacca et al. (2006) claim that developing an understanding of the factors that influence end-user (consumer) behaviour, particularly acceptance of new mobile services, is important at this early stage of the mobile evolution because consumer acceptance is a critical foundation for the continued expansion of the market for mobile services. Indeed, the success and interest of all stakeholders in the mobile commerce value chain is highly dependent on improving our understanding of the forces that drive consumer awareness, acceptance and use of mobile services.

The importance of this issue for both researchers and practitioners is evidenced by the large number of studies that have investigated consumer acceptance and use of mobile services. These studies vary in the type of factors discussed (e.g., technical, managerial, governmental), the perspective adopted (e.g., consumer, service-provider, regulatory authority), type of mobile service examined (e.g., entertainment, transactional, communication), and the context of use (e.g., school, government, organization). Despite the enormous effort put into identifying factors that affect the adoption of MC, however, the adoption rate has not been improved. This suggests a need for further investigation into the current state of knowledge in the area to identify areas of strength and gaps in our understanding, and thereby provide direction for future studies.

In this paper we analyse the existing literature concerning factors that influence adoption of mobile commerce services by individuals. To help explore this large and heterogeneous literature, we have developed a framework called the Entity-Interaction Framework (EIF). This paper offers two main contributions: 1) content - by identifying and summarizing important and relevant adoption factors to identify the current knowledge gap and the future study direction, and 2) process - by offering a systemic and reproducible review mechanism using the EIF, which can be used by other researchers in other fields. While the content part of this literature review provides a good level of coverage of relevant studies, it is not meant to be exhaustive and, more importantly, it demonstrates how the EIF can be utilized to conduct a structured review.

The paper is organized as follows: We first describe the methodology we used to conduct this literature analysis. After that, we introduce the EIF model and use it as a basis for reviewing relevant studies and to highlight the knowledge gaps. The paper concludes with a discussion that summarizes the findings of this literature analysis.

## METHODOLOGY

We began by developing a set of criteria to guide us in the selection of studies include in the analysis. Because of the large number of studies into the adoption of mobile commerce, we limited our initial search to three research themes: *mobile*, *adoption* and *individual*. This limitation allowed our initial search to be more focused on the *adoption of mobile commerce services by individuals*. Three main levels of sources, from general to specific, were systematically used in this study. Firstly, general databases such Web of Science, JSTOR, ScienceDirect and Google Scholar were searched. This allowed us to collect studies regardless of the discipline that a study belongs to. Secondly, we searched through general Information Systems journals such as MIQ Quarterly, Information Systems Research, Communications of the AIS, Communications of the ACM, Decision Support Systems, and European Journal of Information Systems; and also general IS conference proceedings such as the International Conference on Information Systems (ICIS), Asia-pacific Conference on Information Systems (ACIS), Hawaii International Conference on Systems Sciences (HICCS) and so on. This allowed us to collect studies that are more specific to information systems. Thirdly, we searched in journals specific to mobile communication journals such as the International Journal of Mobile Communications (IJMC); and mobile-specific conferences such as the International conference on Mobile Business (ICMB). The objective of structuring our search to cover these three levels was to make the process systematic, organized and comprehensive.

Our literature review resulted in 100 articles from various journals and conferences. To analyse these studies, we developed a framework to help identify the key entities involved in MC adoption and the interactions between these entities. Based on this framework, which we describe next, we carefully examined and categorized each study.

## THE ENTITY-INTERACTION FRAMEWORK (EIF)

The existing literature concerning mobile services adoption by individuals has investigated the importance of many factors in various contexts. Some of these factors were adapted from traditional adoption theories and studies, such as perceived usefulness and perceived ease of use from the Technology Acceptance Model, while others are more mobile-specific such as mobile service design aesthetics (Ainin et al. 2007; Carlsson et al. 2006) and have been added and investigated more recently.

To analyse the large body of the literature in this area systematically, we developed a framework called the "Entity-Interaction Framework". This framework is based on our thesis that the provision, adoption and use of mobile services by consumers, is an interactive process that involves four main entities:

- The **consumer** which is the target of the service provision.
- The **mobile service** which encapsulates the technology via which the mobile service is provided.
- The **mobile service provider** which is the entity that the consumer interacts with in order to use the mobile service. Depending on the specific market structure, the service provider can be a telecommunication company, a content provider, or another entity. For this study, the service provider is the party that the consumer interacts with to acquire the service, solve problems, and pay fees and so on.
- The **social system** which is the consumer's social reference group, including family, peers, and colleagues.

The consumer attitude and intention towards the adoption of the mobile service is affected by the mobile service, the provider of the service and the consumer's social system. Because these entities are closely interrelated but nevertheless distinct, we argue that to fully understand the uptake of mobile services by consumers, it is important to investigate and understand two general sets of factors:

- **Entity-specific factors** are the characteristics and properties of each entity. These include, for example, consumer characteristics such as age, gender, income; mobile service characteristics such as composition, technological requirements; service provider characteristics such as market position and ability to reach and

attract consumers; and social system characteristics that the consumer belongs to, such as the general level of innovativeness vs. resistance to change, the common culture and beliefs of the society.

- **Inter-entity factors** are the factors that influence the interactions or exchanges between these entities. These encapsulate how each entity is perceived by other entities (e.g. how a consumer perceives a service).

Since the EIS framework shows 1) the main entities involved in the MC adoption and 2) the interactions that typically take place among the identified entities, it thus helps us identify factors affecting MC adoption that are related to each of the entities involved in the MC adoption and factors that are related to the interaction between entities. Guided by the EIS framework, we now report the results of a systematic review of the literature to highlight which aspects of adoption have been well investigated as well as which ones have not been well explored and hence potentially require attention in future research.

## ANALYSIS OF THE EXISTING LITERATURE

Researchers in the field have identified and investigated a large number of factors related to mobile commerce adoption. In this section, we review these factors using the proposed Entity-Interactions Framework.

### Entity-specific factors

#### *The consumer*

Consumer characteristics, including attitude and demographic variables (age, gender, income, and so on) are clearly important in the mobile services adoption context, and have been assessed in many studies. For example, Bouwman et al. (2008) data in 2004, 2005 and 2006 from a sample of Finnish consumers and found that gender and age have a direct impact on consumers' attitude towards mobile innovations. Similarly, in a study to explore the demographic characteristics of early adopters of mobile services, Munnukka (2007) found that male, under 35 years of age, and earn a low-income are the more likely adopters of mobile commerce.

In addition to consumer demographics, other consumer characteristics studied include innovativeness, self-efficacy (the user's belief about and confidence in his/her individual ability to use a service), prior experience, and shopping orientation. For example, innovativeness is considered as the main driver for future success of m-commerce Jarvenpaa et al. (2003), and an important characteristic that distinguishes adopters from non-adopters Hung et al. (2003). Self-efficacy has a particularly strong direct impact on both the perceived ease of using a mobile service (which in turn, influences adoption intentions), and intentions to adopt (Gong and Xu 2005; Gong and Yan 2004; Lee and Kim 2002). Prior experience has also been found to influence consumer adoption of mobile commerce albeit the experience with older mobile services (Carroll et al. 2007), traditional technologies such as desktop computers and the wired internet (Blechar et al. 2006) or general life experiences (McManus and Standing 2004). Table 1 summarizes the various consumer attributes that have been found to be related to adoption, including a frequency count of the number of times each factor or category of factors have been studied.

Table 1: Consumer-specific factors that have been investigated in the existing literature

Factors	Demographic Characteristics							Other Characteristics										
	Age	Gender	income	education	occupation	Marital Status	general socio-economic status/social class	Extraversion	Emotional Stability	Conscientiousness	innovativeness/	Openness to Experience	self-expressiveness	self-efficacy	prior experience with mobile/telecom technology	prior experience with other technologies	general personal lifestyle and history	privacy sensitivity
<b>Example Studies</b>																		
<b>Total count</b>	<b>40</b>							<b>74</b>										
<b>Category count</b>	<b>40</b>							<b>34</b>										
<b>Factor count</b>	<b>14</b>	<b>10</b>	<b>7</b>	<b>5</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>8</b>	<b>1</b>	<b>9</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>1</b>	
Constantiou et al.(2009)	*	*	*		*						*							
Munnukka (2007)	*	*	*															
Nysveen et al. (2005)		*																
...	<b>&gt;&gt; There are more studies here that we removed for space considerations &lt;&lt;</b>																	
Jarvenpaa et al. (2003)											*							
Hung et al. (2003)											*							

#### *The mobile service*

The mobile service characteristics play an important role in its adoption and use by consumers. For example, the composition, content and delivery mode of SMS marketing messages and their suitability for a specific

consumer’s needs were found as major determinants of consumers’ acceptance of mobile marketing services (Carroll et al. 2007). The personalisability of the mobile service content and its fit with the user mobile devices are also important characteristics of mobile commerce services according to Constantiou et al. (2006). In addition, the composition of a mobile service bundle (where more than one service is combined to form a packaged mobile service) and how each part of the service package relates to the other parts – supplementary vs. independent – is another service characteristic that influences consumer adoption of mobile services (Bouwman et al. 2007b).

For example, pricing, payment, delivery modes, content and information quality and connection stability are important factors to increase the perceived benefit of the mobile service Bauer et al. (2007) and the hedonic and utilitarian value of the service Park (2006). In addition, security and privacy standards were also found by Khalifa and Shen (2008) as important determinants of the consumer perception of the usefulness of the mobile service. Other mobile service characteristics that have been found to influence the acceptance and use of mobile commerce include: system quality, stability and efficiency and connection stability and availability (Kim et al. 2008), mobile service design quality and aesthetics for mobile internet websites (Cyr et al. 2006), message content, controlability and personalisability for SMS marketing services (Scharl et al. 2005), transaction convenience and speed for mobile payment services (Chen 2008), and the fit between the characteristics of the mobile service and the tasks performed using the service (Lee et al. 2007a). Table 2 summarizes the various factors related to the mobile service as an important entity in the MC adoption.

Table 2: Mobile Service-specific factors that have been examined in the existing literature

Factors	composition	content & info quality	connection (quality & availability)	general (functional) quality of mobile service	fit with/relevance to/awareness of user context & need (task)	personalisability & controlability	Pricing	payment mode	order/delivery mode	security standards	privacy standards	speed	/responsiveness/timeliness/promptness	interaction, navigation, interface, design
<b>Example Studies</b>														
<b>Total count</b>	<b>69</b>													
<b>Factor count</b>	<b>1</b>	<b>9</b>	<b>6</b>	<b>4</b>	<b>6</b>	<b>7</b>	<b>10</b>	<b>1</b>	<b>2</b>	<b>6</b>	<b>3</b>	<b>7</b>	<b>7</b>	
Ko et al. (2009)			*											
Jillbert et al. (2004)		*					*							
Shchiglik et al. (2004)		*				*						*	*	
...	<b>&gt;&gt; There are more studies here that we removed for space considerations &lt;&lt;</b>													
Serenko et al. (2006)				*										

*The social system*

The characteristics of the consumer’s social system play a critical role in shaping the consumer’s overall perceptions, attitudes and behaviours. Su and Adams (2004) found that the contrast in the individualism vs. collectivism cultural dimensions of the Chinese and British societies play a role in influencing consumer adoption and perceptions of mobile services. Similarly, Muk (2007) found that Americans’ adoption intentions are exclusively driven by their attitudinal consideration, while Taiwanese consumers’ decisions are largely influenced by their society and culture, in addition to their individual considerations. In addition, Sarker and Wells (2003) explained that in high power distance cultures (such as Korea) sending SMS to superiors at work can be considered a serious offence, while in other social systems (such as Norway) it is not offensive to do so. Table 3 summarizes the various factors related to the social system as an important entity in the MC adoption.

Table 3: Social System-specific factors that have been examined in the existing literature

Factors	individualism vs. collectivism	power Distance	transactional habits and preferences (e.g. cash-carry)	uncertainty avoidance	perception of time	preferred communication style (e.g. face-to-face, indirect, written)	economic development	market competition	political censorship
<b>Example Studies</b>									
<b>Total count</b>	<b>15</b>								
<b>Factors count</b>	<b>6</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
Dai and Palvi (2009)		*		*	*				
Fan et al. (2005)	*								
...	<b>&gt;&gt; There are more studies here that we removed for space considerations &lt;&lt;</b>								
Lee et al. (2007b)	*			*	*	*			

*The service provider*

The service provider characteristics influence the internal business process quality and therefore its performance in the market and the quality of the services it offers to its customers. Examples of these attributes include: top management commitment (Bricknell 1996), leadership (McCull-Kennedy and Anderson 2002), strategic planning (Anderson 1982; Schoeffler et al. 1990), internal departmental communication (Reynoso and Moores 1995), and employee empowerment and involvement in the business process and performance (Fletcher 1999). Generally speaking, our literature search indicates there are still limited studies of mobile commerce adoption that touched on the service provider as an independent entity. Table 4 summarizes the few factors related to the service provider that have been investigated in the MC adoption literature.

Table 4: Service Provider-specific factors that have been examined in the existing literature

Factors Example Studies	Firm Reputation in the market	Brand reputation of product in the market	Physical availability	Privacy policy	Misuse of customer information	business models
<b>Total count</b>	<b>7</b>					
<b>Factors count</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>1</b>
Siau et al. (2003)	*	*	*	*	*	
Xu et al. (2005)				*		
Yan et al.(2006)						*

**Inter-entity factors**

According to the EIF, the interaction of various entities in any mobile service provision scenario creates many factors that can positively or negatively influence consumer perceptions, attitudes and behaviours towards the acceptance of the provided service.

*Consumer-service factors*

The interaction between the consumer and the service is the source of most of the factors that have been studied in the emerging mobile services adoption field. Factors that relate to the interaction between the consumer and the mobile service have to date been measured based either on consumers' direct experience with the service or on consumers' perceptions and beliefs about how they expect the factors would affect their use of the service. Consumer-service factors can be generally classified into outcome-expectancy factors, effort-expectancy factors and facilitating conditions (adapted from Venkatesh et al. 2003).

The first group, *outcome-expectancy*, relates to consumer perceptions and beliefs about the advantages and disadvantages of adopting a mobile service. Therefore, most factors in this category can either take a positive form and become a benefit, or take a negative form and become a barrier. Generally, expected outcomes from using the mobile service can be classified into two groups: *performance-related* outcomes or *personal* outcomes. Performance-related outcome factors relate to the perceived benefits or advantages from using the mobile service that result in increased performance and improved task accomplishment. These factors are therefore related to more functional, utilitarian or instrumental benefits such as the usefulness, efficiency and convenience of using a mobile commerce service. Personal outcome-expectancy factors are related to non-utilitarian and non-task-oriented benefits such as the enjoyment and playfulness of using a mobile commerce service. The second group, *effort-expectancy*, relates to consumer perceptions about the ease or difficulty of acquiring, dealing with and using m-commerce services. A known example from this group is Perceived Ease of Use from the Technology Acceptance Model (Davis 1989). Effort-expectancy factors also include consumer expectations of other possible difficulties (or efforts) such as perceived loss of personal security and privacy and perceived cost (a financial effort or difficulty) as a result of using mobile commerce services. The third group of factors that relates to the consumer interaction with the mobile commerce service is *facilitating conditions*. These factors are basically conditions whose existence would facilitate the adoption and use of mobile services by individuals. Trialability (Rogers 1995) is a known example from this group.

Table 5 shows that there has been a growing interest in the mobile commerce literature in examining adoption factors that are more specific or relevant to m-commerce, beyond those that are applicable from traditional technology adoption theories. In the table, the count of the number of times each factor and category of factors have been studied (shown in the third and fourth rows) shows that among the four major categories of factors, the performance-related outcome factors and effort-expectancy factors have received far more attention than personal-related outcome and facilitating conditions factors. In the performance-related outcome category, perceived usefulness, relative advantage, perceived utility and contextual benefits have been examined more frequently. Among the effort-expectancy factors, perceived ease of use and perceived complexity have received the most attention.

Table 5: Consumer-Service factors that have been examined to date

Factors	Outcome-expectancy factors (performance-related)	Outcome-expectancy factors (personal)	Effort-expectancy factors	Facilitating conditions
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Example Studies	Perceived usefulness, relative advantage, perceived utility, contextual benefits	Perceived efficiency, speed, quality, flexibility, performance & convenience	Perceived value-added, usability, perceived relevance, need & interest	Confirmation/disconfirmation of the service	perceived satisfaction with service	Perceived enjoyment, playfulness & entertainment	Fulfillment of personal need for uniqueness & emotional values (e.g. self-esteem)	Perceived fashion and enhanced personal image, life-style and status	Perceived self-expressiveness	Perceived ease of use, complexity	Perceived trust and credibility	Perceived risk	Perceived, safety, privacy, and security	perceived cost & monetary value	Other barriers (e.g. physical, cognitive, etc)	perceived compatibility	Triability	Network Externalities (critical mass)	Use situation and context (place and time)	Facilitating conditions (e.g. regulatory policies, availability of support etc)
<b>Total count</b>	<b>277</b>																			
<b>Category count</b>	<b>101</b>					<b>38</b>				<b>104</b>						<b>34</b>				
<b>Factors count</b>	<b>46</b>	<b>21</b>	<b>20</b>	<b>2</b>	<b>12</b>	<b>21</b>	<b>7</b>	<b>8</b>	<b>2</b>	<b>40</b>	<b>13</b>	<b>6</b>	<b>19</b>	<b>26</b>	<b>3</b>	<b>13</b>	<b>4</b>	<b>5</b>	<b>7</b>	<b>5</b>
Wei et al. (2009)	*									*	*		*							
Kim et al. (2008)	*		*							*				*		*				
Lin and Shih (2008)		*		*	*		*				*									
...	<b>&gt;&gt; There are more studies here that we removed for space considerations &lt;&lt;</b>																			
Chu and Lin (2006)	*		*		*					*			*	*		*				
Carlsson et al. (2006)	*	*	*			*	*	*		*	*	*	*	*	*					

*Consumer-social system factors*

Since mobile services are usually used in and around a social environment, consumers’ perceptions, attitudes and behaviours are naturally influenced by other people. Social influence is the effect that others have on the perceptions of the consumer towards the service. One of the well-known factors under this group is the subjective norm (Venkatesh et al. 2003), which measures consumer perception of whether important people to him/her would approve or disapprove his/her decision to adopt the provided service. In the mobile commerce adoption literature, many studies have examined the impact of social influence on consumer adoption of mobile services. For example, in a study to examine and compare the impact of seven adoption factors (usefulness, usability, system quality, social influence, ubiquitous connectivity, perceived cost and perceived value) on the behavioural intention of discontinuers and continues to use mobile services, Kim et al. (2008) found that social influence is one of the factors which has a major impact on the perceptions of discontinuers. Similarly, the impact of subjective norm on adoption intention was examined by Toe and Pok (2003), who found that consumers tend to seek information from their ‘significant others’ reference group (family, friends, colleagues and peers), which consequently influences their adoption intentions. Table 6 summarizes the various studies that investigated the impact of consumer-social factors on the consumer adoption of mobile commerce services.

Table 6: Consumer-Social System factors that have been examined to date

<b>Factors</b>	subjective norm/social pressure/social influence	Agreeableness (trust in social environments and tendency to strive for harmony in social relationships)
<b>Example Studies</b>		
<b>Total count</b>	<b>13</b>	
<b>Factors count</b>	<b>12</b>	<b>1</b>
Fogelgren-Pedersen et al. (2003)	*	
Junglas et al. (2006)		*
...	<b>&gt;&gt; There are more studies here that we removed for space considerations &lt;&lt;</b>	
Yang et al. (2007)	*	

*Consumer-service provider factors*

In our literature search, there was no study identified that explores factors related to the interaction between consumer and the service provider that may directly affect the adoption of mobile commerce.

## DISCUSSION

Guided by the proposed framework, we have systematically reviewed the existing studies exploring factors affecting the adoption of MC by individuals. Some important observations from this review are discussed below.

### Entity-specific factors

Adoption factors in this group include consumer-specific, service-specific, service provider-specific and social system-specific factors. The following table summarizes our evaluation of the extent to which each of these sets of factors has been covered. We use ‘total count’ from the summary tables (previously presented) as an indicator of the literature coverage of each set of factors, and an ‘abundant-poor’ scale to indicate the general evaluation of the extent to which each factor group has as investigated or covered. In addition, the table provides a short summary of the factors that have most frequently been examined within each category of factors.

Table 7 shows that among these types of factors, the existing literature has given more attention to consumer-specific and service-specific factors. On the other hand, fewer studies have examined social system specific factors, while the literature has barely touched on service-provider specific factors. This indicates that more research is needed to explore service provider-specific and social-system specific factors and how these can influence consumer acceptance of mobile services.

Table 7: The extent to which each set of Entity-Specific factors has been covered in the existing literature

Entity-specific factors	Total count	General extent of coverage				Most frequently examined factors
		Abundant	Good	Fair	Poor	
consumer-specific	74					Age, Gender, innovativeness/Openness to experience, self-efficacy
Mobile service-specific	69					Price, content & info quality, personalisability & controllability, speed responsiveness/ timeliness/ promptness, interacation, navigation, interface, design.
Social-system specific	15					individualism vs. collectivism, power Distance
Service-provider specific	8					Privacy policy

The summary in the above table provide several important insights. Firstly, the fact that the most frequently investigated factors are consumer-specific is quite predictable since these factors include demographic characteristics which are commonly examined in almost all fields of research. Demographics are important because they inform about the profile of existing and most likely future users of the innovation and, therefore, enable practitioners to employ suitable strategies to enhance adoption rates. Secondly, the focus on factors that relate to the mobile service characteristics (independently from the end user) is also important because in the field of innovation adoption, the characteristics of the innovation itself play a major role to attract or repel potential users. For example, if a mobile service that is promoted to serve urgent needs and provide fast solutions to the end user is lacking in terms of its speed, performance, navigation system or design, then most probably this mobile service will fail to attract potential users. Our review shows that researchers in the field have paid adequate attention to both consumer-specific and mobile service-specific factors.

Thirdly, the summary shows that the existing literature has not paid enough attention to factors that are specific to the characteristics of the social-systems in which mobile services are consumed. This could jeopardize the theoretical informativeness and the practical usefulness of the existing literature because many mobile services (e.g. SMS/MMS, email, chat, banking, brokerage mobile services, etc) depend on the interaction among members (individuals and businesses) of the social system. Therefore, unless we understand what dynamics govern social interactions and what makes a social system unique compared to others, it will be difficult for mobile services to sell and spread. Our study shows that there is a need for more research in this area. One helpful direction would be to build on the results and findings of other specialized research fields (e.g. sociology) that investigate the dynamics of relationships and interactions in a specific country or social system; and examine how these findings might be useful to better understand the spread and use of interactive mobile services.

Fourthly, the least investigated set of entity-specific factors are the ones related to the characteristics of the providers of mobile services. This type of factor has important implications on the successful spread and use of mobile services. To successfully attract consumers to try a new mobile service is dependent on many characteristics of the service provider such as reputation, physical availability, and the effectiveness of its business model(s). Moreover, the characteristics of the firm and its capabilities become even more important to ensure the continued use of mobile services by consumers, through the firm’s ability to provide them with satisfactory experiences. Despite the importance of this type of factors, our review indicates poor coverage in the existing literature. One possible direction to enrich this aspect of literature is to acquire and integrate ideas from other research areas that are more focused on firm characteristics and attributes, and then test these in the context of consumer adoption of mobile services.

### Inter-entity factors

Focusing on the consumer, the inter-entity group of factors includes those that relate to the interaction between the consumer and the mobile service, between the consumer and his/her social system, and between the consumer and the service provider. The following table (Table 8) summarizes the existing literature coverage of these factors. Just like we did in the previous section, we use ‘total count’ from the summary tables and an ‘abundant-poor’ scale to demonstrate the extent to which each group of factors has been investigated. In addition, the table provides a short list of factors that have most frequently been examined within each group. In general, the table shows that more research is particularly needed to investigate the impact of factors that relate to the interaction of consumers with service providers and with their social system.

Table 8: The extent to which each set of Inter-Entity factors has been covered in the existing literature

Inter-Entity factors	Total count	General extent of coverage				Most frequently examined factors
		Abundant	Good	Fair	Poor	
Consumer-service	277					Perceived usefulness, relative advantage, perceived utility, contextual benefits, Perceived ease of use, complexity
Consumer-social system	13					Subjective norm/ pressure/ influence
Consumer-service provider	0					none

The above table provides several important insights. Firstly, it shows that the most frequently studied inter-entity factors relate to the interaction between the consumer and the mobile service. This is not surprising given that most early studies on mobile services adoption are based on the traditional technology adoption literature, which heavily focus on such factors as perceived usefulness and perceived ease of use. Direct replication of these traditional adoption studies is normal for an emerging technology such as mobile services. However, these type of studies became predominant, and so has created an imbalance in the mobile adoption research field because researchers have focused on what makes mobile services similar to older innovations rather than what makes these services unique and different. The research community should attempt to ‘detach’ itself from direct replications of older studies to developing theories and models that consider the uniqueness of the adoption process of mobile services.

Secondly, the table shows that the interaction between the consumer and his/her social system has also been covered quite adequately in the existing literature. The popularity of Subjective Norm factor from the Diffusion of Innovation Theory (Rogers 1995) is one of the major drivers for researchers’ current focus on the social aspect of individuals’ adoption of mobile services. In addition, the interactive nature of mobile telecommunication technologies has alerted researchers to the importance consumer-social factors. Nevertheless, just like the case with consumer-service factors, the social aspects of m-commerce adoption were also constrained by the boundaries of theories and studies from the traditional adoption research. Most of the current investigations of these factors in the existing literature are concerned with proving/disproving the existence of an impact (i.e. What is the impact of these factors on the adoption process?). As a result, most existing studies used theory-testing or hypothesis-testing to answer this question. We observe that the existing literature reached a saturation point where there is nothing new to learn from proving or disproving the existence of this impact. To enrich the literature, more innovative perspectives and theories are therefore needed.

Thirdly, the table indicates that the impact of the interaction between the consumer and the mobile service provider on the adoption process of mobile services has been largely overlooked. It is important that this type of interaction receives more attention from researchers because it is what determines the nature and quality of the consumer’s experience while using mobile services. If the consumer’s experience is positive, he/she would most probably continue to use the service and might even consider upgrading to more advanced versions of the service. This has important implications on the future of mobile telecommunications markets. Once again, we think that integrating the existing literature with research areas that focus on the interaction between consumers and service providers would be helpful to get this direction of the literature started. Then, new theories and perspectives that are specific to the mobile market will evolve and develop.

### CONCLUSION

In this paper we analyse and synthesise the existing literature which focuses on the factors that impact the adoption of mobile commerce services by individuals. We develop an innovative framework to guide this analysis and review 100 related studies. Results show a clear imbalance in the existing literature and bias towards some types of adoption factors in favour of other equally important factors. In summary, to further develop this field of research, researchers need to give more attention to factors that related to the characteristics of the providers of mobile services and nature of the interaction with consumers and examine how these factors affect consumers’ acceptance and use of offered mobile services. In addition, there is a need to closely examine the

underlying dynamics that govern the impact of factors that relate to the characteristics of the social system and how the consumer's interaction with his/her social system can affect the adoption processes of mobile services.

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