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PIERCE THE FOG OF MOBILE SERVICE AND ADVERTISING ADOPTION

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Abstract

The heightened interest towards mobile service and advertising among academic and industry circles has led to the need to understand the key factors effecting the use, adoption and applicability in the realm of mobile business. This dissertation seeks to contribute to the body of knowledge covering the field of mobile advertising and service adoption. This thesis contributes to the literature by providing some insight to these important areas through a set of qualitative and quantitative studies. More specifically, this study attempts to fill up research gap in the user mobile adoption research, applying theoretical foundations into practical mobile service business cases to find insights to increase adoption rate and revenue.

This thesis summarizes the result of survey studies on cross cultural adoption of mobile internet, adoption of mobile service applications and factors affecting mobile advertising. The results of this thesis will serve as guidance for researchers, mobile application developers, operators and device makers. This thesis present several theoretical and practical insights into the position of mobile services and advertising to help researchers and managers better understand critical components and provide ideas for further research in this emerging field of mobile business.

Acknowledgement

The research described in this doctoral thesis was carried out during year 2005-9 in cities of Helsinki, Dallas, Palo Alto, Mountain View, Redwood City and Dusseldorf, under Department of Industrial Engineering and Management at Helsinki University of Technology. I would like to acknowledge the support of my family, my colleagues, friends, co-authors, and also my supervisors in this path to get my second doctoral degree.

Redwood City, California, October 2009

Ramin Vatanparast (Dr. Tech.)

Dedication

This work is dedicated to my beloved wife, Mahsa, for her love, devotion, support, and encouragement during our life together and to my son, Arian, who brought so much love, joy and happiness into our life.

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List of publications

This thesis consists of an overview and of the following 5 publications:

- I Vatanparast, R., & Asil, M. (2007). Factors Affecting the Use of Mobile Advertising. *International Journal of Mobile Marketing*, 2, 2.
- II Vatanparast, R. (2009). Theories behind Mobile Technology Acceptance and Service Adoption. In K. Pousttchi, & D. G. Wiedemann (Eds.), *Handbook of Research in Mobile Marketing Management*. Business Science Reference. ISBN: 978-1-60566-074-5
- III Vatanparast, R., & Butt, A. H. (2009). An Empirical Study on Factors Affecting Use of Mobile Advertising. *International Journal of Mobile Marketing*, 4, 2.
- IV Vatanparast, R., & Qadir, H. Z. (2010). A Cross-Cultural Study on Mobile Internet Usage. *International Journal of Mobile Marketing*, 5, 1.
- V Vatanparast, R., Qadir, H. Z., & Ebrahimi, M. (2010). Mobile Service Adoption Optimization: A Case Study. *A working paper*.

Author's contribution

The author of this thesis was the leading author in the above listed publications. The author was exclusively; designing the research, crafting the survey and collecting the data. The co-authors have contributed in analyzing the data and writing the articles. The author was the sole writer of the first article and listed book chapter.

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Structure of the thesis

This dissertation seeks to clarify the factors affecting usage of mobile advertising and services. This thesis is laid out in following order:

Chapter 1 (Articles 1-4)

This chapter explores the basic concepts and issues related to mobile advertising, internet and applications. Next, describes the basic research problem and approaches used to solve it. (Vatanparast & Asil, 2007; Vatanparast & Butt, 2009; Vatanparast & Qadim, 2010; Vatanparast, R., Qadir, H. Z., & Ebrahimi, M. (2010).

Chapter 2 (Book chapter)

This chapter provides a literature review, in which literature on theories behind mobile service and technology adoption and related fields are reviewed. The chapter helps address the first research objective:

1) to get a thorough understanding of the theories and models behind mobile service adoption and technology acceptance. (Vatanparast, 2009)

Chapter 3 (Articles 1-4)

This chapter explains the models, sampling methods, data results and insights to address each of the following research objectives:

2) to provide a comprehensive understanding of the advertising space and its influencing factors from both the industry and expert's point of view. (Vatanparast & Asil, 2007; Vatanparast & Butt, 2009)

3) to do a quantitative cross cultural study over mobile internet adoption as a main channel for mobile advertising, and to learn about the perception of consumers regarding mobile Internet usage and its correlation to external factors across five national markets. (Vatanparast & Qadim, 2010)

4) to explore the adoption of mobile applications as a channel to deliver new services and related advertising. (Vatanparast et al., 2010)

Chapter 4

This chapter provides the overall conclusion that brings together the studies and research conducted.

Chapter 1: Introduction

1.1 Background

The history of media industry and related advertising is long enough for marketers to be familiar with the technicalities of this field. While advertising has changed radically over the years due to new techniques and technologies (Richards & Curran, 2002), advances in mobile technology have significantly changed the business environment. The mobile phone has recently emerged as a promising advertising channel (Barwise & Strong, 2002).

Wireless communication enables consumers and businesses to transcend time and place, and it has resulted in increased accessibility and expanded both social and business networks (Palen, 2002). Wireless communication also promises to provide convenience, localization, and personalization of services (Clarke, 2001). Progress in mobile technology had changed the business environment significantly. Devices and technological mobile applications have become a common place in our everyday lives (Balasubramanian, Peterson, & Järvenpää, 2002), increasing the accessibility, frequency and the speed of communication.

The concept of mobile services has been defined as something for which the provider can charge the mobile user for taking part in (Liljander & Nordman, 2004). The original concept of mobile service was voice communications with mobility. However, the mobile service concept has radically changed and is not only about voice but also about multimedia communications and entertainment. Certainly, advances in mobile technologies provided a platform for these new services. However, these services are not always successful. Understanding market needs and consumer adoption are crucial dimensions to influence a new service's success. Service providers have to identify their costumers' needs and tastes in order to develop the right service for the right market.

Based on the latest research report of GSM Association, global mobile telecommunication consumers will be in a number more than 5 billion in 2015, which is three times the number of users in 2007 (Wu, Tao, & Yang, 2007). In 2007, more than 80% of the global population has been serviced by mobile technologies, which is twice the amount in 2000. Mobile technologies are adopted in almost all the countries with a high growth rate. On the other hand, some studies revealed that although mobile services have not yet been widely adopted in some countries, they will gain importance as technology develops and infrastructure is ready (Liljander & Nordman, 2004). The result of many research studies shows that adoption rates of simple mobile services such as messaging and ring tones are greater than that of advanced services such as mobile Internet services (Kim, Lee, Lee, Choi, Hong, Tam, Naruse, & Maeda, 2004; Ishii, 2004; Carlsson, Hyvönen, Repo, & Walden, 2005; Mylonopoulos & Doukidis, 2003) due to many reasons such as price of service, device interactivity and so on (Vatanparast & Asil, 2007).

Seeking for more benefits and more market share, mobile application designers and service providers have to understand reasons behind the consumer's intention to use and adopt new services. Service providers have to understand the needs and requirements of users and try to satisfy them by delivering optimized and customized services. For widespread adoption of mobile services, a set of requirements including technological, business strategic and behavioral are to be considered (Pedersen, 2002). For researchers, an important issue is to learn how mobile services differ from stationary services in regard to users' adoption (Pedersen 2005). As Davis (1989) cites, in order to help vendors to estimate and evaluate user needs and requirements for new inventions and also for organization managers to evaluate the vendors' offerings, it is important to understand what is there, behind intentions to use a technology or service. Considerable developments in mobile technologies and related services create new motives for users and also strong need for studies in the area of service adoption to maximize service penetration and consumer engagement in different markets (Balasubramanian et al., 2002; Nysveen, Pedersen, & Thorbjørnsen, 2005a). Such studies help service providers respond to the needs and requirements of today's mobile market.

Although the global mobile advertising industry is in its formative years (Ovum Forecast, 2002), forecasts concerning growth of mobile advertising have been quite enthusiastic (Future Mobile Handsets, 2006). Mobile advertising holds strong promises to become the best targeted, one-to-one, and the most powerful digital advertising medium, offering new ways to aim messages to users that existing advertising channels can never do. The mobile advertising market is expected to jump to \$11.35bn in 2011 (Future Mobile Handsets, 2006). Many experts consider mobile advertising as an encouraging branch of mobile business (Bulander, Decker, Schiefer, & Kolmel, 2005) because mobile devices, as personal communication devices; could be addressed individually, have high penetration rate with multimedia capabilities and interactivity. However, there are also some serious challenges in mobile advertising area, such as spam, limited user interface, privacy concerns, service delivery channels and the expense of mobile data communication.

The achievement of mobile services and advertising depends largely on its acceptance by consumers. Potential customers so far did not have the opportunity to signal their likes and dislikes with marketing activities via mobile services. This puts marketers at a high risk (Robins, 2003) as they are unsure whether their marketing activities cause positive or negative reactions by the customer. If marketers want to use the mobile media communication channels in an efficient way, they need to understand how mobile consumers perceive, value and evaluate mobile services as a source of advertising. There is a clear demand for broad research to evaluate; factors affecting consumer usage and adoption of mobile services as channels to deliver mobile advertising and also factors affecting mobile advertising itself. This thesis contributes to the literature by providing some insight to this important area through a set of qualitative and quantitative studies. This thesis describes the challenges and future directions of mobile services and advertising to help researchers and managers better understand critical components and provide ideas for further research in this emerging field of mobile business.

1.2 Research problem

The increase in use of mobile technology has been dramatic in recent years. Understanding the reasons behind this immense expansion can be done by comprehending the factors affecting consumer usage. It is becoming more and more crucial for today's marketers to study how and why consumers adopt new mobile services. The knowledge of the service adoption process, the factors driving it, and perception about usage of such services may be relevant for both providers and customers. If marketers want to use the mobile media communication channels in an efficient way, they need to understand how mobile consumers perceive, adopt, value and evaluate mobile services as a source of advertising. There is a clear demand for broad research to evaluate; factors affecting mobile advertising and adoption of different mobile services as advertising delivery channels. Increased usage of mobile technologies and services is also an important reason for studying its adoption.

Several theoretical models have been proposed to explain users' acceptance behavior. The most used ones include the Theory of Reasoned Action (Fishbein & Ajzen, 1975), the Theory of Planned Behavior (Ajzen, 1991) and the Technology Acceptance Model (Davis, 1989). Factors affecting mobile marketing has been researched from established information technology and application point of views. For example, Barnes and Huff (2003) look at the diffusion of Internet access via mobile phones, based on Rogers' innovation and diffusion theory (Rogers, 1995), whereas attitude of consumer has been studied, in the field of marketing and advertising, using a form of theory of reasoned action by Fishbein and Ajzen (1975).

This thesis aims to provide a comprehensive understanding of the mobile advertising space and its influencing factors and also mobile services as a delivery channel for mobile advertising. This thesis will provide comparative data and high level metrics on industry inputs, users' experience, attitudes and preferences in this field. The result would be input for not only academic research but also for creating strategies and business development plans. The main research problem can be defined as a question, "What are the factors affecting usage of mobile advertising and services?"

In order to tackle the research problem, the first challenge is to conceptualize mobile advertising, services and cross cultural factors based on existing literature and theoretical reasoning. The research problem is broken into four generic questions, which are listed hereunder and illustrated in Figure 1-1.

- 1) What are theories behind the mobile advertising, service adoption and mobile marketing research? (Vatanparast, 2009)
- 2) What are the factors affecting adoption or usage of mobile advertising? (Vatanparast & Asil, 2007; Vatanparast & Butt, 2009)
- 3) What are cross cultural issues affecting mobile Internet usage? (Vatanparast & Qadim, 2010)
- 4) How to maximize adoption rate of an application during the development process? (Vatanparast et al., 2010)

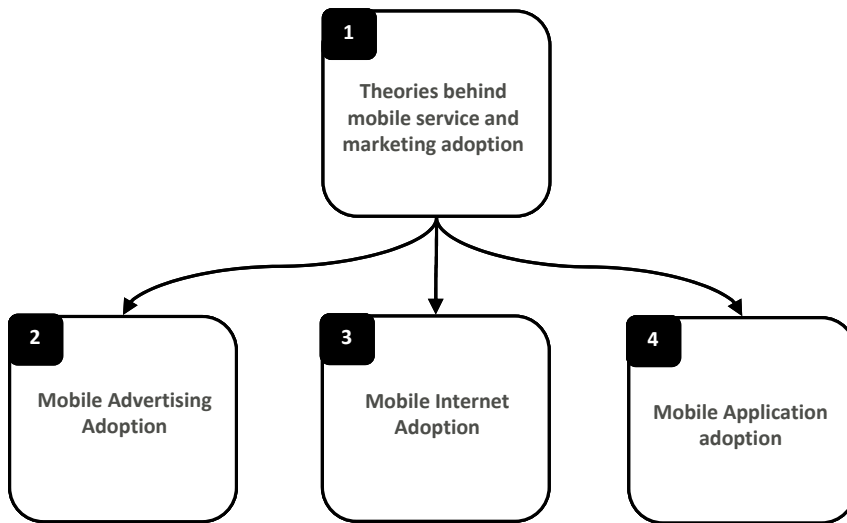


Figure 1-1: Research Frame work

1.3 Research objectives

The objective of this thesis is to form better understanding of the mobile advertising system, and to draw conclusions on factors influencing consumer acceptance towards this new marketing channel. This thesis is organized to highlight the different factors driving user acceptance of mobile services because these services are considered to become more widespread among users in the future. The four objectives of the thesis are:

- 1) to get a thorough understanding of the theories and models behind mobile service adoption and technology acceptance and how those could be used in mobile services and mobile marketing research.
- 2) to provide a comprehensive understanding of the advertising space and its influencing factors from both industry and expert point of views.
- 3) to do a quantitative cross cultural study over mobile internet adoption as a main channel for mobile advertising, and to learn about the perception of consumers regarding mobile Internet usage and its correlation to external factors across five national markets.
- 4) to explore the adoption of mobile applications as a channel to deliver new services and related advertising.

1.4 Scope and limitations

Due to the limited amount of resources available for this study, an attempt has been made to narrow the focus on the selected markets and also certain amount of users. The surveyed data is also limited because of access and scalability of quantitative and qualitative surveys in different studies. There are also differences in the data availability and technology access between countries in the cross cultural study conducted.

1.5 Research approach and methods

The lack of cross cultural research into mobile services and advertising raises a question of the most appropriate research approach in this field. The lack of previous research could justify an explorative research approach. While there is little cross cultural research over mobile services and advertising, there is a lot of research done in the area of cross cultural research, mobile advertising, mobile services, and user adoption, individually. By reviewing thoroughly, the relevant research in these related fields and identifying commonalities, it is possible to find and/or build strong models and related hypotheses. While this approach requires wide and extensive literature reviews of several fields, this approach both advances the understanding of mobile advertising and related issues further than what would be possible through an explorative survey. The models or hypotheses which were used in this study were tested quantitatively and qualitatively using statistical methods. Methods and hypothesis used in this thesis will be reviewed in more detail in chapter 3. The data used in the analyses were collected through an email survey during year 2007. The presented work highlights the different factors affecting mobile advertising and service adoption. In general, this thesis aims to consolidate and expand the existing literature on mobile advertising.

1.6 Concepts and challenges

1.6.1 Mobile technology

Advances in mobile technology have changed the business environment significantly. As a result, mobile technologies have the potential to create new markets, change the competitive landscape of business, create new opportunities, and change existing community and market structures (Stewart & Pavlou, 2002; Ktoridou, Epaminonda, & Kaufmann, 2008). Today's development in information technology helps marketers keep track of customers and provide new communication venues for reaching smaller customer segments more cost effectively and with more personalized messages. This resulted in two major changes of permission marketing and targeted marketing in marketing communications environments (Kotler, Wong, Saundersa,

& Armstrong, 2005). Developments in information technology are speeding up the shift towards permission marketing (Godin, 1999), and at the same time marketers are shifting to targeted marketing. As the result, modern advertisers are increasingly relying on various modes of interactive technology to advertise and promote their products and services (Pavlou & Stewart, 2000). Gradually, many companies are redirecting their marketing spending to interactive marketing, which can be focused more effectively on targeted individual consumer and trade segments.

1.6.2 Mobile services

As already mentioned, there has been an immense growth of the users of mobile technologies. The trend of increasing use of wireless technology has reached many more countries in recent years, which can be illustrated by the increasing number of mobile phone subscribers. Liljander and Nordman (2004) described the concept of mobile services as “something that content provider can charge the mobile user for taking part in”. Even though applications are invisible to users and do not appear on users’ bill, but when a customer orders a product with his wireless phone, many applications are needed to make it happen such as security, certifications and so on. In comparison to wired internet, mobile services have certain advantages such as anywhere anytime, personalization, availability of location- based services and so on. (Liljander & Nordman, 2004).

Availability, anywhere and any time, has its roots in the fact that wireless devices, such as mobile phones, can be easily carried around. They are light and small, and thus it should not be an extra burden for the owner to have it with him at any point of time. Personalization is specifically suitable for mobile phones because they are solely personal. They can even be used as personal identification cards and can be highly customized when information such as name, address, date of birth, credit card information will be saved on mobile phone. Availability of location- based services is another advantage that mobile services have. This particular feature can even be used for location-based advertising. Mobile services also make it possible for customers to purchase goods and services via mobile phone, as it is possible to access information anywhere and anytime. Even though mobile services have not yet been widely adopted, they will gain importance as technology develops (Liljander & Nordman, 2004). However, the immense increase in growth in mobile technology, as pointed above, has recently led to increase in the services provided on mobile phones. There are plenty of mobile services being provided for use on mobile phones today. Types of services, price and quality vary among service providers.

1.6.3 Adoption of mobile services

Increased usage of mobile technology is an important reason for studying its adoption. The study of how and why consumers adopt (new) technology, mobile services and related

advertising may be relevant and important for both providers and customers (Vatanparast, 2009). Understanding the drivers of adoption helps service providers and designers tailor particular services so that they will be used by the customers better. In this way, vendors will be able to differentiate themselves from competitors. In addition, providers will be enabled to deliver superior customer experiences with more customized, specific or better tailored services that meet customer's needs and expectations. This in turn will have a positive effect on customer satisfaction and loyalty. If a provider manages to achieve all this, the competitive advantage can increase together with positive effect on market share and increased revenues. As for customers, understanding the motives for adoption of technology or services can increase a customer's awareness of his/her own motives for the use of mobile services. Being aware of such motives, a customer can choose better the technologies or services that fit to his individual needs. It will also enable a customer to make smarter choices from the pool of different mobile services.

Increased usage of mobile technology is another important reason for studying the factors behind the adoption and usage of mobile technology, services and advertising. The presence of computer and information technologies in today's organization has expanded dramatically (Venkatesh, Morris, Davis, & Davis, 2003). Davis (1989) highlights that it is important to understand what lies behind the intentions to use technology, because it helps vendors to assess user demand for new ideas and for organization managers to evaluate these vendors' offerings. Another reason for studying technology adoption is due to constant development of new and more sophisticated information technology devices (Nysveen et al., 2005a). Furthermore, tremendous developments in mobile services themselves that are available to mobile devices are creating new motives for use and study such services (Balasubramanian et al., 2002). These are all reasons for studying consumer's intentions to use mobile technology, services and advertising as they can give answers to the phenomena of today's mobile market.

Several theoretical models have been proposed to explain user's acceptance behavior. The most used ones include the Theory of Reasoned Action (Fishbein & Ajzen, 1975), the Theory of Planned Behavior (Ajzen, 1991) and the Technology Acceptance Model (Davis, 1989). Nysveen et al. (2005a) present a model that explains customer's intentions to use mobile services in particular, as a part of newly emerging technology. Rogers (1983) presents another adoption model, which also explains factors underlying the adoption of technology, but from an innovation perspective. He says that getting a new idea adopted can often be very difficult, despite its advantages. Therefore, it is important to understand the adoption process of innovations (Rogers, 1983). Many researchers extended the models and studies done on intention to behave and to use technology, to focus on intention to use mobile services. Rogers (1983) defines adoption as "a decision to make a full use of an innovation". In this research, this means actual use of mobile services. Davis (1989) adds also the attitude toward use and intention to use as the factors influencing the adoption. Nysveen et al. (2005a) use further intention to use mobile services as a surrogate measure on the adoption of mobile services. Since the most authors use "intention to use", it shall be used in this research as well, as a measure of adoption of mobile services.

Nysveen et al. (2005a) studies show strong support for the effects of motivational influences (usefulness, ease of use, enjoyment and expressiveness), attitudinal influences (attitude),

subjective norms and perceived control on consumer's intentions to use mobile services. In other words, results confirm perceived usefulness, perceived ease of use and attitude toward the use to be either direct or indirect determinants of mobile service usage. Subjective norms and perceived control are further proved to be important direct antecedents of consumer's intentions to use mobile services. Perceived expressiveness and perceived enjoyment show the most promising and notable effect in their study. All the variables that were proposed to be the determinants of intention to use mobile services were significant. In addition to this, they also found that process characteristics (goal oriented vs. experiential services) associated with the mobile services moderated some of the effects between the drivers of adoption and the intention to use mobile services. For goal-oriented services, such as SMS and payment via mobile phone, perceived ease of use and perceived control were found to be especially important, while for experiential services (chat and game on the mobile phone), perceived expressiveness and perceived enjoyment were important.

In another article, Nysveen, Pedersen, and Thorbjørnsen (2005b) researched on how gender moderates the intention to use mobile chat services. The results show that social norms and intrinsic motives such as enjoyment are important determinants of intention to use mobile services for female users. For male users, it was extrinsic motives such as usefulness and surprisingly expressiveness, which were the key drivers for intention to use mobile chat services. Ease of use and attitudes did not have different effects across genders. Statistics show that there is a big variation in the use of mobile services concerning age. The average age for of mobile phone and mobile service users is decreasing, and young people use services more. The usage pattern between men and women differs too.

Lexhagen, Nysveen, and Hem (2005) showed in another study that perceived enjoyment, attitude towards using the technology, and perceived usefulness (indirect through attitude) are the main determinants of intention to use mobile devices for coordination service. The study of Hung, Ku, and Chang (2003) on adoption of WAP services, using theory of planned behavior and innovation diffusion theory, indicates that connection speed, user satisfaction, personal innovativeness, ease of use and usefulness determined intention to use WAP services indirectly through attitude. Peer influence was revealed to determine the intention through subjective norms, and self efficacy determined intention to use WAP services through perceived behavioral control. Attitude, subjective norms and perceived behavioral control were all critical factors influencing the use of mobile WAP services. However, in their study, attitude and subjective norms determined use of mobile WAP services indirectly through the intention to use. Perceived behavioral control did not get support in determining the intention to use in this study. Perceived behavioral control determined the use of mobile WAP services only directly.

Teo and Pok (2003) examined the factors influencing the adoption of WAP – enabled mobile phones among Internet users using theory of reasoned action, theory of planned behavior, technology acceptance model, and innovation diffusion theory as a theoretical basis, since it attempted to explain the intention of certain behavior and adoption of certain technology. The results confirm the same as in Hung et al.'s (2003) study, namely that attitudinal factors and subjective norms, rather than perceived behavioral control, influence intention to use a WAP – enabled mobile phone.

The above listed studies show that attitudes toward intention to use mobile services have been significant in all studies. Perceived expressiveness, perceived enjoyment and perceived usefulness were all significant in the studies where they were included as independent variables. Subjective norms were not significant predictors of intention to use mobile services only once, whereas behavioral control and perceived ease of use were not significant determinants twice. It is interesting to do a cross cultural study over adoption of mobile services such as mobile internet and also study how such models could be used to understand a service better before official launch of the service.

1.6.4 Research directions on adoption of mobile services

The use of mobile services has been studied before by social scientists, industry researchers and mobile informatics researchers. In studies of information and communication technology (ICT) adoption, different concepts, such as diffusion, adoption, appropriation and domestication are used. These concepts have much in common while these concepts are sometimes used to distinguish research on adoption in one direction from another. Researchers studying adoption share a common interest in understanding how information technologies and services are being adopted by end users of different kinds and in different contexts.

There are four main research directions possible for understanding the adoption of mobile Internet services; diffusion research, uses and gratifications research, domestication research and adoption research. The research directions are quite different in level of analysis and in focus on the adoption process. While diffusion research studies adoption at the aggregate level, adoption research studies adoption at the individual level, and while adoption research focuses on the description and explanation of adoption, domestication research is more concerned with the individual and societal consequences of adoption. Following paragraphs are providing, more detailed presentation of the research directions and also briefly introduce examples of studies in each research direction, relevant to understanding the adoption of mobile Internet services.

Diffusion research has its foundation in marketing and economics, and studies that aggregate adoption or diffusion of a technology or service in general in a community, an industry, or in society (Pedersen, & Ling, 2003). As specified by the title of Rogers's (1995) book, the innovations being adopted are the adoption objects of study in diffusion research. Diffusion theory is meant to be general and includes the study of such diverse innovations (Rogers, 1995). Thus, particular attention to the specific attributes of the ICT artifact is not very common in diffusion research (Orlikowski & Iacono, 2001). General mobile services have been studied before using diffusion research. Mante-Meijer and Haddon (2001) studied the demographic characteristics of early adopters of mobile services like voice and messaging in comparison to non-adopters, while Tjøstheim and Boge (2001) did the same for mobile commerce. Mahler and Rogers (2000) suggested that differences in network effects (externalities) between mobile and fixed telephony technologies could explain the difference in the adoption processes. Gruber and Verboven (2001) suggest that the regulatory regime provided by license regulation and

competition in Europe, explains the widespread diffusion of mobile telephony. These aggregate studies of diffusion processes are typically applied to predict the aggregate adoption rates of new technologies, mainly as a function of time only (e.g. Kim, Seo, & Lee, 1999). But these studies are little help in developing individual level models of service adoption. The adoption process as a process of innovation diffusion at the aggregate level are mainly explained and described by diffusion research. Studies focusing on description typically use demographic and socioeconomic variables to characterize user segments along the diffusion process, such as early adopters, early majority users and laggards.

Uses and gratifications research studies the gratifications sought by adopters of different kinds of media and has its foundation in media and communication theory (Blumler & Katz, 1974). The objects of adoption in these studies were originally mass communication media (Pedersen, & Ling, 2003). Later, uses and gratifications studies have been extended to study the gratifications of such diverse technologies and services, as few examples; video games (Sherry, Lucas, Rechtsteiner, Brooks, & Wilson, 2001), Internet (LaRose, Mastro, & Easiton, 2001), email (Dimmick, Kline, & Stafford, 2000) and household telephones (Dimmick & Sikand, 1994). Uses and gratifications research has its theoretical foundation in Computer-Mediated Communication (CMC) research and traditional adoption research, as in general, the adopters seek gratifications in technology use based upon their individual "needs" or "motivations" (Lin, 1996). Several uses and gratifications studies are found in technologies likely to be relevant to the mobile Internet, such as mobile phones (Leung & Wei 2000), pagers (Leung & Wei 1998), instant messaging services (Leung 2001) and text messaging (Höflich & Rössler 2002).

Domestication research has its foundation in sociology and most often applies a qualitative methodology, which is often more descriptive and categorizes adopters by demographic variables such as age and gender (Pedersen, & Ling, 2003). Domestication research has a long tradition of studying everyday life technology adoption (Silverstone & Hirsch 1992), which are not limited to studies of individuals or aggregates, but are found describing the adoption and usage patterns of groups in society (Townsend, 2000) as well as individual end-users (Ling, 1997). The adoption and use of mobile services have been studied using domestication research in work and leisure contexts, in different contexts represented by demographic variables such as age and gender, in contexts of private and public use, in the dynamic contexts represented by multiple and changing roles of modern technology users, in the work context and in the "blue collar" workers context (Wellman, 2001; Green, Harper, Murtagh, & Cooper, 2001; O'Hara, Perry, Sellen, & Brown, 2001; Brodie & Perrie 2001). Even domestication research is interesting due to it focuses on functional reasons for adoption, but little of it has been directed specifically at the adoption decision of end-users.

Adoption research is part of the area of information system research and has its foundation in information system research (Pedersen, & Ling, 2003). Adoption and use of mobile services can leverage use of information system research; traditional adoption research and research on computer mediated communication (CMC-research). CMC-research has been focusing primarily on mediated communication technologies, such as email and video conferencing systems, whereas adoption research has been focused on the adoption process of a wide variety of technologies and applications (Te'eni, 2001). CMC-research on media choice can be used and are relevant in understanding the adoption of mobile Internet services. In adoption studies, the

technologies being adopted are most often applications, systems or services such as; business software applications, email systems and personal productivity applications rather than technological artifacts or devices. Sometimes adoption research has been criticized for a lack of attention to the attributes of the applications and services being adopted (Orlikowski & Iacono 2001). Adoption research typically studies user's decision to adopt a particular technology, service or media and seeks explanations of why a particular adoption behavior may be observed at the individual level. Mobile and Internet services have been studied using adoption research, for example; in organizational settings (Haythornthwaite, 2001; Nardi, Whittaker, & Bradner, 2000), telework (Hu, Chau, Lui-Sheng, & Yan-Tam, 1999), mobile telephones (Kwon & Chidambaram, 2000) and mobile commerce services (Pedersen, 2005). So far, findings in diffusion, uses and gratifications and domestication research suggest traditional adoption models need modifications, refinements and extensions when applied to mobile Internet services.

The listed research directions improve the understanding of the adoption mobile services with their different perspectives of the object of adoption, levels of analysis, focus on the adoption process, and investigated contexts. However, few attempts have been made at integrating the findings into a more comprehensive model of mobile service and advertising adoption. This thesis deliberately overlooks important research directions studying users of mobile services and the research focusing primarily on improving the usability of mobile services with the primary purpose of giving design advice to developers of mobile services. Integrating findings across research directions may be useful when trying to explain the adoption of mobile services, but surely each model should be designed based on the focus of research and access to user data. It should also show how traditional adoption models may be modified and extended when the using findings from other research directions.

1.6.5 Mobile advertising

The American Marketing Association defines marketing as “the process of planning and executing the conception, pricing, promotion, and distribution of goods, services, and ideas to create exchanges that satisfy individual and organizational goals”. Whereas, advertising is defined as “The placement of announcements and persuasive messages in time or space purchased in any of the mass media by business firms, nonprofit organizations, government agencies, and individuals who seek to inform and/ or persuade members of a particular target market or audience about their products, services, organizations, or ideas”. Advertising is defined by Kotler (2000) as “any paid form of non-personal presentation and promotion of ideas, goods, or services by an identified sponsor”. Advertising value is defined as “a subjective evaluation of the relative worth or utility of advertising to consumers” (Ducoffe, 1995), which is a measure for advertising effectiveness and “may serve as an index of customer satisfaction with the communication products of organizations” (Pavlou & Stewart, 2000). A value can be described as a long-term belief that a specific conduct/state is socially-culturally or personally-psychologically preferable to another conduct/state (Levi, 1990). Value can reflect the worth of the experience associated with the transaction and the element itself as it draws from

experiences or behavior accompanying the exchange and also the expectations about an offering itself (Houston & Gassenheimer, 1987).

It is valuable to make a distinction between mobile advertising and mobile marketing. Although there are various definitions for the concept 'mobile advertising' in both academic and industrial publications, no commonly accepted definition exists (Leppäniemi & Karjaluoto, 2005). The Mobile Marketing Association, the worldwide leader in promoting mobile marketing via mobile devices, defines mobile marketing as "the use of wireless media as an integrated content delivery and direct response vehicle within a cross-media marketing communications program". Therefore, mobile marketing can be considered marketing in the context of a mobile environment. Mobile advertising can be seen as a part of mobile commerce (Mennecke & Strader, 2003), which is seen as radically different from traditional commerce (Choi, Stahl, & Whinston, 1997). Mobile advertising enables not only sending unique, personalized and customized ads (Turban, King, Lee, Warkentin, & Chung, 2002) but also engaging consumers to discussions and transactions with the advertiser. In this research, based on the common characteristics of mobile media, the definition of mobile advertising is used as "any paid content, communicated by mobile media with the intent to influence the attitudes, intentions and behavior of those addressed" (Leppäniemi, Karjaluoto, & Salo, 2004).

Mobile advertising values can be the basis of attitudes, performance, actions, and judgments (Beatty, Kahle, Homer, & Shekar, 1985). In general, attitudes are "mental states used by individuals to structure the way they perceive their environment and guide the way they respond to it" (Aaker, Kumar, & Day, 1995). McKenzie and Lutz (1989) defined an attitude toward an advertisement as consumer's "learned propensity to respond in a consistently favorable or unfavorable manner toward advertising in general". Attitude toward mobile web advertising is influenced by advertising value of web advertising (Ducoffe, 1996). Consumers' attitude toward advertising via mobile devices is influenced significantly by the value which consumer sees from mobile advertising (Haghirian & Madlberger, 2005).

The challenges of mobile advertising show an area of divergence: personalized advertising requires sensitive information about the end user, user's fields of interest, latest activities or his current location. On the other side, there are privacy concerns when providing this information for a mobile advertising application. Despite all the attention paid to advertising, only few academic researchers have evaluated critical factors determining its success. There is no agreement between researchers, whether the focus should be on internet-based or message-based advertising in the telecom sector. In the US, researchers have mainly focused on wireless internet-based advertising, whereas in Europe mobile advertising has just been understood as a message-based telecommunication. Even though these two views from a very different basis for future business models, the main factors affecting both environments are the same.

1.7 Conclusion

The Wireless World Research Forum presented their "Book of Visions" on the future of wireless networks stating: "It will become more and more important how the users perceive the service

and the emotional impact and pleasure that the service creates and maintains” (WWRF, 2000). However, little is said about how those perceptions, emotions and pleasures are created at the service and end-user level. As in most vision documents on the wireless future, technological requirements are elaborated and specified without further discussion of these important end-user issues. In the demand side, studies of telecommunication service adoption, individual end-user adoption requirements are also left out. Instead, adoption is typically studied at the aggregate level using diffusion models (Mahler & Rogers, 2000). Aggregate diffusion models and technological requirement models are insufficient as bases for understanding the end-user requirements for adopting mobile services.

There is a strong need that the adoption decisions of individual end-users must be better understood to predict and explain the adoption of mobile services in general, and mobile advertising in particular. The end-user context provides a set of context specific adoption requirements, which could be understood by three following different perspectives: 1) The end-user as a technology user, e.g. adoption of an application in a mobile device to use a particular service; 2) The end-user as a Mobile Internet user being a part of network, 3) The end-user as a consumer, interacting with mobile advertisement. Each perspective suggests a set of specific theories, research approach, models and methodologies.

The three different perspectives, reason behind the triangulation of research work, are useful in the development of end-user models and customer scenarios (Seybold, 2001). By combining the three perspectives in a demand side adoption framework, operators, service providers and application developers may improve their understanding of the end-users and their usage scenarios. This will make them perform better evaluations of the likelihood of adoption, and will improve their foundation for designing, evaluating and timing mobile advertising end-user services. A triangulation of three perspectives on the mobile advertising end-user is suggested to understand and explain the end-user adoption process. The three perspectives view the end-user as a technology user, a network member, and consumer respectively. The three perspectives are combined in a common framework. With each perspective come relevant theories, hypothesis, models and methodologies.

Chapter 2: Literature review

The previous chapter provided the background and problem discussion of the area of this thesis, leading to the research questions. In this chapter, the earlier studies within the research purpose area will be reviewed. The aim of this chapter is to provide relevant literature study for this thesis. Based on this literature study, in the chapter 3, conceptual models and sampling methods will be developed.

2.1 Theories behind mobile service adoption

The technology and service adoption models have been used as conceptual tools to identify central issues in the mobile domain (Vatanparast, 2009). They highlight factors affecting consumer's intention to use and adopt mobile services. It is necessary to get a thorough understanding of the theories underlying mobile technology and service adoption in order to be successful in mobile service and advertising business. Robey (1979) was among the first researchers who managed to combine earlier work done by Vertinsky, Barth, and Mitchell (1975) and Schultz and Slevin (1975) and could develop an expectancy model that shows a significant connection between user attitudes (or perceptions) and system use.

Fishbein (1967) multi-attribute model proposes that attitudes are the sum of cognitive beliefs, where attitudes can be determined by relevant cognitive beliefs and the evaluation of those beliefs. Fishbein and Middlestadt (1995), argue that when using cognitive factors that are inappropriate or measured incorrectly, then only non-cognitive factors influence an attitude. Schwartz (1997) suggests other feelings such as moods are actually cognitive and serve as sources of information that are evaluated just as beliefs are evaluated in Fishbein's model. Fishbein and Ajzen (1975) developed an adaptive behavioral theory and model called the Theory of Reasoned Action (TRA). It extends Fishbein's multi-attribute model by clarifying the relationship between attitudes and behavior. Two new contributions to Fishbein's model are attitude towards behavior and subjective norms that are affecting the intention to perform a behavior. The model links individual beliefs, attitudes, intentions, and behavior to describe the psychological process that mediates the observed relations between attitudes and behavior (Fishbein & Ajzen, 1975). TRA can predict consumer's behavior to perform or not perform in a situation where the customer is solely and directly responsible for his own behavior, and he is considerate. The relationship between the attitude and the behavior in regard to mobile services and advertising can be studied using Fishbein and Ajzen (1975) theory of reasoned action (TRA).

Ajzen (1991) revises TRA and proposes the inclusion of a third determinant of behavioral intention; perceived behavioral control. According to Theory of Planned Behavior (TPB), behavior is determined by the intention to perform the behavior. The behavior itself is determined by three factors: attitude toward the behavior, subjective norm, and perceived behavioral control (Mathieson, 1991). Perceived behavioral control refers to an individual's

perceptions of the existence, or non-existence, of the resources, skills, or opportunities required to use a system, or some feature of that system (Ajzen & Madden, 1986). Ajzen (1991) shows in his TPB that attitude towards behavior can be described as an individual's favorable or unfavorable evaluation with using a service, while subjective norm can be seen as the perceived social pressure to use or not to use this service. TPB extends TRA to account for conditions where individuals do not have complete volitional control over their behavior (Taylor & Todd, 1995; Ajzen & Madden, 1986; Ajzen, 1991).

Theory of Acceptance Model (TAM) is grounded in the Theory of Reasoned Action (Fishbein & Ajzen, 1975) and Theory of Planned Behavior (Ajzen, 1991). TAM was initially designed by Davis (1989) to predict user's acceptance of information technology and usage on the job. TAM is based upon intentions to use technology and defines two key constructs; "perceived usefulness" and "perceived ease of use" (Davis, 1989). TAM is repeatedly used in studies that focus on users. In studies on the adoption of mobile services, results have complied with central factors in the TAM: perceived ease-of-use and perceived usefulness. In a comparison to TAM and TPB conducted by Mathieson (1991), he found TAM is easier to apply and have a slight empirical advantage over TPB but only supplies very general information on user's opinion about a system. On the other hand, TPB supplies more detailed information that could be used to improve the system. Mobile advertising usefulness and ease of use can be studied by TAM. Based on TAM, it is expected that consumers with more experience and positive attitude toward mobile phone technology should have more positive attitudes towards mobile advertising.

Nysveen et al. (2005a) developed a new model, to better predict adoption of mobile services, and suggest several extensions that may be relevant in explaining customer's intention to use mobile services. They integrate different models such as multi-attribute model, TRA, TPB, TAM from information system theories and gratification and domestication theories from everyday life context (Silverstone & Hirsch, 1992; Skog, 2002). Based on their study, perceived expressiveness and perceived enjoyment show the most promising and notable effect. Direct or indirect determinants of mobile service usage are perceived usefulness, perceived ease of use and attitude toward the use. Finally, subjective norms and perceived control proved to be important antecedents of consumer's intentions to use mobile services. Perceived enjoyment shows a significant effect on intention to use, which can increase when the multimedia communication and entertainment are getting richer (Li, Chau, & Lou 2005; Hsu, Lu & Hsu, 2007).

Another theory that describes acceptance and intention to use technology is Innovation Diffusion Theory (IDT) (Teo & Pok, 2003). Rogers (1983) explains the process of innovation diffusion as one where the individual passes from an early point of essential knowledge of innovation and creates a decision to either adopt or reject it by forming a favorable or unfavorable attitude toward it. Through the process, the individual reduces uncertainty as to whether the innovation will be superior to existing solutions in the market.

The Unified Theory of Acceptance and Use of Technology were formulated by Venkatesh et al. (2003) based on the Technology Acceptance Model (Davis, 1989) as well as empirical comparisons, testing and integration of seven other prominent models of information

technology acceptance. Based on UTAUT (Venkatesh et al., 2003), intention to use can be determined by three antecedents: performance expectancy, effort expectancy and social influence and, as a consequence, intention to use is to exert influence on actual behavior toward a service. Four moderators that contribute to the model are: age, gender, experience, and voluntariness. Performance expectancy measures how much people perceive a service is useful in achieving their goals (Venkatesh & Davis, 2000).

The concept of performance expectancy, including perceived usefulness, has been considered the most powerful tool for explaining the intention to use the service regardless of the types of environments. On the other hand, effort expectancy explains how much people feel comfortable and find it easy to adopt and employ the service. Social influence is the last construct proposed as antecedents of the intention to use. The concept of social influence is likely to be complex while involving compliance related to social pressure such as subjective norms and identification related to self identity standing for social status gains (Venkatesh & Davis, 2000). The effect of social influence also depends on environmental characteristics such as mandatory or voluntary (Hartwick & Barki, 1994; Karahanna, Evaristo, & Srite, 2005; Venkatesh & Davis, 2000).

To reflect individual differences, age, gender, experience, and voluntariness of use moderate the relationship in UTAUT. As an example, based on UTAUT, gender would moderate the effect of performance expectancy, effort expectancy, and social influence. Such moderators have been suggested before by several studies in the area of technology acceptance in a variety of technologies (Gefen & Straub, 1997; Slyke, Comunale, & Belanger, 2002; Lichtenstein & Williamson, 2006). According to Venkatesh, et al (2003), the UTAUT “provides a useful tool for managers and marketers to assess the likelihood of success for new technology introductions and helps them understand the drivers of acceptance in order to proactively design interventions targeted at populations of users that may be less inclined to adopt and use new systems”.

2.2 Factors affecting mobile advertising

The factors that affect mobile advertising can be broken down into four main components (Vatanparast & Asil 2007):

Consumer: Bauer, Barnes, Reichardt, & Neumann (2005) identified the influential variables affecting consumer behavior. Based on this review, the main factors that are affecting consumer behavior are 1) Privacy; the degree to which personal information is not known by others, 2) Purpose; the type of purpose the receiver is trying to satisfy by using a mobile device, and 3) Performance; respond and attitude towards mobile advertising.

Message: According to Kotler (2000), formulating the message is critical in mobile advertising and will require solving four problems: what to say (message content), how to say it logically (message structure), how to say it symbolically (message format), and who should say it (message source). Based on the review, the following factors are critical regarding messaging in

mobile advertising; 1) Content; ‘relevant content is king’ in mobile advertising, content being informative and entertaining, 2) Credibility; consumer’s perception of the truthfulness and believability of advertising in general, 3) Customization; mapping and satisfying of customer’s goal in a specific context with a business’s goal in its respective context.

Devices: Mobile handsets are seen as very powerful communication devices by advertisers, due to the personal, immediate, and interactive nature of them (Koranteng, 2001). The mobile device may be an attention getter, but an attention getting device that is unrelated to the message will not attract the consumers, who are interested in the message or the product (Ogilvy, 1963). The device should have the following characteristics to maximize user experience in mobile advertising: 1) Interface; a good and suitable user interface maximizes user experience, 2) Interactivity; enable interactive solutions for communication between mobile marketer and consumer, 3) Intelligent; include the latest telecommunications platforms and also location based technologies.

Media: For maximizing mobile advertising effect, business models that can capture the synergy of two existing industries, advertising and telecommunications, must be conceived. In any future sustainable business model, all players will have to reach a consensus on the structure of the system and on the importance of each player in that system (Leppäniemi, Karjaluo, & Salo, 2004). The factors affecting the mobile advertising media are: 1) Price; instant and recognizable benefits such as discounts or special offers convince people to consider mobile advertisements, 2) Process; relationship and cross media working in the mobile advertising value chains, 3) Policies; legislation and regulation which place sets of rules for the collection and procession of location-based data.

2.3 Cross-cultural research

To analyze the effects of different cultures on mobile services, it is important to interpret culture in a relevant manner. Culture was defined by Hofstede (2001) as “the collective programming of the mind that distinguishes the members of one group or category of people from another”. The cultural characteristics of individuals include a constellation of psychological traits, attributes, and characteristics (Matsumoto, Kouznetsova, Ray, Ratzlaff, Biehl, & Raroque, 1999). Most information system research on cultural issues treated culture at the country level. For example, Kralisch, Eisend, and Berendt (2005), argues that user’s cultural backgrounds influence their Web site navigation patterns. However, sometimes within-country heterogeneity is greater than between-country heterogeneity and as a result, using country as a surrogate for the individual is likely to be misleading. Ford, Kotze, and Marcus (2005) have proposed identifying user’s individual-level cultural characteristics. Conceptualization of culture at the individual level reflects the multilayered cultural values accumulated in the self (Erez & Gati, 2004). Technologies like the mobile Internet, designed for individual users who have different needs and expectations, and are based on voluntarily usage, in accordance with the individual preferences of the users (Hong & Tam, 2006). Models based on national or other group cultures may be essential for understanding behaviors within organizational contexts

(Karahanna et al. 2005). However, as the target is to clarify, how cultural characteristics influence an individual's voluntary service usage, a model based on individual cultural characteristics is more appropriate (McCoy, Galletta, & King, 2005).

There is little knowledge about how consumers react to mobile Internet. This lack of knowledge becomes even wider when this issue is addressed on an international basis. Despite the importance of cultural and market specific factors for service providers, not much research has been conducted on comparing adoption of mobile Internet in different markets. Previous research on mobile Internet predominantly focused on technological developments, usability issues, and mobile telecommunication policies (Kristoffersen & Ljungberg, 1999; Gruber, 2001; Gruber & Verboven, 2001). Seldom has research been done to investigate the differences in usage of mobile Internet from a cross-cultural perspective.

In order to study the effect of cultural factors on mobile internet usage, a robust and reliable framework is required. The Technology Acceptance Model (TAM) is well suited for this requirement. The TAM model has been used in many similar studies. Cheung, Chang, and Lai, (2000) and Chang and Cheung (2001) studied factors affecting the acceptance of Internet in workplace settings. Their analyses revealed that perceived ease of use, and usefulness (increase the job performance) influence their acceptance and usage behaviors. Lederer, Maupin, Sena, and Zhuang (2000) report results that support TAM, in the context of studying an increase in the probability of a user's repeated usage of mobile Internet. Morris and Turner (2001) explored the role of experience in changing relationships among TAM variables in the Internet usage context.

To use the TAM model, there is a need to identify measurable characteristics of the population under study. Relevant characteristics can be identified by analyzing similar studies that are based on TAM. External variables, both individual and organizational, are important considerations with respect to the process of adopting new information technologies. Both indirect and the direct effects of these external variables on user behavior must be considered. Seyal and Rahman (2003) have confirmed that external variables such as demographics, task characteristics, computer exposure, and institutional support, do contribute towards both perceived ease of use and perceived usefulness. These two factors affect the attitude of the students in predicting Internet usage in educational institutions.

Seyal and Rahman (2007) tested and built arguments based on TAM to study the usage of internet by business executives with three external variables of computer attitude, computer self-efficacy, and personality. Their study has shown that computer attitude has a significant effect on perceived ease of use. Whereas, computer self-efficacy has a significant but negative effect on perceived usefulness, and has a positive and significant effect on perceived ease of use. Seyal and Rahman (2007) have found that the 'perceived ease-of-use' and 'perceived usefulness' constructs fully mediate the influence of external variables on usage behaviors. Seyal, Rahman, and Tajuddin (2007) confirmed in their study that prior experience with the Internet has a strong impact with the utilization of the Internet. The studies described help in deciding which characteristics are important in understanding the effect of cultural differences on the usage of mobile internet.

2.4 Trend

Today's development in information technology helps marketers to keep track of customers and provide new communication venues for reaching smaller customer segments more cost effectively and with more personalized messages. This resulted in two major changes of permission marketing and targeted marketing in marketing communications environments (Kotler et al., 2005). Developments in information technology are speeding up the shift towards permission marketing (Godin, 1999), and at the same time marketers are shifting to targeted marketing. As a result, modern advertisers are increasingly relying on various modes of interactive technology to advertise and promote their products and services (Pavlou & Stewart, 2000). Gradually, many companies are redirecting their marketing spending to interactive marketing, which can be focused more effectively on targeted individual consumer and trade segments. Mobile devices offer a high opportunity in this area of interactive marketing.

There are a couple of reasons why many experts consider mobile advertising as an encouraging branch of mobile business (Bulander et al., 2005); high penetration rate of mobile terminals, mobile terminals as personal communication devices, individually addressable, multimedia capabilities and interactivity. However, there are also some serious challenges when talking about mobile advertising, such as spam, limited user interface, privacy concerns, and the expense of mobile data communication. The mentioned features and challenges of mobile advertising show an area of divergence: personalized advertising requires sensitive information about the end user, his fields of interest, latest activities or his current location. On the other side, there are privacy concerns when providing this information for a mobile advertising application. The research tries to offer insights as to which factors are more important.

2.5 Literature review conclusion

Mobile service and advertising usage has not reached its potential. Academically, in spite of new empirical studies in mobile service and advertising, there is still a lot of room to explore this field with a focus on the adoption theories (Okazaki, 2005). From a practical perspective, though the entire global economy is keeping its eyes on mobile services and marketing as a good opportunity for growth, there is a need to provide a better understanding of theories in the field to help researchers and managers in this domain. An understanding of previous theories and research work can provide insights into businesses that confront difficulties in mobile service and advertising diffusion in different markets. The heightened interest towards mobile service and advertising recently observed among the academic and industry circles has led to the need for the formulation of a simple yet comprehensive conceptual framework to ascertain the key factors effecting the use and potency of current as well as future endeavors in the realm of mobile business.

Chapter 3: Models, methods and results

This chapter reviews the studies in three parts. First, focusing on mobile advertising (Vatanparast & Asil, 2007; Vatanparast & Butt, 2009), second explaining the work on mobile Internet (Vatanparast & Qadim, 2010), and finally discusses the work around adoption of mobile applications (Vatanparast et al., 2010).

3.1 Mobile advertising

The main objective of the study is to explore mobile advertising's challenges and future directions by evaluating a conceptual model and factors that influence mobile advertising. Based on existing literature, a set of hypotheses was proposed, which lay the foundation for the conceptual model of factors affecting mobile advertising. The deeper substance of this study could be found in the articles of Vatanparast and Asil (2007), and Vatanparast and Butt (2009) in appendix.

3.1.1 Conceptual model:

Factors affecting mobile advertising was explained in chapter 2, section 2.3. Based on the literature study, a conceptual model consists of four main factors that influence the use of mobile advertising is shown in Figure 3-1 (Vatanparast & Asil, 2007).

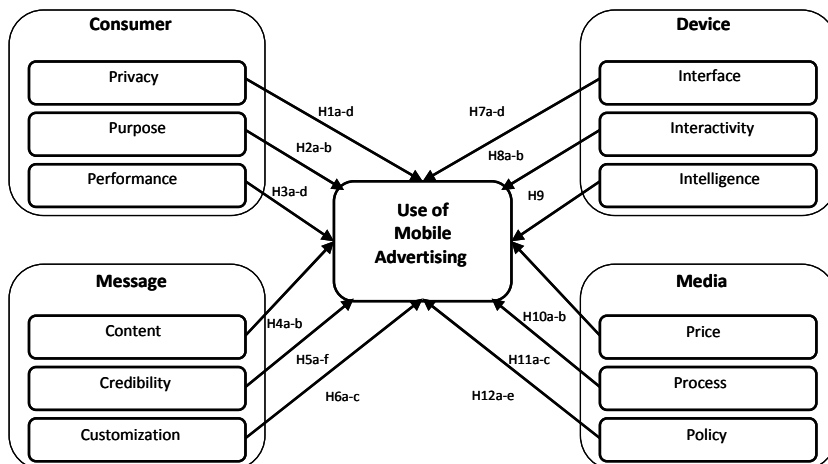


Figure 3-1: A conceptual model of factors affecting mobile advertising (Vatanparast & Asil, 2007)

3.1.2 Sampling methodology

In this study, the model is tested by evaluating the hypotheses against a five point Likert scale (1 strongly agree to 5 strongly disagree). The data was gathered through a survey study during spring 2008, to help evaluate the hypotheses. The survey population comprised of 115 mobile advertising experts working across 19 different countries in North America, Europe and Asia. At first a survey invitation was sent to around 50 selected, well-known individual who had the practical or academic contributions in the field. It was requested from them to recommend some more industry/academia peers from the mobile advertising community. Overall, 245 participants belonging to different segments of the mobile marketing/advertising industry and academia were contacted for the survey, leading to 115 completes. A set of experts were selected in the early stage of the research with the intention of proofing the model before getting it tested by the consumers. A contradictory case could be made that the research methodology of validation through experts would tend to replicate what is already know and hence tend to validate models more easily but the survey results show that still there is not strong consensus over some of the tenants of the model.

To operationalize the factors used to test the hypotheses, a written survey instrument with battery of 45 questions was developed. Items selected for the constructs were primarily adopted from prior studies to ensure construct validity. After pre-testing the measures, these items were modified to fit the context studied. According to the uses-and-gratification-approach (Katz, Gurevitch, & Haas, 1973; Katz, Blummer, & Gurevitch, 1974), consumers consciously select and use certain media and content to gratify a specific purpose. Most consumers are still quite uncomfortable and skeptical about mobile business and whether these businesses are feasible and secure (Siau & Shen 2003; Wang, 2009). The three categories for the consumer construct were adapted from previous studies measuring privacy, purpose and performance (Rust, Kannan, & Peng, 2002; Siau & Shen, 2003; Gohring, 2002; Barwise & Strong, 2002; Shavitt, Lowrey, & Haefner, 1998; Haghirian, Madlberger, & Tanuskova, 2005)

Message is a key factor in attracting the users and keeping them engaged in mobile advertising. The construct was measured in three different categories of content, credibility and customization from previous studies (Paavilainen, 2002; Kotler, 2000; McKenzie & Lutz, 1989; Goldsmith, Lafferty, & Newell, 2000; Haghirian et al. 2005; DeZoysa, 2002; Yunos, Gao, & Shim, 2003; Riecken, 2000).

Capabilities of a device play an important role on interaction possibilities for a consumer in a mobile media (Sinisalo & Karjaluo, 2009). Interface, interactivity and intelligence of a device were measured under device construct based on previous research (Blaber, Bouchard, & Brown, 2006; Kurkovsky, 2005; Duncan & Moriarty, 1998; Davenport, Harris, & Kohli, 2001; Yunos et al., 2003; Geysken, Gielens, & Dekimpe, 2002).

For a long period of time, it has been clear that perceptions of the advertising medium affect attitudes toward individual advertising (Ducoffe, 1996). Mobile medium's process and policies are playing an important role on success of mobile marketing campaigns (Leppäniemi & Karjaluo, 2008). Success of mobile campaigns is also based on interaction rate (Sharma,

Herzog, & Melfi, 2008). Based on information economical model of communication, consumers will only accept mobile advertising if they recognize a benefit in receiving advertising messages on their mobile phone (Kavassalis, Spyropoulou, Drossos, Mitrokostas, Gikas, & Hatzistamatiou, 2003). Price, process and policies under media construct were measured based on prior studies in this field (Haghirian & Madlberger, 2006; Varshney, 2003; Drossos & Giaglis, 2006; Baltas, 2003; Kavassalis et al., 2003; Hinde, 2003).

3.1.3 Survey results:

A macro-level analysis of the basic statistical metrics of the survey data reveals that the panel of mobile advertising experts agrees with the twelve important factors proposed and the only factor which demands a closer look and some debate is Device Intelligence (Vatanparast & Butt, 2009). Figure 3-2 shows the average scores for the factor on the X-axis and the Standard Deviation on the Y axis. This plot can be seen as a simple representation of what factors are more important than others and to what degree the respondents agreed with each other in their responses. It is evident to this graph that the strongest consensus was found on the 'message content' factor of the model, which had the lowest Standard Deviation and a 4+ average rating. The results of the survey have proven the conceptual model in the respective areas of consumer (privacy, purpose and performance), message (content, credibility and customization) and media (price, process and policy) at a statistically significant level. This proposed conceptual model/framework can serve as a solid base for the evaluation of the critical success factors for a market-worthy mobile advertising strategy.

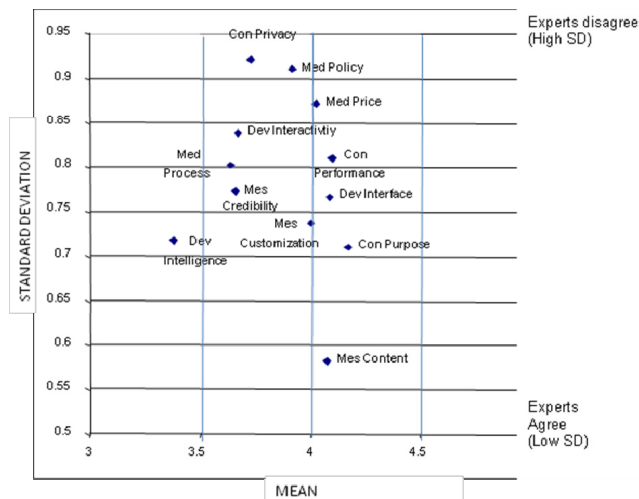


Figure 3-2: Macro-level analysis of the basic statistical metrics of the survey data (Vatanparast & Butt, 2009)

3.1.4 Study results

A deeper analysis of the data reveals that all but two of the factors under consideration, 'consumer privacy' and 'media policy' have shown a standard deviation in the range of 0.7-0.9 and the mean rating for all but one factor, 'device intelligence', falls in the 3.5-4.5 rating on the Likert scale. The survey respondents have shown a higher than the expected level of agreement on the various factors upon which the model is predicated, barring few outliers. It is important to note that in spite of the slightly higher variability on the two outliers in the data, 'consumer privacy' and 'media policy', their mean score rating is well above 3, which serves as the threshold for the experts to have an affirmative view on the factors, included in the model. With regards to 'consumer privacy', the qualitative data reveals that the panel of experts sees it as an important factor in the model but there is a higher variability in the results because of the relative importance the panel allocates to this particular factor.

The survey results can also be interpreted as a 'ranking' of relative importance the panel of experts has assigned to the various factors under consideration in the model. 'Device intelligence' is the only factor which got a mean rating below 3.5(=3.38) and a sampling of the qualitative feedback shows that the panelists believe that the general level of sophistication and intelligence of mobile devices currently in the market is progressing at the appropriate pace for mobile advertising to proliferate effectively. Respondents are of the view that device intelligence is not an important factor in this regard and even appropriately timed and targeted mobile marketing campaigns through the SMS medium can prove quite effective. More targeted and simpler messages that can be delivered on devices with average device intelligence and technological sophistication will be more effective in going after the low-to-mid income bracket consumers. Targeting mobile advertising for more intelligent devices will restrict its audience to the early adopter, the tech-savvy crowd to start with. Therefore, device intelligence should not become an important factor for strategic decision making about mobile advertising in its early days. On the other hand, it is obvious that more intelligent the device is (e.g. enabled with GPS, following user behavior, etc.), there are more opportunities to utilize the intelligence for targeted marketing and customization.

Figure 3-2, also gives clear evidence that the expert panelists believe that the core marketing and advertising principles of targeted and relevant messaging will hold true for this emergent advertising domain as well. The higher mean rating for 'message content', 'consumer purpose' and 'consumer performance' all reveal that the 'softer' aspects of the message are going to be critical for mass-market adoption of this new advertising medium. Furthermore, the high mean rating on 'media pricing' also shows that pricing is going to be an important consideration not just for the consumers, who would expect rebates or discounts for receiving mobile advertising but would also be important for other players in the mobile advertising value chain. To prove the viability of this promising advertising avenue, players in mobile advertising value chain will have to offer attractive pricing propositions to the advertisers.

3.2 Mobile Internet

A cross cultural study on mobile internet use would provide insights for service providers who plan to develop and market services for mobile internet phones in different regions and cultural contexts. To understand cross cultural factors, the study investigates the different usage patterns of mobile Internet users in five countries, spread across three continents. The list consists of Japan, the country with the highest usage of mobile internet, two countries from emerging markets: China, and Russia and two western countries, USA and UK. For a more detailed description of this study, please refer to the article of Vatanparast and Qadir (2010), in appendix.

3.2.1 Conceptual model

The Technology Acceptance Model (TAM), which was described earlier, has been widely used in technology and service adoption studies. It is modified to provide the theoretical foundation for this study. Based on the result (Vatanparast and Qadir, 2010), more users use mobile Internet for personal use than for work related duties. Therefore, one's use of mobile Internet is assumed to be voluntary. Based on the review of TAM literature, following research model (Figure 3-3) is proposed, as an attempt to explain differences in usage of mobile Internet in five different countries. Age, gender, education and income are placed as part of user individual characteristics and stationary Internet experience and mobile phone experience are placed as elements affecting prior experience that facilitates usage of mobile Internet.

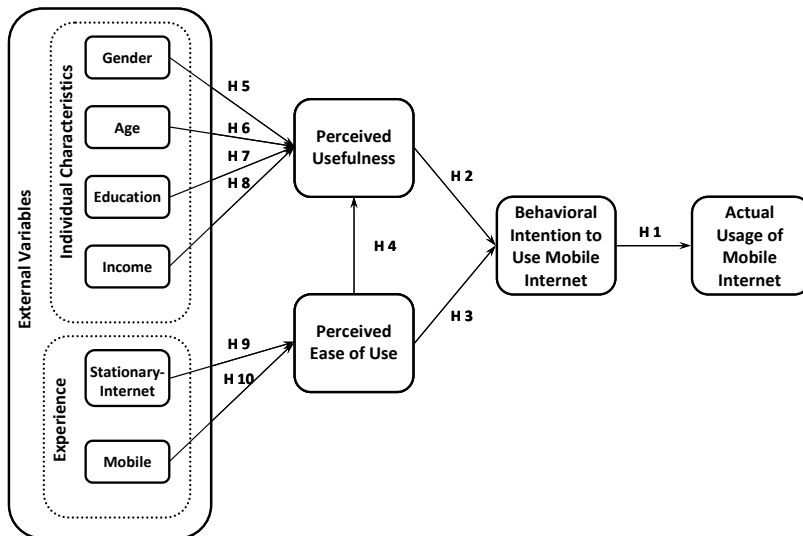


Figure 3-3: Proposed research model for mobile Internet (Vatanparast & Qadir, 2010)

As shown in Figure 3-3, there are 10 hypotheses that are tested: H1 to H10. The fitness measurement of the model was done using the SPSS (Statistical Program for the Social Sciences) in which the posterior predictive p values were extracted for the data of each country. Table 3-1 shows that the posterior predictive values for each country are around 0.5, which implies that the model is plausible, based on Gelman, Carlin, Stern, and Rubin (2004).

Table 3-1: Fit measures for the mobile Internet model in different countries (Vatanparast and Qadim 2010)

	USA	UK	Russia	Japan	China
Posterior P value	0.51	0.49	0.51	0.48	0.50

3.2.2 Sampling methodology

A survey was conducted, to test the hypotheses in the proposed TAM model. The tested populations were users who use a stationary internet and have used mobile phones. This population was considered to be relevant to the study. Large-scale on-line surveys were conducted in US, UK, Russia, China, and Japan, using a questionnaire with battery of 35 questions. Surveys were conducted at around the same time in order to increase the external validity of the results. The back-translation method was used to maintain the linguistic integrity of the questionnaire across the three countries. The research has been exploratory, asking more than 6,500 consumers in five countries in a period of 3 months in the last quarter of year 2007. All data was collected via online survey and respondents were drawn from demographically diverse groups of mobile phone users. The countries selected for the survey have different cultural characteristics. These differences will reveal whether they result in any differences with a customer’s intention to use the mobile internet.

The well established constructs and operationalizations of the various TAM models are applied to mobile service settings (Hung et al., 2003; Teo & Pok, 2003). The research rests commonly on the central assumption that contingency relationships can be established between antecedent, and outcome variables and be likely modeled to predict people’s intentions to use as well as actual use of a certain mobile service. The research model makes use of the TAM and several of the antecedents of perceived usefulness and perceived ease of use from the relevant literature. Although all the research constructs were operationalized using multi-items scales from the relevant previous studies, many of these scales were modified to reflect the study of mobile Internet. To ensure that the measurement scales were adapted appropriately, a pretest was conducted and minor changes in wording and structure of the questionnaire were performed. In the questionnaire, respondents are asked to score on a 5-point Likert type scale with the endpoints being “strongly disagree” and “strongly agree.” The dependent variable, of actual use, was measured by the frequency of using mobile Internet services. Factor analysis was performed to confirm the construct validity of all the scales for the endogenous and exogenous

variables. All the constructs were measured using scales that were previously developed and validated. Four items were used to measure ease of use (Davis, Bagozzi, & Warshaw, 1989; Davis, 1989). Four items were used to measure perceived usefulness, similar to the ones used in TAM (Davis, 1986; Davis et al., 1989; Davis, 1989). Finally, two items were used to measure behavioral intention (Davis et al., 1989; Davis & Venkatesh, 1996; Venkatesh & Davis, 2000). A “check the box” format was used for external variables, each with five items, similar to external variables used by Venkatesh et al., (2003).

3.2.3 Survey results

Questionnaire data were analyzed by using SPSS (Statistical Program for the Social Sciences), which computed the coefficients of correlations to investigate the defined hypothesis. In addition, T-test was applied to determine the gender influences. The correspondent p value was measured, which shows whether there exists evidence against the null hypothesis, “no difference between men and women in their perceived usefulness of mobile internet technology”. Table 3-2 summarizes the results of the analyses for all the target countries.

Table 3-2: Summary results of the analyses for the mobile Internet in different countries (Vatanparast & Qadim, 2010)

	USA	UK	RU	JP	CN
H1 (intention to use and service usage)	0.469**	0.213**	0.417**	0.300**	0.507**
H2 (perceived usefulness and intention to use)	0.038	0.074	0.296**	0.124**	0.251**
H3 (perceived ease of use and intention to use)	0.413**	0.154**	0.296**	0.332**	0.405**
H4 (perceived ease of use and Perceived Usefulness)	-0.164**	0.137*	0.418**	0.083**	0.111**
H5 (p values for the t-test, difference in perceived usefulness values between men and women)	0.037	0.034	0.067	0.173	0.046
H6 (age and perceived usefulness)	0.081*	-0.037	-0.015	0.146**	-0.043
H7 (education and perceived usefulness)	-0.049	0.064	-0.027	0.006	0.026
H8 (income and perceived usefulness)	-0.009	0.025	0.132**	0.022	0.112**
H9 (stationary Internet experience and perceived ease of use)	0.128**	0.010	0.149**	0.178**	0.129**
H10 (mobile phone experience and perceived ease of use)	0.085**	0.059*	0.140**	0.147**	0.117**

*Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

3.2.4 Study results

H 1: There will be a positive relationship between Intention to use and service usage. As a whole, the correlations show that the behavioral intention is a strong influencer of usage behavior of customers in all the cultural contexts.

H 2: There will be a positive relationship between perceived usefulness and intention to use. From Table 3-2, it is seen that a positive correlation between perceived usefulness and behavioral intention is not supported in USA and UK. The coefficient of correlation is not considerable in Japan and the hypothesis is supported in Russia and China. Differences in the relationship could be explained by the extent of unemployment and social welfare in each country. Thus in countries with less unemployment and greater social welfare, the usefulness of the technology for consumers may be less important than the countries where a user can utilize to advance in certain part of life. In other hands in countries like China and Russia, the main channel for reaching Internet is mobile devices, where in other developed countries, stationary Internet is the main root to connect to Internet.

H 3: There will be a positive relationship between perceived ease of use and intention to use. The positive correlation between perceived ease of use and behavioral intention is supported in all countries.

H 4: There will be a positive relationship between perceived ease of use and perceived usefulness. The correlation between perceived ease of use and perceived usefulness is only supported in Russia. Russia is in its early stages of mobile Internet adoption and that might be a good reason why perceived ease of use has an impact on perceived usefulness in Russia.

H 5: There will be a different Perceived Usefulness value between men and women. The results of t-test revealed that there is a difference between men and women for this relationship. In Japan, the difference is lower as shown by its higher p-value. In general the results indicate that gender changes the relationship.

H 6: There will be a negative relationship between age and perceived usefulness. There is weak evidence supporting the effect of age on perceived usefulness of the customers in almost different cultural contexts. Japan has the largest coefficient; however, it is not large enough to support the hypothesis.

H 7: There will be a positive relationship between Education and Perceived Usefulness. There is no evidence that supports the positive relationship between the education levels and perceived usefulness of the service with customers.

H 8: There will be a positive relationship between income and perceived usefulness. There is no evidence of existence of a relationship between the income levels and perceived usefulness in US, UK and Japan. However, the results reveal weak evidence of such a relationship in Russia and China.

H 9: There will be a positive relationship between stationary Internet experience and perceived ease of use. The results do not support this hypothesis. A study by Park, Yang, and Lehto (2007)

also supports the findings as they found that the moderating effect of past internet experience is insignificant.

H 10: There will be a positive relationship between mobile phone experience and perceived ease of use. The above analogy can be used for the case of mobile phone experience. This implies that the service providers can include consumers with little or no previous background of working with stationary internet and mobile phones in their target market.

As a whole the results of this survey revealed that variables (except for gender) have little or no impact in almost all the cultural contexts. As the result, the service providers need not to focus on specific market segments in different cultural contexts. On the other hand, the endogenous variables have different impacts in different countries, which imply that the services have to be customized for each cultural context to have the highest adoption.

3.3 Mobile application

Here the intention is to study use of a service, through a mobile application, for possible improvement in adoptability of the service. An adoption model could be used in development stage or prior launching an application or service to improve user experience and increase adoptability to reach a higher adoption rate for a service when it is launched. For a more detailed description of this study, please refer to the working paper of Vatanparast et al. (2010), in appendix.

3.3.1 Conceptual model

The Nysveen et al.'s integrated model (2005a) has been utilized for conducting the research. Nysveen et al. (2005a) claimed that; perceived expressiveness and perceived enjoyment show the most promising and considerable effect; perceived usefulness, perceived ease of use and attitude toward the use are direct or indirect determinants of mobile service usage and finally subjective norms and perceived control are important antecedents of user's intentions to use a mobile services.

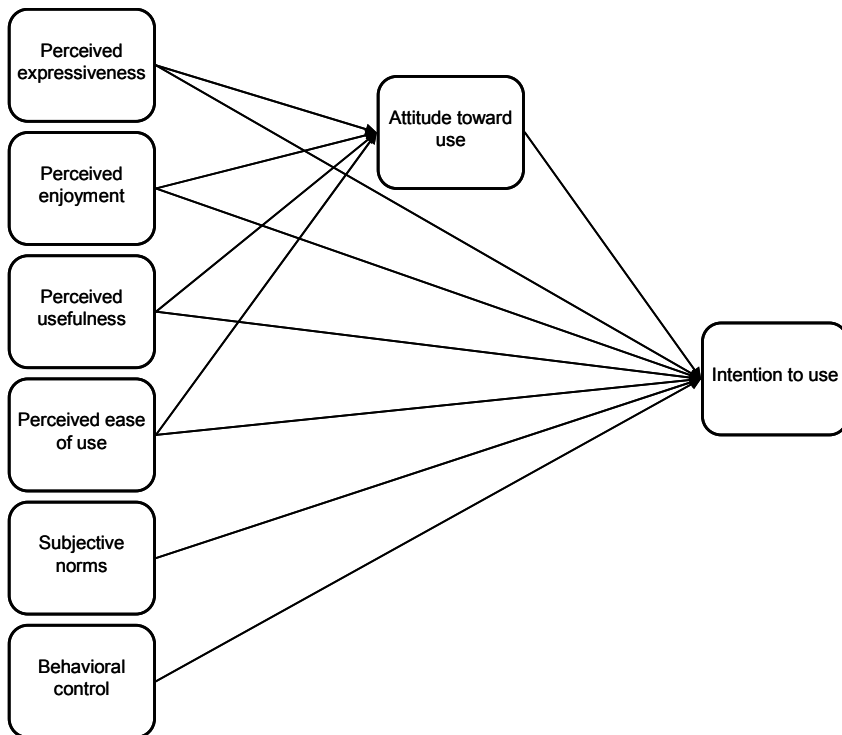


Figure 3-4: Nysveen et al.'s integrated model (2005a) to study a mobile application usage

3.3.2 Sampling methodology

A company's internal employees were used to study and run the service trial. The participants in this study did not have any experience or knowledge about the selected service and its focus prior to their usage. User recruiting has been done through an Email marketing campaign which was targeted to approximately three hundred employees. It was asked from voluntary participants to go to a particular website to register and download a client application, and start using the service during a trial period of four weeks. Hundred thirty five users registered to download the application and among those, seventy seven successfully downloaded the application and activated their service. Eighty six percent of users recruited by end of week one. After the period of trial, they were asked to fill in a research questionnaire, which was designed around the integrated model with a collection of 52 questions. The questions were including ten areas to cover different constructs of the integrated model.

Since the research model is based on the Nysveen et al's (2005a) model, the same measures were used for perceived usefulness, ease of use, expressiveness, enjoyment, subjective norms, behavioral control and intention to use. The measures were adopted to match requirement of the particular mobile service relevant to this study. The questionnaire was web-based and in

English. In order to measure the real sense of the users in each of the constructs in the integrated model, the five point scale Likert System were used in which the data is in an ordinal format. It is important to note that in the operationalization of variables, this study used a self reported behavior. Although assessing consumer’s actual behavior would be ideal this method would result in smaller data sets and require a considerable amount of time. Furthermore, at the time this study was conducted the users were not exposed to other similar services. Therefore, this study aims to assess consumer perceptions toward the mobile service as a marketing medium and adopting a self-reported behavior is deemed appropriate to achieve the objectives of this study. As a final note, it was initially intended to have a larger number of participants in public but due to confidentiality of the service, legal and liability issues we did not have permission to run the trial version in public.

3.3.3 Survey results

A data reduction factor analysis was conducted to determine the existence of subcategories among the questions included in each of the constructs. Multicollinearity represents the degree to which one variable can be predicted by the other variables in the analysis. Hair, Anderson, Tatham, and Black (1998) suggest that calculating tolerance and VIF values are good measures for testing multicollinearity. Table 3-3 shows the collinearity statistics for the data set. Either tolerance or VIF values in the data are within the accepted values according to Hair et al (1998).

Table 3-3- Descriptive for the variables on mobile application usage (Vatanparast et al., 2010)

	Minimum	Median	Maximum
Usefulness	6.2	13.8	34.8
Ease of Use	8.43	14.29	29
Expressiveness	7.75	15.5	25.25
Enjoyment	6	14.8	34.8
Subjective Norms	6	13.5	32.5
Behavioral Control	6.67	12.67	32.67
Attitude	6	15.67	35.67
Intention	6	15.33	34

Tolerance value should lay somewhere between 0 to 1 and, VIF values should vary between 1 to 10 but should not exceed 10, and the closer to 1 the better. High multicollinearity contributes negatively to the interpretation of the result as it makes it difficult to ascertain the effects of a single variable. This indicates that the data do not suffer any collinearity problems. Correlation analysis was conducted based on the integrated model, in order to determine the impact of each construct on the user’s attitude and intention to use the service. A descriptive summary of the correlation analysis is shown in the Figure 3-5.

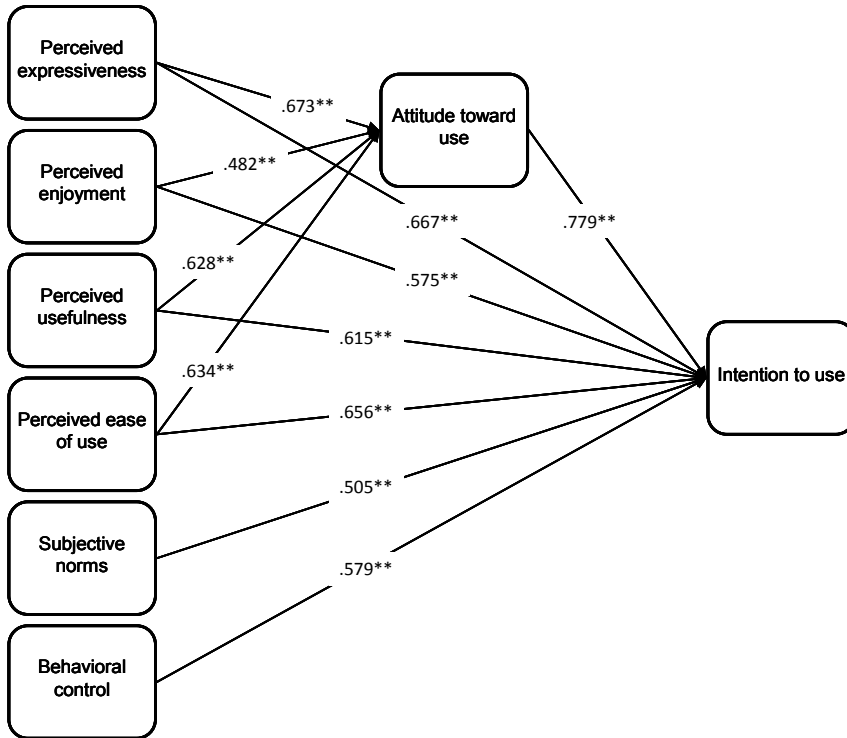


Figure 3-5 – A descriptive summary of the correlation analysis on mobile application usage (Vatanparast et al., 2010)

The results of correlation analysis reveal that, there exists a high positive relation between the constructs of the model and also all the correlations were significant (at 0.01 level). There is a high positive correlation between attitude and intention to use. The coefficient of correlation between behavioral control and intention is rather high and considerable. Attitude has the highest impact on the intention of the users towards the use comparing to other constructs. On the other hand, the coefficient of correlation between subjective norm and intention to use is the least which means that subjective norms have the least effect on intention toward use behavior in the service. Comparing to expressiveness and ease of use, usefulness and enjoyment have higher coefficients of correlation with attitude. Usefulness has a higher positive correlation with the intention to use comparing to the other three constructs. Ease of use, on the other hand, has the least impact on the attitude of the users towards the use.

3.3.4 Study result

The results of this study highlight the importance of early phase investigation of mobile services. The conclusion is that applying realistic predicting models, like integrated model, in an early stage of development are even more important than the traditional approach, focusing on the user's feedback collected after the service comes to the market. Early phase studies, secure success of services or applications by increasing the adoption rate in current tough commercial markets. As all the variables in the model are influencing the intention to use the mobile service. An increase in any of these variables during the development process will lead to an increased user's intention to use the mobile service. This is in agreement with Nysveen et al.'s (2005a) finding that, all six variables explained the user's intention to use a mobile service. The result could be utilized to improve and optimize the mobile services which are under development, based on user's feedback. Out of all direct positive effects, three were significant in this study. It is namely perceived usefulness, perceived expressiveness, and perceived enjoyment that has strong positive influence on the adoption of the mobile service. This emphasizes the importance of improving these constructs for increasing the user's adoption in this particular mobile service.

Chapter 4: Discussion and conclusion

4.1 Mobile advertising

The panel of mobile experts espoused the importance of the ‘message’ tenant from multiple angles and shared useful insights (Figure 3-2). The key qualitative feedback regarding message customization was that mobile advertising will gain traction only if we give the consumer full control and flexibility in terms of what advertising content gets through to them on their devices and what needs and usage behavior they exhibit. A combination of consumer contributed information and contextual targeting from mobile usage data as well as the frequency of ad placement is important to be taken into account. Factors like the consumers’ location, financial capability, device type, address book, calling patterns, etc. are inherently private features that need to be managed carefully when data-mining for customizing the advertisements. Consumers should be allowed to ‘pre-select’ the types and categories of ads that they would be interested in. Allowing people the flexibility to use a service to opt-in to mobile campaigns and truly providing some value to the consumer will result in advertisements with more impact. Nevertheless, such customized, targeted and relevant mobile advertising will require cross-domain collaboration among various domain experts like marketers, advertisers, usability experts, technologists, sociologists and anthropologists. Relevance is a complex function of ascertaining the end-users location, context and user consumption patterns in a timely manner. Customized messages would need to be as well-represented as possible and should fully exploit current mobile media technology like images, video, sound and maps, etc.

Ascertaining the consumer’s purpose and need so that mobile advertising can be targeted according to their need is extremely important for the advertisers. Getting a thorough understanding of the consumer’s behavior might require us to conduct surveys or behavioral analyses, which could irritate the average consumer and ‘behind the scene’ analytics of their search trends, location preferences, etc. could potentially be seen as an intrusion into their privacy. Hence advertisers need to take a balanced approach in this regard where they do not irritate their customers by following their behavior too closely and educate them effectively about the benefits they can receive by allowing the mobile operators/ mobile advertisers to follow their usage behavior and patterns.

There was a strong consensus among the panel of experts around the importance of the device interaction for the success of mobile advertising (Figure 3-2). Simplicity and high quality/high resolution interactive touch display was thought to be very important in this regard. Some experts highlighted the need of understanding the behavior and preferences of users living in different countries as well. To expect a large portion of end users across the world to have advanced interface features on their mobile device is not realistic. Unlike in Japan where the average mobile consumer changes phones at least twice per annum, opting for more technologically advanced phones each time, in the US, consumers do not change their phones that frequently. So in order to develop suitable marketing, general ads should be developed to

play on all phones by adopting the strategy of working to the lowest common denominator, which will help get penetration into as broad a target market as possible. On the flip side, if one was to focus only on users with advanced phones, then this niche is a community that could also be well-served as they are expected to be early adopter and tech-savvy users. The mobile advertisers should focus on a breadth rather than 'depth' when trying to spur adoption of mobile advertising in the market place. Again, simplicity is the key for quick adoption by users and complicated and time-consuming graphics heavy features can be added on later, when the user has seen the value of mobile advertising and is fully engaged. Interactivity will assist advertisers in their 'call to action', and it will be a necessary part of a successful mobile advertising promotion.

4.2 Service/application adoption

The result in Figure 3-4 shows that the service is high in perceived usefulness, which means that users believe in the existence of a positive use-performance relationship. The result shows that, the information intensive service, which was provided during the trial, led to a positive usage intention. The service helped users to accomplish certain tasks, get useful information and gain positive value and satisfaction. The result in Figure 3-4 shows that perceived expressiveness was unexpectedly considerable for the tested mobile service, which was information intensive. Significant effect could be seen on the relationship between perceived expressiveness and intention to use and also the attitude toward the use the mobile service. Other studies highlighted that; the use of mobile services can serve as a way of expressing personality, status and image in a public context (Nysveen et al., 2005a; Leung & Wei, 2000). In other hands, higher perceived expressiveness may contribute to higher probability of using the service. This confirms the direct link between expressiveness and intention to use of mobile service which, was also supported by a fair amount of domestication researches done by other scholars (e.g. Ling, 2001; Skog, 2002).

When it comes to perceived enjoyment, it is understandable that this variable is significant with low information intensive services. The original intention of the service was built around delivering free content and information. High information intensive services are meant to collect or to process big amount of information and content, and are not preliminary designed for fun and relaxation. However, it seems that users, value enjoy-ability and looking for fun and relaxing time while consuming information and content (Figure 3-4). In other words, from user's view, the service is used not only for receiving information but also for enjoyment. As a set of quizzes with prizes were delivered during the trial period, promoting usage of the service, the mobile service led to an intrinsic reward, which enhanced enjoyment. This surely brings a higher probability for users to use this service. Perceived enjoyment was proven to be an important antecedent of usage intentions and had a significant effect on all services that had been studied (e.g. Nysveen, Pedersen, & Thorbjørnsen, 2003).

4.3 Cross cultural issues

In regard to cross cultural mobile internet study, the result of correlation analysis (Table 3-2) reveals that a positive correlation between behavioral intention and actual usage is supported in all the countries. However, the relationship is a little weaker in the UK. As a whole, the correlations show that the behavioral intention is a strong influencer of usage behavior of customers in all the cultural contexts. The positive correlation between perceived ease of use and behavioral intention is supported in all countries. It can be concluded that perceived ease of use is one of the antecedents of the behavioral intention in all the cultural contexts, especially in US and China. From Table 3-2, it is seen that a positive correlation between perceived usefulness and behavioral intention is not supported in USA and UK. The coefficient of correlation is not considerable in Japan and the hypothesis is supported only in Russia and China.

On one hand, the studies of Venkatesh et al (2003) showed that perceived usefulness has been considered the most powerful tool for explaining the intention to use the system. Studies of Lee, Kim, Lee, and Kim (2002) also proven that perceived usefulness is a significant determinant of user's satisfaction in Korea, Hong Kong, and Taiwan; although they have also proven that the results are different through different cultural lenses. On the other hand, in some other study the relationship between perceived usefulness and behavioral intention has not been supported (Bhatti, 2007). In addition, the studies of Kim and Kwahk (2007) showed that usefulness and emotion are indirect antecedents of both usage and intention through perceived value, and overall they do not directly influence usage and intention. Studies of Kim, Chan, and Chan (2007) also support these findings suggesting that for the services to be useful, service providers should focus on satisfying the user's needs and desires in ways that are impossible in other typical similar services.

The study looks at the relationship in different countries. In other words, the reason why the results of the survey are different lies in the fact that the effect of perceived usefulness is dependent on the society in which the survey is conducted. For example, the results of studies of Lee et al (2002) in Korea, which has greater cultural similarity with China, are closer to the findings in China. The correlation between perceived ease of use and perceived usefulness is only supported in Russia. In the US, the relationship is negative. The studies of Taylor and Todd (1995) suggest that the ease of using a technology has an influence on user's future attitude and intention towards using that technology. Nysveen et al (2005a) also found out that perceived ease of use influence perceived usefulness of the consumers. Although perceived ease of use has been proven to have strong effect on intention to use, some studies have revealed that perceived ease of use is important in the early stages of the adoption (Venkatesh & Davis, 2000). In other words, through the passage of time, the effect of perceived usefulness will be lower.

The results of t-test revealed that there is a difference between men and women for this relationship. In Japan, the difference is lower as shown by its higher p-value (Table 3-2). In general the results indicate that gender changes the relationship. The effects of the gender on

the adoption of the technology are different in different cultural contexts with different gender roles, The surveys conducted to investigate the effect of gender on adoption of an IT services has revealed different results. For example, studies of Westlund and Bohlin (2008) revealed that there is a gendered dimension in the use of internet services as men use the internet more frequently. The studies of Ozhan-Dedeoglu (2004) have revealed that men and women perceive mobile phone's usage differently. On the other hand, Slyke et al. (2002) showed that gender does not have a significant impact on the adoption of web based services. Bigne, Ruiz, and Sanz (2007) also proven that gender does not have a significant impact on intention towards M-Commerce. Thus it seems that the effect of gender is different in different cultural contexts, and it does not remain constant in them. Mobile internet service providers should be cognizant of gender differences except for Japan where the differences are relatively lower.

There is weak evidence supporting the effect of age on perceived usefulness of the customers in almost different cultural contexts. Japan has the largest coefficient; however, it is not large enough to support the hypothesis. In some previous studies, it has been observed that young generations are more interested in mobile technologies and services (Dickinger, Haghirian, & Kohlbacher, 2004; Dickinger, Haghirian, Murphy, & Scharl, 2004). Actually, it has been observed that mobile devices, more than being as means of communication, are used as fashion accessories (Robins, 2003) that may be a good reason why mobile technologies are more favorable to younger generations. On contradiction to these findings, some other studies of mobile service adoption support the findings. For example, Bracket and Carr's (2001) findings in investigating web ads revealed that age did not influence the attitude of the consumers. The studies of Haghirian et al. (2005) and Haghirian and Madlberger (2006) imply that the age of the consumers does not have a significant influence on the perceptions of the users towards mobile marketing. One must keep in mind that this study was conducted only on people that already use the stationary internet and who own a mobile phone. The coefficients could be larger if the survey was conducted on the general population.

4.4 Overall implication

The results of this paper made implications relevant both for theoretical and for managerial purposes. The proposed and tested advertising model highlights some new areas such as media policies, device intelligence, and device interactivity and provides some new insight on well-known factors such as consumer privacy. Recent developments in mobile advertising support the model and effect of factors such as device intelligence and interactivity as advertisements are delivered through more context aware channels. The result of the advertising study shows that factors such as privacy are losing its power as people are getting more familiar with mobile services and trust mobile advertising channel more. For mobile advertising, the proposed conceptual model can serve as a solid base for the evaluation of the critical success factors for a market-worthy mobile advertising strategy. A potential extension of the advertising research in this field is the same set of advertising survey questions, to be fielded by mobile phone

consumers across different demographics in different countries to assess how the consumer's perception stack-rank against the expert's opinions.

The cross cultural study was not only adding some new variable to the original TAM model but also testing and comparing the proposed model through different cultures. Cross cultural comparison of mobile internet usage through modified TAM model, opens new customization opportunities in regard to mobile internet services. In this way, consumer's intention towards using mobile internet services can be studied even more comprehensively. This may also provide new possibilities for researchers and chance for richer and more varied cross cultural research opportunities in the future. The result of the study shows the importance of cross cultural difference when designing a mobile internet service. Thus, in their service delivery and marketing campaign, the managers have to emphasize how the service fits with targeted group's lifestyle; mainly, with their way of living, needs, communicating and doing things.

The results also show the effect of external factors such as age and gender on perceived usefulness and intention to use mobile services. This finding implies that industry players must be aware of such effects, which have different intensity in different cultures. Conclusively, it can be said that marketing managers must pay attention to cultural issues when developing a new service as it plays an important role for consumer's intentions to use the service. The cross cultural study was a novel approach and provided some insights into mobile internet adoption and its differences across geographies. The conceptual approach can be used as a model of reference for future studies. Researchers are encouraged to further update and modify the model to changing requirements based on global and technological developments. Other external variables may also be explored and investigated to determine whether they have different impacts in different cultural contexts.

Up until now, the models around user's usage intention were used to study the mobile services, which have already been launched. The new approach should be, to study comprehensively user's usage intentions during development of a mobile service and before official launch of service. Such a study allows mobile service designers to apply user's feedback in the early stage of development, to improve the service before official launch. The research also highlights that information intensive services need additional treatment in order to increase the positive effect on intention to use the service. Modification on user interface design and/or add complimentary rewarding or value adding side services could be named to increase the positive intention to use information intensive services. The result introduces a new approach to utilize adoption models in the future studies. The result of the overall regression shows the importance and the advantage of adoption study of mobile services during the period of development to impact final design of a mobile service.

The finding implies that industry players must be aware of drivers affect on attitude toward use and intention to use when developing services. It will be important for mobile service developers to pay attention to fun, excitement and expressiveness factors when developing high information intensive services. High information intensive services also have to be designed to enable their users to express their social and personal identity. It can surely be challenging for service producers to combine informativeness, usefulness, enjoyment and expressiveness factors in one service. However, it shows that mobile service industry is willing

to take on any challenges to enable mass adoption. By utilizing this approach the service providers will be able to tune the elements of a particular service and improve and utilize the areas that have the highest impact on the adoption of the service. The methods of observing and testing product success in the area of mobile service should be developed further. The results of this study highlight the importance of early phase investigation of mobile services. The conclusion is that applying realistic predicting models, like integrated model, in an early stage of development are even more important than the traditional approach, focusing on the user's feedback collected after the service comes to the market.

In regard to validity of the data, all factor analyses in the paper showed that every variable or concept was measured properly. All the scales were correctly composed and that the variables were measured correctly with the appropriate items. All definitions of the variables in this paper were based on the definitions from previous studies, or on the items used in the past studies, only slightly adjusted for the purposes of this paper. All this should indicate that the validity in this paper was good and that there are no problems with the method in this sense. These results have come upon after years of serious research and extensive surveying and analysis. I believe that above listed studies have not been conducted before and therefore, the results will be highly useful and relevant in the current situation. Additionally, the studies give a global view with regards to mobile services and advertising. This is a valuable component for one with both a local and international focus as it helps with customization and optimization.

This thesis and its conclusions will be a contribution to the debates in academia. The author hopes that this thesis opens new dialogues on multiple unexamined issues concerning mobile advertising and service industry. This thesis is looked at the basic concepts and issues related to mobile advertising, internet and applications. The basic research problem, approach to solve and literature study were described in first and second chapters. The approach to solve the problem evolved based on past literature and theories already existing, which helped attain the first objective:

- 1) To get a thorough understanding of the theories and models behind mobile service adoption and technology acceptance.

Research models, studies conducted, results and conclusion were described in chapter 3 and 4, which helped to answer the following questions:

- 2) To provide a comprehensive understanding of the advertising space and its influencing factors from both the industry and expert's point of view
- 3) To do a quantitative cross cultural study over mobile internet adoption as a main channel for mobile advertising, and to learn about the perception of consumers regarding mobile Internet usage and its correlation to external factors across five national markets.
- 4) To explore the adoption of mobile applications as a channel to deliver new services and related advertising.

To answer the main question and objective of the thesis, "What are the factors affecting usage of mobile advertising and services?" I need to tie back my studies. The study on mobile

advertising tells us about possible consumer preferences and inclinations with respect to using advertisements. The study on mobile service/application adoption helps explain the user's behavior towards an application and the issues that a user cares about most. Finally, the cross cultural study enables us to customize services and advertisements based on the geography and give us further insights into basic user behavior with regards to mobile services and applications. An overall implication of the study is drawn in Figure 4-1.

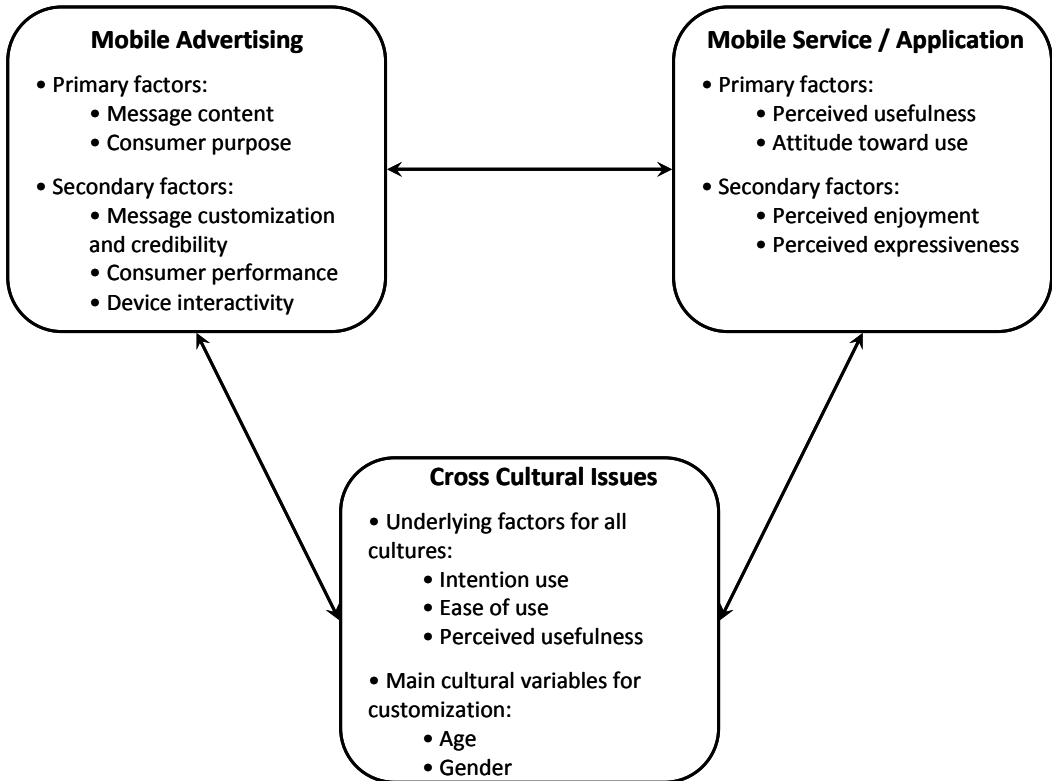


Figure 4-1: An overall implication of study on usage of mobile advertising and services

As a manager or service provider, the Figure 4-1 can be used to decide on what factors are most important. Another important point to note is that there are common consumer behaviors that will affect all three areas. This is shown by the interconnected diagram. For managers, the suggestion is to use a two-step process to interpret this diagram:

- 1) Based on whether they are application developers or service providers, they should select the applicable primary factors. They can evaluate and optimize the factors in the early stage of design, before launching the application or service to maximize the effect.
- 2) Based on the geography that the service/application is to be deployed, they should customize the service/application based on important variables.

4.5 Research limitations

There are several factors that could have led to some weaknesses in this paper. Small quantity of the data in the mobile advertising and mobile service adoption study does affect the integrity of data analysis. On the other hand, the samples were not representative of the population, as were only covering a segment of people. This implies that one has to be careful when interpreting the results in the segments outside the samples. It also can be predicted that the respondents answered the questionnaire best they could, but based on their opinions and maybe not on their real experience. This particularly could cause problems. In the future research, such problems can be solved by either choosing another, more specified and focused service for a study, or choosing more appropriate response groups, making sure that the group actually has real experience over the service. The issue with service selection contributes to limited external validity of the paper. However, this can be an interesting challenge for the future researchers, where it offers them new and exciting research opportunities to work on in the times to come. I also hope that the research will stimulate further discussion and study. The mobile business and markets are constantly changing, and they will require continuous research as well to be up to date with the current developments. Further cross cultural studies would greatly benefit the mobile community to enhance the understanding of factors and issues.

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