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Department of Business Administration
International Marketing

CONSUMER RESISTANCE TO MOBILE COMMERCE SERVICES

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TIIVISTELMÄ

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Oheinen opinnäytetyö on kvalitatiivinen tutkimus kuluttajavastarinnasta mobiilin kaupankäynnin palveluja kohtaan. Tutkimus kohdistuu läntisiin kulttuureihin, joissa kyseisen innovatiivisen palveluryhmän leviämistä tukevat monet aikaisemmat innovaatiot kuten matkapuhelin, Internet, digitaaliset pankkipalvelut.

Tutkimus esittelee innovaatioiden vastarintatekijöitä ihmisen luonnollisena reaktiona tämän vakiintuneita elämäntapoja mullistavia keksintöjä kohtaan nimenomaan läntisissä kulttuureissa, joissa kuluttajat ovat perinteisesti hyvin teknologiamyönteisiä. Toisaalta tutkimusalueella on havaittavissa sosiaalisten ryhmien pirstoutuminen yhä pienemmiksi alaryhmiksi, mikä voi hidastaa sosiaalista oppimista.

Tutkimus vastaa todelliseen tutkimusaukkoon. Aihe on samalla sekä ajankohtainen että relevantti vastatessaan nykyisin käytävään utopistiseen keskusteluun digitaalisen informaatioyhteiskunnan kehittymisestä ja merkityksestä modernille ihmiskunnalle.

Tutkimuksen teoreettinen eksploratiivinen viitekehys rakentuu valikoiduista uusien tuotteiden ja palvelujen kehittämisen, palvelumarkkinoinnin ja sosiaalisen oppimisen teorioista sekä innovaatio- kommunikaatioteorioista. Empiirisen osan muodostavat kansainvälisten markkinatutkimuslaitosten ja haastateltujen asiantuntijoiden näkemykset alan kehityksestä.

Tutkimus osoittaa, että kuluttajat eivät ole valmiita vastaanottamaan kehittyvien teknologioiden mahdollistamia mobiilin kaupankäynnin palveluita ennen kuin ne vastaavat kuluttajien perustarpeisiin ja rakenteelliset vastarintatekijät (alhainen käytettävyys, matala lisäarvo, koetut riskit, perinnevastarinta, palveluryhmän huono mielikuva) on poistettu.

Tutkimus esittää, että mobiilin kaupankäynnin alalla toimivien yritysten tulisi työskennellä yhteistyössä keskenään ja kuluttajien kanssa luodakseen kuluttajien tarpeita ja toiveita vastaavia turvallisiksi koettuja mobiilin kaupankäynnin palveluita. Tutkimus ehdottaa, että kyselytutkimusten ohella käytettäisiin havaintomenetelmiä, jotta teknologiat voitaisiin valjastaa kuluttajien tarpeita ja kulutustottumuksia vastaaviksi.

ABSTRACT

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Current research is a qualitative research about consumer resistance to mobile commerce services. Focus of the research is on western cultures where several earlier introduced innovations such as mobile phone, the Internet and digital banking services support the diffusion of the service category in question.

Current research presents consumer resistance to innovations as a natural human response to inventions which change or disrupt established routines. Research focus in on western cultures where consumers have shown to be receptive to new technologies, but where on the other hand one may see increasing social heterogeneity, which may slow down the social learning process.

Current research points to an existing research gap. The topic is both a relevant and an interesting object of investigation as it takes part in the current utopistic debate of digital information society, its development and significance to modern society.

The explorative theoretical frame of reference of current research is build on selected innovation theories, new product and service development theories, services marketing theories, social learning and communications theories. The empirical part is based on international market research companies' and interviewed experts' views on the future of the field of mobile commerce.

Current research indicates that consumers are not ready to adopt mobile commerce services provided by developed technologies until there is a fit between consumers' basic needs and until structural barriers (usage, value, risk, tradition, and image barrier) are overcome.

Current research suggests that the players in the field of mobile commerce should cooperate with each other as well as in cooperation with consumers in order to create mobile commerce services, which would eventually satisfy consumers' needs and which they would perceive being secure. It is advisable to utilise observational methods in addition to questionnaires to create a fit between technologies and consumers' needs and habits.

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Milles bisous à mon amour qui était sûr que j'aillais y arriver un jour.
Merci pour ta resistance!

Lämmin kiitos tuestanne, äiti, isä, veljet

Champ Girard, le 7 Janvier 2001
Lappeenranta, 1. maaliskuuta 2001

Miia Tiainen

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ABBREVIATIONS

2G	Second Generation mobile telecommunications networks e.g. GSM and GPRS
3G	Third Generation of mobile Internet; new digital broadband networks, which promise the ability to provide multimedia services e.g. EDGE, UMTS
Bluetooth	Low-power radio interface between mobile phones and their accessories
EDGE	Enhanced Data for GSM Evolution
GPRS	General Packet Radio Services
GSM	Global System for Mobile Communications
PDA	Personal Digital Assistant
SMS	Short Messaging Service
UMTS	Universal Mobile Telecommunications System
WAP	Wireless Application Protocol

1 INTRODUCTION

1.1 Background

Since the invention of the transistor, in 1947, we have seen a remarkable increase in the speed with which 'killer applications'[1] have been appearing in the field of digital technology. Computing devices are getting smaller, cheaper, and more powerful in minicomputers, notebooks, personal digital assistants, credit cards, and clothing. (Downes & Mui, 1998, 20) Changes in modern society accelerate the increased utilisation of information networks. Concentration of human activities is shifting from capital-intensive production of raw materials and energy to the activities of the new era of 'information society'. The revolution has been explained by at least eight different variables: a) technological development, b) economic change, c) changes in professions, d) changes in the notion of place, e) cultural changes, f) changes in know-how, g) need of lifetime learning, h) changes in behaving and working methods. (Viherä, 2000, 78)

Thereby, it is predicted that the knowledge on how to create and utilise innovative information applications becomes the real motor of modern countries' economic growth, communities' welfare, and peoples' well being. Key technologies in the information society in the beginning of the new millennium are predicted to be (Heiäng & Ourila, 1998, 53):

- ✓ Wireless applications, mobility, and insensitivity of position
- ✓ Information and data security
- ✓ Control of information and knowledge, intelligent digital content, product development and tailoring based on consumer needs and wants
- ✓ Solutions for electronic commerce and for mobile commerce

Already, the Internet and value-added services on mobile phones have revolutionised access to information for millions of people. There are now a quarter of a milliard digital mobile phone subscribers world-wide increasingly familiar with using their handset as an

[1] *Killer applications* are breakthrough technologies, which do not merely change markets, but rather they have far-reaching effects on the way society functions and how human beings work and live (Downes & Mui, 1998).

information and transaction tool. However, bringing secure mobile commerce to the nearly 50 million 2G mobile phones already in circulation needs a well-thought access strategy. (Chanay, 2000, 29) International players in the mobile telecommunications sector (telecommunications operators, mobile operators, market research companies, new media companies, venture capitalists) predict fast growth in mobile commerce markets that would be powered by 3G mobile commerce infrastructure and subsequent innovations. Moore (1999) states the often-repeated phrase: "you need to take advantage of your day in the sun before the next day renders you obsolete. From this notion comes the idea of a window of opportunity". (Moore, 1999, 14)

'Mobile Internet'[2] and its services are experiencing their hottest 'hype' at the moment. For instance, in the same research report, a globally respected market research company argues that the mobile commerce market "will grow significantly in the next five years" and that the true potential of what it can provide "will not be realised for at least another three years". (Datamonitor, 2000, 4) Another report suggests that by the year 2005, in Western Europe there would be as much as 33% and in the United States 22% of population using mobile commerce services. This would generate revenues from mobile commerce activities of USD 74 milliards in Western Europe and of USD 47 milliards in the United States for operators and service providers. (Chanay, 2000, 29-30). Probably the wildest predictions have been that consumers would wish to use all the services available regardless of time and place; in the future people would practically dress themselves with electronic equipment (Heiäng & Ourila, 1998, 60). All in all, industry experts in the mobile telecommunications sector predict that changes will occur in consumer behaviour, communication methods and in the interaction of consumers and enterprises. Changes will also be seen in the mobile telecommunications value chain, and in value-added services of mobile devices. (Takala, 1999, 76)

An early dictum of the Chicago School of Sociology says, "If men perceive situations as real, they are real in their consequences" (Rogers, 1995, 209). Still on the contrary to the often-touted belief that the world is changing ever faster, a review of past clearly shows that it takes a long time for innovation to find commercial success. No technological

[2] Mobile Internet content is developed in WML (Wireless Mark-up Language) instead of Internet's HTML (Hyper Text Mark-up Language), defined to suit current bandwidth constraints and handset form factors. Browsers accessing the content may be located either in the handset or in a removable smart card that identifies the subscriber. (Chanay, 2000, 29)

product can spawn a growth market before its time. Another mistake made in technological forecasting occurs when the forecaster automatically assumes that particular technologies will inevitably serve a large market. (Schnaars, 1989, 129-139)

1.2 Previous research and research gap

Two streams of past research of innovations are relevant to the study of consumer resistance to innovations: the adoption and diffusion of successful innovations and the new product success / failure literature, which examines what distinguish winners from losers. (Ram, 1989, 20-21)

"The diffusion process is perhaps one of the most widely researched and best documented social phenomena" (Mahajan & Peterson, 1985, 7). Already by the year 1986, over 3 000 studies and discussions of diffusion processes had been published in at least 12 identifiable disciplines such as anthropology, sociology, rural sociology, education, marketing, psychology, and geography. Thus, marketing strategists must use care when studying the diffusion literature, because many of the studies have been conducted in primitive societies. *Everett Rogers* has written probably the most important contribution to the study of diffusion of innovations and a synthesis of the antecedent literature in 1962. One might argue that he is the most influential 'change agent' in diffusion of the diffusion research. He has identified the types of consumers adopting a new product and classified them by the time to adoption as: ‘innovators’, ‘early adopters’, ‘early majority’, ‘late majority’, and ‘laggards’. The fifth edition of Rogers' "Diffusion of Innovations" dates back to the year 1995 and is commonly used in current research. An excellent source for marketing application materials in the field of innovation diffusion is the work of *Thomas Robertson*, who has reviewed marketing and diffusion literature and prepared a summary of the most critical needs for further studies. (Engel, Blackwell & Miniard, 1986, 529-549)

In general, diffusion models have been put to three distinct uses. Initially they have been used to describe behavioural events such as the spread of rumours and the diffusion of certain innovations. As such, they have been used to explain the phenomena around innovations as well as to test specific diffusion-based hypotheses. Secondly, they have been used to analyse how innovative products should be marketed. A third use has been in forecasting the success / failure of new products. In addition, some usage of the

diffusion models in broader contexts has been done. For example, Monin (1976) has executed analysis of changes in attitudes, and Becker and Speltz (1983) have examined research and development productivity. (Mahajan & Peterson, 1985, 70-72)

Reasons for new product success and failure have been widely researched during the last decades. Three different phases or trends may be identified in the evolution of the research of the reasons for new products success and failure. (Cooper & Kleinschmidt, 1987, 169-171)

The first phase and school, starting from the 1960's, consists of studies examining reasons for success cases and failure cases separately (e.g. Myers & Marquis (1969), Globe (1973), Townsend (1976)). In the 1970's, another school awoke to discovery that a more reliable way to find these reasons is to compare a large number of success and failure cases in the same study (e.g. Rothwell (1972) Kulvik (1977)). The research of the eighties and nineties does not focus so much on identifying reasons but rather attempts to make deeper analyses on the most obvious factors of new product success (e.g. Cooper (1987), Maidique & Zieger (1985), Schnaars (1986)). (Cooper & Kleinschmidt, 1987, 169-171) "Although these research efforts differed in the methods used for data collection and analysis, the type of products studied (industrial / consumer), the locus of the study (USA, Canada, UK), and the findings are often similar and consistent" (de Bretani, 1991).

New service development has not been studied as deeply as new product development. In several researches, these two have been considered the same when studying and introducing innovations, although services and the marketing of services differ from physical products. Especially, very little has been written about the development of new services and even less has been done in the way of broad empirical research to probe the question of the potential success / failure of new services. (de Bretani, 1991, 33)

Glazer and Montgomery (1980) have summed up the literature concerning services. They concluded that previous to 1980, only a tiny fraction of product innovation articles addressed services. During the early 1980s, most of the writings were of a conceptual nature, usually concentrating on one specific element of the new service development problem. Such problems included new service design, modelling the service operation of the delivery system, concept testing and business analysis, importance of the frontline, and the corporate culture in new service development. Studies in the latter half of the

1980s took on somewhat broader and more empirical evidence as a basis of conclusions. Furthermore, rather than concentrate exclusively on the factors that make services distinct, a small number of studies began to incorporate theoretical concepts derived from research on the development of manufactured goods, taking into account that services often have marketing characteristics that are similar to goods. Lowelock (1984) and Wind (1982) argue that marketers should learn from theories derived from the study of innovation in manufacturing as long as the theories are modified to fit the specifics of new service development (de Bretani, 1991, 34-38).

In addition, it has been shown that one critical but underresearched aspect is the importance of the social context of product adoption behaviour (Solomon, Bamossy & Askegaard, 1999, 297). Also, several research studies have consistently claimed that innovations which fail to meet consumer needs, wants and preferences are likely to encounter consumer resistance (Ram, 1989, 20). Yet, little profound research has been done on this subject (Ram & Sheth, 1989, 6). Sheth and Ram have been studying causes of consumer resistance, and their findings between 1979 and 1989 are very much used in current research.

All in all, one may conclude that there is a research gap in the diffusion of *innovative services*. Another research gap may be found in the *combination of cultural and sociological aspects* in the adoption process of innovative services. Thus, current research points to an existing research gap, as the research focus is on the *consumer resistance* of *innovative services* in the field of *mobile commerce*, which is still on its early stages. The theoretical frame of reference, though, is selectively constituted on the theories of innovative products' diffusion. It is then applied in the empirical part to point out the factors behind potential consumer resistance in *western cultures*.

1.3 Objectives and limitations of current research

Technological determinism denotes that technology determines our society (Joseph, 1993, 238). Unfortunately, people with a vested interest in a highly specialised technology, *technocrats*, tend to be either unable or unwilling to disrupt established procedures to produce truly market-driven innovations (Sheth & Ram, 1987, 35-44).

The first objective of current research is to show that it is not only the technology, which

changes people's behaviour, but that the latent or existing needs of consumers may induce the diffusion of technological innovations. Thus, one objective of current research is to explain why market and customer orientation is important in traditionally technology driven telecommunications sector. The second objective of current research is to show that it takes more time than mobile phones' even shortening life cycles or the development of 3G infrastructure in order to reach critical mass[3] for an efficient diffusion of mobile commerce services. Finally, current research is intended to generate discussion around the introduction and development of mobile commerce services.

Instead of asking, "how will the new technology affect society", it might be more profitable to ask, "what kind of society produces new technology". Then you may concentrate on the social conditions that give rise to inventions and innovations, and their adoption. (Joseph, 1993, 212) It is clear that the integrative effect of technology on society and the integrative process within technology itself is a highly complex and multifaceted phenomenon. One aspect is the integration of human activity all over the world into one global geo-technical system. In the 70's OECD estimated that the expansion of telecommunications would be a major factor in the process of integrating the less developed countries both internally and within the world system. (Hetman, 1973, 30) Still in the 90's, some fear that while the advent of the 'new information age' will bring great opportunities for raising the quality of life, there is danger that in the end social inequalities could be extended. If past experience is anything to go by, the benefits from all these developments will go to those who have invested most heavily in the new technology (Joseph, 1993, 207-208):

- ✓ Large and powerful organisations and successful multinational enterprises
- ✓ The most educationally advantaged versus the least educated
- ✓ Those with greater resources versus those who are economically weak
- ✓ Small group of privileged special end users

There are certain functional prerequisites all societies must perform to remain going concerns, which means filling the biological and psychological needs of the individual members, their relationship with the social environment, and the necessity of its co-

[3] Critical mass occurs when enough individuals have adopted an innovation so that the innovation's further rate of adoption becomes self-sustaining. Until a critical mass occurs at arelatively early stage in the diffusion process, the rate of adoption is slow. (Rogers, 1995, 313-333)

ordination into social systems. Although societies and cultures differ externally, unique identifying features exist, which position various cultures on a continuum of social change from traditional to developed societies. The criterion to be used is the amount of resistance to change. A transition from one point of cultural evolution to another is accompanied by a weakening of the resistance to change. An understanding of the process and conditions by which different cultures move on the continuum can help to understand and even predict the adoption of innovations in a society in question. The concept of a transition continuum may also be used to study the influence of culture on personality-related variables as they affect an individual's buying decisions. (Sheth & Sethi, 1979, 373-374)

Figure 1, Figure 2, Figure 3 and Figure 4 show the significant indicators, which are generally argued to be critical to the development of mobile telecommunications services (Romtec, 1999, 7):

- ✓ Economic wealth measured in GDP/capita
- ✓ High levels of the diffusion of personal computers
- ✓ High levels of the diffusion of mobile phones
- ✓ Large numbers of Internet subscribers

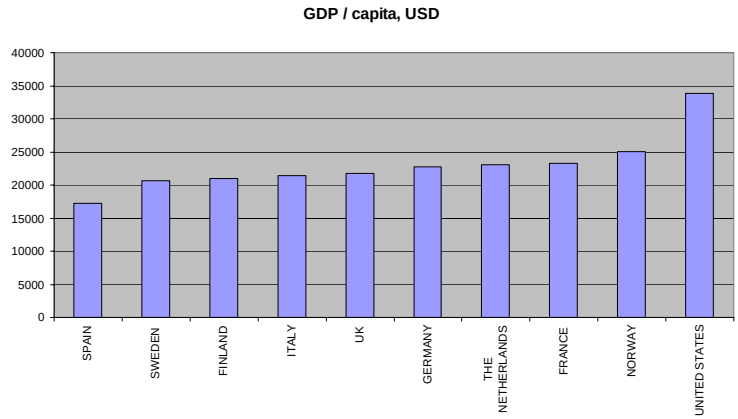

Figure 1. The level of GDP/capita in western cultures included in current research (Modified from Sonera Information Services, 10/2000)

In other words, the countries included in current research in addition to the United States are Norway, Finland and Sweden in the Northern Europe, France, the Netherlands, Germany and the United Kingdom in the Central Europe, and Italy and Spain in the Southern Europe. Previous researches assume that innovative mobile commerce services are adopted first in the developed countries, where GDP/capita and the diffusion of

digital technology are already high. Thus, those countries are the focus of current research. One may still argue that many of observations made in current research are not unique to western cultures, and diverse regional trends may provide some indications of even wider mobile commerce market.

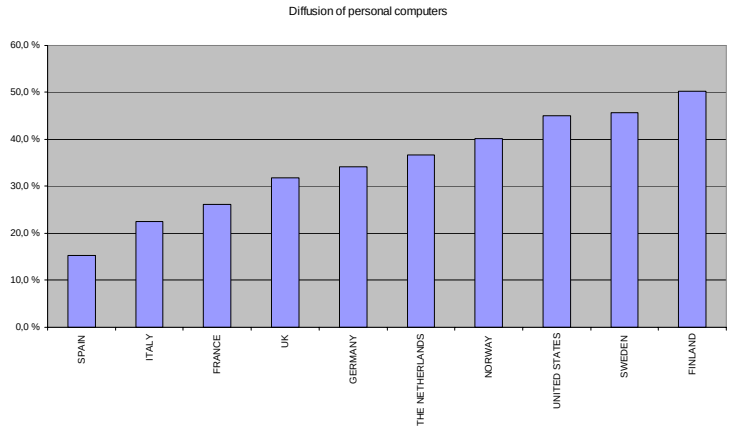

Figure 2. Diffusion of personal computers in countries included in current research (Modified from Sonera Information Services, 10/2000)

Figure 2 shows that the diffusion of personal computers seems to be relatively high both in countries where the GDP/capita is relatively high (United States, Norway and the Netherlands) and in countries where GDP/capita is relatively low (Finland and Sweden).

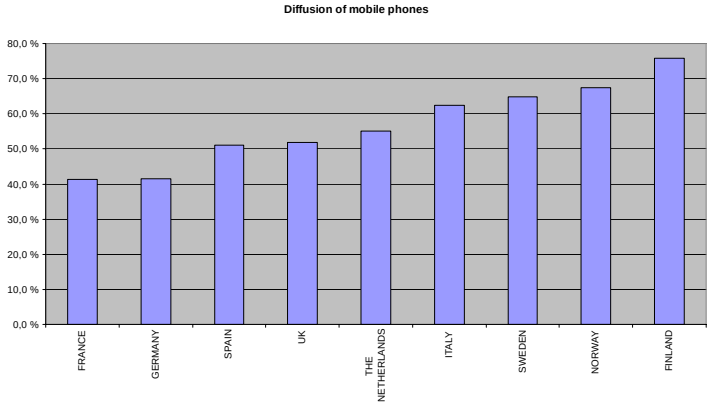

Figure 3. Diffusion of mobile phones in countries included in current research (EMC in Sonera Information Services, 10/2000)

Figure 3 shows that the diffusion of mobile phones seems to be relatively high both in

countries where the GDP/capita is relatively high (Norway and the Netherlands) and in countries where GDP/capita is relatively low (Finland, Sweden and Italy). In addition to the information on the figure above, in the United States, the diffusion of mobile phones in January 2000 was 39,9 % (EMC in Sonera Information Services, 2/2001).

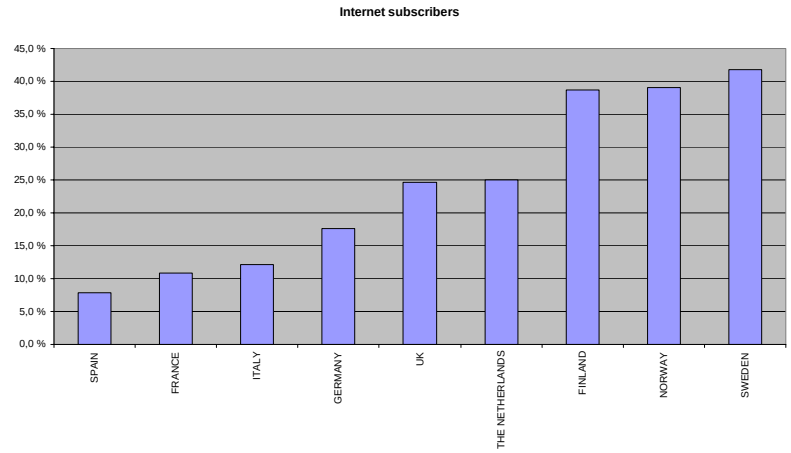

Figure 4. Diffusion of the Internet in countries included in current research (Modified from Sonera Information Services, 10/2000)

Figure 4 shows that the diffusion of the Internet seems to be relatively high both in countries where the GDP/capita is relatively high (Norway and the Netherlands) and in countries where GDP/capita is relatively low (Finland, Sweden and UK). According to Nielsen Net Ratings (2/2001), the diffusion of Internet in the United States has risen to 60 percent, with a total of 168 million people using the Internet in January.

Even though the GDP/capita in Spain is not very high (under 20 000 USD/capita), the country is included in current research because of its high level of mobile phone diffusion relative to that in France and in Germany. Also, there is a major difference between Europe and the Unites States in the telecommunications sector. European countries, unlike the US, have adopted a clear lead in terms of usage and application development in the form of advanced diffusion of mobile phones and a successful single standard, GSM, which dominates the wireless world throughout the continent. United States is still included in current research because key electronic commerce trends and business models usually derive from the United States. (Mueller-Veerse, 1999, 7)

In other words, as current research concentrates on consumer resistance to innovations, it

leaves the business-to-business environment for future research. Current research neither goes deeply into technological problems, such as development and qualities of broad band transmission of data, usage of the Internet as a mobile service platform or the ability to create virtual realities. Consumer resistance to mobile communications services is studied covering the whole service category in general, which means that no service-specific study is conducted in current research. Although, characteristics of potential killer applications are identified in chapter 5.5. Logistics is undoubtedly one of the major interest areas in the future of mobile commerce. Despite of that, current research does not evaluate problems in the development of logistical and delivery chains due to their more product and branch focused characteristics.

1.4 Research problem and research questions

Telecommunications is a universal service, which has an impact on everyone. It is continuously going through significant environmental changes, especially technological and regulatory. These changes further accelerate the process of innovation. (Sheth & Ram, 1987, 97) Huge expectations exist and investments are made in the field of mobile commerce. At the same time we witness electronic commerce companies' failure. When following the discussion in media and industry experts' speeches turning around the future of mobile commerce services, one may easily conclude that both market and technology uncertainty in the field are high.

While innovations have been beneficial to mankind, historical evidence suggests that innovations have consistently met with resistance. People tend to resist any innovation, because they change or even disrupt established routines. Resistance to change is a normal and inevitable human response. Thus, in order to be successful, marketers need to understand customer resistance to innovation, and try to overcome those barriers. Ironically, as the demand for innovation increases, so does the resistance: customers resist innovation even though it means better products and services. Also, the more radical the innovation, the greater the structural barriers, and therefore the greater the resistance. (Sheth & Ram, 1987)

Current research is focusing on the adoption process of innovative services in western cultures and on defining the needs, which mobile commerce services could eventually satisfy. Current research presents factors, which could show why mobile commerce

services will reach their critical mass after a relatively long period of time, which could mean that the investments made in 3G mobile technologies have not necessarily been wise in the short term. Thus, current research is constituted of four dilemmas in the mobile telecommunications sector. Research questions are:

What kind of consumer resistance exists to innovative services?
How are innovations diffused in a society?
Which needs may mobile commerce services eventually satisfy in western cultures?
Which consumer barriers may prolong the reach of critical mass in the diffusion of mobile commerce services in western cultures?

1.5 Methodology and the structure of the research

Current research is conducted in two parts: theoretical and empirical. After the first chapter of introduction, in chapter two, the focus of the research is on the characteristics of innovations and innovative services. The presence of market and technology uncertainty in innovative markets is discussed. Also, a discussion of the need of combining technology and market orientation is arisen. In chapter three, the adoption process of innovations is presented. Rogers' (1995) adopter categorisation according to consumers' relative innovativeness is presented in chapter 3.1. Findings of previous communications research concerning individuals' information channels are presented. Variables behind consumer resistance are presented in chapters 3.4 - 3.6 in order to form the theoretical frame of reference further on in chapter four. Cultural differences in the adoption process are briefly discussed in chapter 3.7. The last theoretical chapter presents theories of the diffusion of innovations especially in western cultures. Moore's (1999) revision of technology adoption life cycle is presented in chapter 4.2. Discussion is then broadened with an analysis of current trends in western cultures in order to explain cultural and sociological aspects behind the adoption and diffusion of mobile commerce services. At the end of chapter four, the theoretical frame of reference for current research is presented.

Chapter five starts the empirical part of current research. In order to lead the reader into the mobile commerce sector, chapter five covers briefly the available empirical data in the mobile telecommunications sector in the selected western cultures concerning the drivers and expectations in the field. It presents characteristics of ‘innovators’ and ‘early adopters’ of mobile commerce services as well as the estimations of needs, which could

eventually be satisfied by the offered services in question. In chapter six, consumers' adoption process and potential resistance to mobile commerce services is discussed. In chapter seven, a potential time scale for the diffusion of mobile commerce services in western cultures in relation to other regions is presented. The need for co-operation between the players in the field is discussed in chapter 7.3. In chapter eight, the major findings of current research are presented. Chapter nine concludes the discussion around four research questions, makes suggestions for managerial implications and for further research.

Several methods were used in order to improve the validity of current research. Denzin (1970) would classify current research as a research of source, methodological and theoretical triangulation (Hirsjärvi, Remes & Sajavaara, 2000, 215).

Especially in the empirical part, a wide range of secondary *sources* has provided valuable data for current research. In addition, some industry experts were selected to be interviewed according to their previous experience in telecommunications' innovation diffusion, and a few researchers of innovations' diffusion in western cultures were interviewed in order to enlighten the visions of mobile commerce services' future development.

The *method* in the interviews was a semi-structured theme interview. Interviewees received a list of questions a couple of days in advance by e-mail to highlight the themes to be discussed. Six out of nine interviewees had the chance to read through the questions before the interview. Average time spent in each interview was about 1,5 hours. Each interview was held in the very surroundings of interviewees' posts, and no remarkable interruptions happened during the sessions. Inaccuracy of the interviews may have resulted from the fact that interviewer used only a pen and a paper to collect valuable information for current research. Interviewer's subjectivity may have influenced the reliability of the results of the interviews. Despite of that, saturation of interview material was reached, as the last interviews did not increase understanding of the research area significantly, and the same viewpoints as in the first interviews were repeated regularly. Because the focus of the interviews is in turbulent and highly innovative markets, interviewees' statements were processed confidentially so that no individual opinions may be identified from the text. Structure of interviews is presented in appendix I.

Throughout current research, both international marketing and sociological *theories* are present. Research findings from innovation theories, new product and service development theories, services marketing theories, social learning and communications theories are combined in current research.

Thus, current research is an inductive and descriptive research executed in qualitative methods as the focus is on defining the quality and meanings of problems. The nature of the field of study is new, and therefore exploratory means were used.

1.6 Definitions

Adoption is a personal mental process through which an individual passes from the stage of first hearing about an innovation to the final adoption of it. (Spence, 1994, 83)

Consumer resistance is the normal, instinctive response of consumers to an innovation because the innovation poses potential changes from a satisfactory status quo or because it conflicts with consumers' belief structure. Innovation resistance varies in degree, increasing from passive resistance or inertia to active resistance. The degree of resistance affects the timing of adoption. (Ram & Sheth, 1989, 6-7)

Diffusion is the social spread of a new idea from its source to the end users. When combining adoption and diffusion together, they form a process known as innovation, which is directed to bringing about change. (Spence, 1994, 83)

An innovation is a new product with four criteria: newness from existing products, newness in time, newness in terms of sales penetration level, and consumer newness to the product. *New product or service* can be new in three ways: in functional sense, in technical sense, or in stylistic sense. (Robertson, 1971, 7-8) In addition, *an innovation* may be a new or improved product, service, system, process or method, which is a commercially successful invention (Kotler, 1994, 348). Urban, Weinberg and Hauser (1996) have argued that "*A really new product* is a product which revolutionise product categories or define new categories and shift market structures, represent new technologies, require consumer learning, and induce behaviour changes" (Aggarwal, Cha & Wilemon, 1998, 358).

In current research, the word *innovation* is used to mean new products and services as well as really new products and services, which *may* lead to commercial success. This may cause deplorable inaccuracy in text, because in the narrowest sense innovation occurs only after an invention has reached its critical mass and commercial success. In fact, a more correct way of using the notion consumer resistance could be in the context of *resistance to inventions* rather than *resistance to innovations* until the focus of the research, mobile commerce services has reached its critical mass and commercial success.

Technology is "the practical knowledge, know-how, skills, and artefacts that can be used to develop a new product or service and/or a new product/delivery system. Technology can be embodied in people, materials, cognitive and physical processes, plant, equipment, and tools." (Moriarty & Kosnik, 1989, 7)

Mobile commerce refers to activities involving financial transactions that are initiated or carried out over mobile network. *Mobile commerce services* include ordering, reserving or paying for goods and services, including information and entertainment services as well as banking services and bill payment. (Bond & Williams, 2000, 2)

2 COMPONENTS OF INNOVATIVE MARKETS

Hetman (1973) argues that an innovation may be evaluated in three steps: by *technical*, *economic* and *social evaluation*. In the technical step, it is ascertained that the technological development effectively meets the technical criteria, which are required to achieve given objectives. In the step of economic evaluation, a cost/benefit analysis is conducted to identify practical uses of the new technology. The social step includes the study of technology diffusion and acceptance in the society. Normally, in this phase of evaluation, it may be shown that on the basis of social criteria a more or less large part of the new technology should be altered or improved, rather than to expect society to adapt itself to the new technology. (Hetman, 1973, 308) Current research focuses on the social evaluation of innovations. First, in this chapter, notions of innovations and innovative services are presented in order to form the theoretical frame of reference in chapter 4.3.

2.1 Characteristics of innovations

According to Rogers (1995), an innovation is an *idea*, *practise*, or *object* that is *perceived new* by the unit of adoption. From human behaviour's viewpoint, it matters little whether or not an idea is objectively new as measured by the lapse of time since its first use or discovery. In other words, the perceived newness of the idea for the individual determines his reaction to it. If the idea seems new to the individual, it is an innovation. Newness of an innovation does not only mean that the person gets to know about the innovation, but it may be expressed in three terms: that of *knowledge*, of *persuasion*, or of a *decision to adopt*. (Rogers, 1995, 11) Individual's decision process and the information channels he tends to follow are discussed in detail in chapters 3.2 and 3.3.

Bower and Christensen (1997) suggest that managers should look for an answer already inside of their companies to find out if the new product is a true innovation or not, whether the technology is *disruptive* or not. Marketing and financial managers because of their managerial and financial incentives rarely support a disruptive technology. On the other hand, even in the face of opposition from key customers and marketing and financial staff, technical personnel often persists in arguing that a new market for the technology will eventually emerge. (Brown, 1997, 133)

According to Cooper (1988), newness of products may be defined as follows: A new

product is 1) *new to the company*, if the company has never before sold the type of product before. It is 2) *new to the market*, if it is the first of its kind. (Cooper, 1988, 15) The concept 'really new products', RNPs is a relatively new concept. It includes products, which represent quantum leaps compared to previously marketed technologies and products, which may warrant major changes in marketing and/or consumption systems. Examples of RNPs are mobile phones, compact disks and pocket calculators. From the consumers' perspective, RNP's research includes a) perception of the newness of a product, b) information processing, c) consumer learning, and d) choice processes (Aggarwal *et al.*, 1998, 358). Communication and learning in the society are discussed in detail in chapter 4.1.

In the studies of innovations' impact on behaviour in the social structure, Robertson (1971) has concluded that innovation may either be 1) *continuous*, 2) *dynamically continuous* or 3) *discontinuous*. A continuous innovation means, e.g., modifications of an existing product, and therefore has the least disrupting influence on established patterns of customer behaviour. A dynamically continuous innovation may involve the creation of a new product or the alteration of an existing one, and it thus has more disrupting effects, although it still does not generally alter established patterns of customer buying and product use. A *discontinuous* innovation involves the introduction of an entirely new product that causes buyers to alter significantly their behaviour patterns. (Robertson, 1971, 7) Between continuous and discontinuous innovations lies a spectrum of demands for change (Moore, 1999, 10).

According to previous research, mobile commerce services may be considered to be as disruptive innovations because they are mainly driven by technological experts, as sociologists are only about to start profound research in societal changes mobile commerce services may bring about in the future. In addition, they may be considered to be as discontinuous innovations, because they are new from the technology, economic and the social point of view. Mobile commerce services are value-added services, which are expected to revolutionise product categories, such as credit cards and postal catalogues, and to change human behaviour after a relatively long learning process. Therefore in current research, mobile commerce services are included both in the category of technological innovations and really new products.

Rate of adoption of innovations is the relative speed with which members of a social system adopt an innovation. The phenomenon is explained more thoroughly in chapters

three and four, but it has been proven that diverse characteristics of innovations help to explain how innovations are adopted. Substantial characteristics are (Rogers, 1995):

1. *Relative advantage*, which is the degree to which an innovation is perceived as better than the idea it supersedes. It may be measured by economic terms, social prestige, convenience to use, and by perceived customer satisfaction. The most important thing is whether an individual perceives the innovation advantageous or not.
2. *Compatibility*, which is the degree to which an innovation is perceived as being consistent with the existing values, past experiences, and needs of potential adopters. The adoption of an innovation requires the prior adoption of a new value system, which is a *slow process*.
3. *Complexity*, which is the degree to which an innovation is perceived difficult to understand and use. Innovations, which require the adopter to develop new skills and understandings, are adopted *slowly*.
4. *Trialability*, which is the degree to which an innovation may be experimented. An innovation, which is not trialable, represents more uncertainty to the individual who is considering it for adoption.
5. *Observability*, which is the degree to which the results of an innovation are visible to others members of one's fellow men. An intangible innovation, the results of which are not easily visible, takes *much time* to be adopted.

2.2 Characteristics of innovative services

Services' marketing is becoming a recognised and accepted subset of the marketing discipline in a way that services marketing is seen in certain key respects different from goods marketing. Three basic assumptions pervade the growing body of literature on services marketing. First, services have several characteristics that products do not have, such as *intangibility*, *inseparability of production and consumption*, *heterogeneity*, and *perishability*. Second assumption maintains that these characteristics pose vexing problems for services' marketers. Third assumption holds that services marketing problems require specific services marketing solutions, because the strategies developed from experience in goods marketing are often seen insufficient. (Zeithaml, Parasuraman & Berry, 1985, 44)

2.2.1 Intangibility of services

The fundamental difference between goods and services universally cited by the authors since 1963 has been intangibility of services, which means that services are performances rather than objects, because they cannot be seen, felt, tasted, or touched in the same manner with goods (Zeithaml *et al.*, 1985, 33-34). Several researchers (e.g. Shostack (1977) and Thomas (1978)) have argued that because services are more intangible than tangible, customers must *risk* buying an eventual outcome and/or an experience, which they cannot fully assess prior to purchase (de Bretani, 1991, 36). These risks are discussed further in chapter 3.5.

As a conclusion, several researches (e.g. Langeard & Eiglier (1983) and Besson (1973)) have shown that to successfully market a new service, which is highly innovative or new-to-the-world, marketers need to put a special emphasis on helping consumers to conceptualise and evaluate the service (de Bretani, 1991, 36).

2.2.2 Inseparability of production and consumption of services

Reagan (1993) argues that "whereas goods are first produced, then sold and then consumed, services are first sold, then produced and consumed simultaneously" (Zeithaml *et al.*, 1985, 33-34). Many services are produced and delivered in the presence of customers or they require substantial interaction with the consumer at the time the service arrangement is first established as well as at later stages in the relationship as circumstance change. As with intangibility, the simultaneity with (or inseparability of) production and consumption characteristic has certain implications for the development of new services. (de Bretani, 1991, 37)

As customers have an increasing role in the fulfilment process of services, one may utilise the notion '*co-creation marketing*', which involves both the marketers and the customer who interact in aspects of the design, production, and consumption of the service. Co-creation marketing enables and empowers customers to aid in service creation, distribution and fulfilment, and communication enhancing simultaneously customer loyalty and reducing the cost of doing business. With co-creation marketing, the concepts of collaboration, co-operation, and communication become very important in the society moving toward a 24/7 economy in which consumers refuse to be held hostages by time

and place. (Sheth, Sisodia & Sharma, 2000, 62)

Innovations have shown to require *active learning* and significant cognitive investment from consumers. Consumers learn about innovations through media and other information channels, and more importantly through *trial*, which involves actual use of the product or service and can occur either prior to adoption or following adoption. Logically, inaccessibility, for whatever reason, impedes consumers' ability to learn about innovations, which then reduces changes of adoption. (Aggarwal, 1998, 362)

Several researchers (e.g. Langeard & Eiglier (1983) and Lovelock (1984)) have found out that because production and delivery are so essential to the success of new service, companies need to concentrate on *market needs* in addition to *operations* (de Bretani, 1991, 37). Inseparability characteristic means also that centralised *mass production of services is particularly difficult*. This is one of the reasons why marketers should emphasise selection and training of public contact personnel in order to manage consumers. (Zeithaml *et al.*, 1985, 35) Also Grönroos (1990) has stated that direct customer contact with the firm's service process means that customer satisfaction is very much linked to the outcome of the service and to the process by which it is produced and delivered (de Bretani, 1991, 37).

2.2.3 Heterogeneity of services

Heterogeneity concerns the potential for high variability in the performance of services. The quality and essence of a service can vary from producer to producer, from customer to customer, from day to day. This leads to the problem of consistency of behaviour and the *difficulty to standardise and control the provided quality* of services. This is also why services are rather and better seen when they are customised. (Zeithaml *et al.*, 1985, 34-35)

2.2.4 Perishability of services

Bessom and Jackson (1975) and Thomas (1978) have argued that perishability of services means in the first hand that services cannot be saved anywhere. Because services are performances that cannot be stored neither inventoried, service businesses frequently find it difficult to synchronise supply and demand: sometimes there is too much, sometimes

too little demand (Zeithaml *et al.*, 1985, 34-35). This is an important aspect to be studied in the case of new services, because as much as the services are new to the potential customers, so is the needed capacity. When constructing 3G infrastructure and services, it has not been easy for telecommunications players to estimate the future demand. This is discussed further in chapters five, six and seven.

2.3 Reasons for market and technology uncertainty

Innovations include a great variety of uncertainties. For example, often, no one knows what to do with an invention once it is made. The use to which it will ultimately be put is rarely apparent at the beginning. (Schnaars, 1989, 134) In general, one may conclude that high technology includes two uncertainties: market uncertainty and technology uncertainty (Moriarty & Kosnik, 1989, 7-10)

The first dimension in high technology and its market is market uncertainty, which means *ambiguity about the type and extent of customer needs* that can be satisfied by the technology (Moriarty & Kosnik, 1989, 8). See Figure 5.

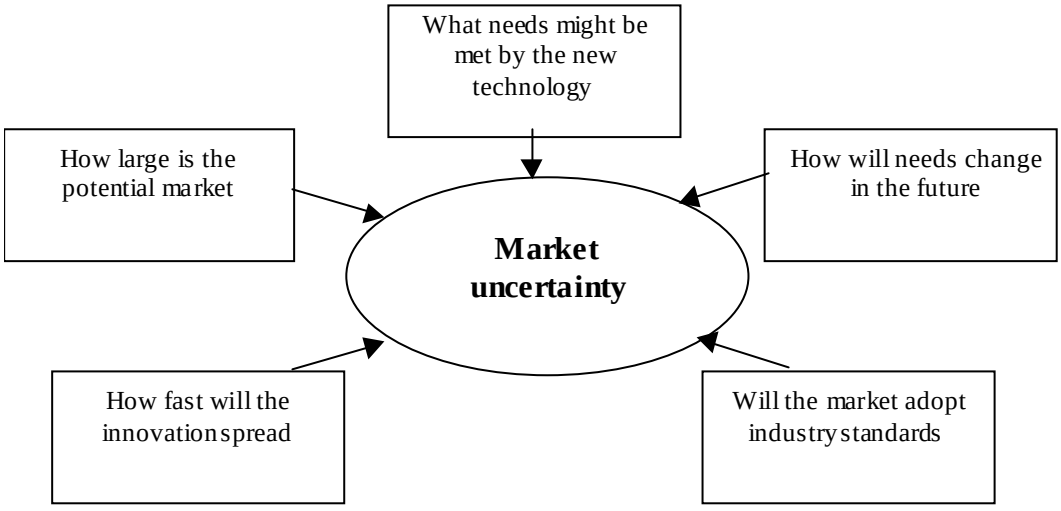

Figure 5. Sources of market uncertainty (Moriaty & Kosnik, 1989, 8)

Moore explains the same phenomenon in other words as he defines market for the purposes of high technology as a set of actual or potential customers for a given set of products and services. Those target customers have a common set of needs and wants, and they reference each other when making a buying decision. (Moore, 1999, 28)

"A *need* is a state of dissatisfaction or frustration that occurs when one's desires outweighs one's actualities, when 'wants' outrun 'gets'. Therefore, innovations can lead to needs, as well as vice versa." (Rogers, 1995, 164) Perceived needs or problems are not a complete explanation of why individuals begin the innovation-decision process. Partly, this is because individuals do not always recognise when they have a problem to solve or to fulfil, nor do individuals' needs always agree with what experts might think individuals need. Research does not provide a clear answer to which is first, awareness of an innovation or awareness of a need. For example, Coleman (1966) claims that an individual plays a passive role in being exposed to awareness-knowledge about an innovation. It is argued that the individual becomes aware of innovation by accident, since he cannot actively seek an innovation until he knows it exists. Still, one may argue that individuals will seldom expose themselves to messages about an innovation unless they first feel a need for the innovation. On the contrary, Hassinger (1959) represents the school of selective exposure communication, which argues that communication is related to one's existing beliefs and attitudes. (Rogers, 1995, 163-165) Still, several researches have stated that Maslow's (1954) hierarchy of needs is valid even in the studies of the adoption of innovations. See Figure 6.

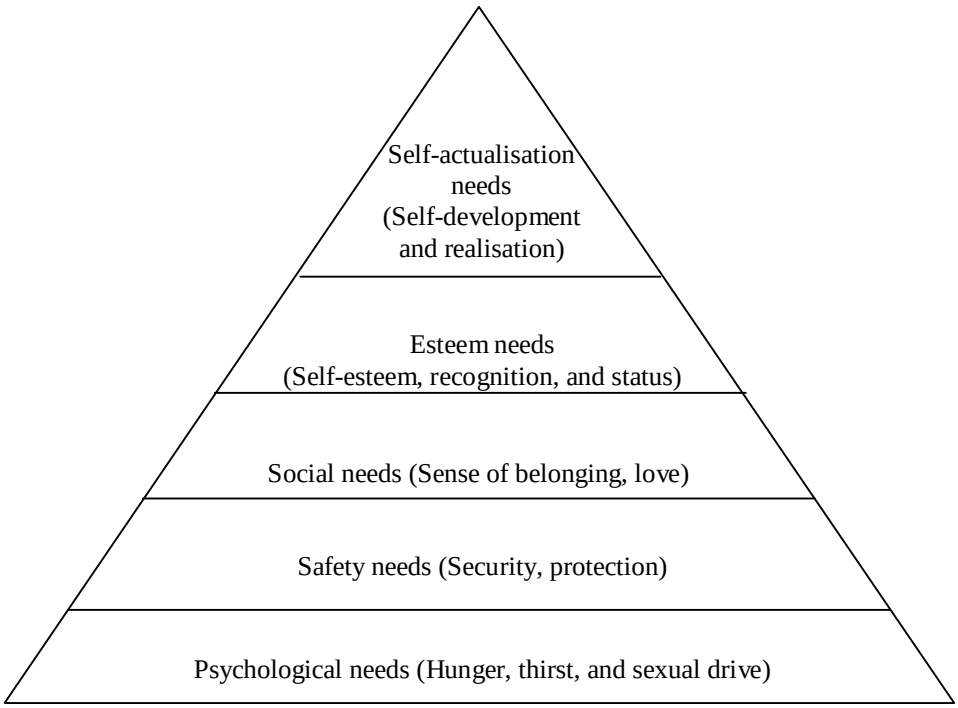

Figure 6. Hierarchy of needs (Maslow, 1954, 80-106)

The increasing diversity in needs, wants, and resources in consumer markets have made consumer behaviour inherently less predictable and forecasting less accurate. In such environment, companies that succeed will be those that can rapidly adjust their supply to meet demand, that is, practice demand-driven supply management. (Sheth *et al.*, 2000, 61)

In addition, once customer needs are known they may be a subject to fast and unpredictable change as the environment evolves (Moriarty & Kosnik, 1989, 8). This means that even though an innovation can offer consumers desired benefits, because consumers may later change their minds and demand a new and different benefit, the manufacturer may be kept with an unwanted product that offers an obsolete benefit. (Schnaars, 1989, 89) Importantly to current research, there is an extremely high rate of change in modern cultures. In general, people tend to accept and even expect change in their lives. Changes in the consumer environment sometimes occur suddenly, but usually they tend to move slowly into the lives of people until they are recognised as having arrived. This process of acceptance across a culture is also known as diffusion, which is discussed further in chapter four. (Wilkie, 1994, 324)

Thus, the form of an innovation takes also changes as the market evolves. The problem might be, that it involves in unexpected and unforeseen ways, and in a manner that is delirious to those, who initially foresaw the potential of the market. (Schnaars, 1989, 135) In newly born information society, companies can develop infrastructures of virtually unlimited capacity and extremely low unit cost. Adding additional complementary products and services that would be of interest to the same customer group can then leverage the marketing system. (Sheth *et al.*, 2000, 63) This is related to another market uncertainty question whether the market will eventually establish *technical standards* with which the products must be *compatible* if the buyer wishes to use them with other products, people or organisations (Moriarty & Kosnik, 1989, 8).

The second dimension in high technology and the market is technology uncertainty, which means that one cannot know whether the technology can *deliver on its promise* to meet the customer needs, which they have been articulated. The newer and/or more rapidly changing is the technology, higher is the technological uncertainty. (Moriarty & Kosnik, 1989, 8-9) See Figure 7.

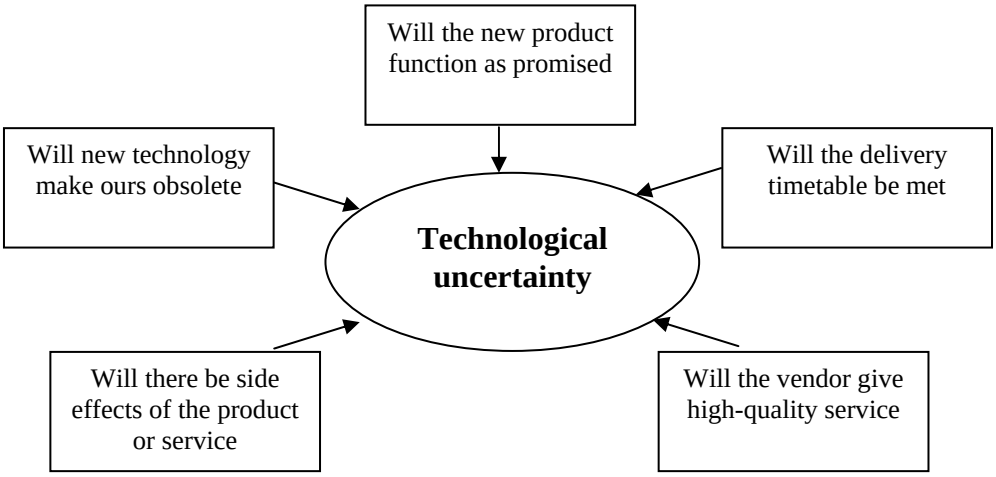

Figure 7. Sources of technological uncertainty (Moriaty & Kosnik, 1989, 9)

The presented figure of technological uncertainty has a support a several researchers. For example, Schnaars (1998) has listed factors behind the success / failure of *new technological products*. They are for example a bad influence of overvaluation of technological wonder, 'hype', the role of the existing and subsequent substitutes in relation to the benefit offered by new product, the focus and stability of social trends in the market, and consumer needs and barriers to adopt the innovation. (Schnaars, 1998)

In addition, according to de Brentani (1990), *new services* may fail in their introduction phase if some of the distinguishing characteristics of services impact on the unsuccessful development of new services. The key elements are (de Brentani, 1990, 56):

- ✓ Not responding to market needs with new or changed services
- ✓ Services do not offer consumers neither functional nor experimental quality
- ✓ Services are not truly superior to competitive offerings
- ✓ Failures in new service development process
- ✓ The firm does not have any unique strengths or proficiencies.

Easingwood (1986) has proven that since services are not patentable and usually require little up-front investment, innovative ideas can be rapidly imitated. This often leads to a proliferation of highly similar services, where a reasonable market share can be difficult to achieve. Wind (1982) has added that service firms have much less incentive than physical product firms to undertake costly and time-consuming pioneering development since attaining a long-term competitive edge is often impossible. Several researchers (e.g.

Shostack (1984), Bowers (1986) and Easingwood (1986)) have shown that one negative effect of the apparent ease with which new services can be created is that firms tend to use too casual an approach for the development process and this can lead to failure in new services. Companies, which move too rapidly, often experience problems like poorly researched service concept, a haphazard design process, inadequate testing and too little planning for an effective market launch. (de Bretani, 1991, 36)

2.4 Importance of combining innovation and customer orientation

Schnaars (1989) argues that the most prominent reason why technological forecasts have failed is that the people who made them have been *seduced by technological wonder*. The emerging technologies are said to spawn huge growth in markets, and to pay a large part in people's everyday lives; the forecasters 'fall in love' with the technology, and estimate, that consumers will find the new technology as enticing and irresistible as they do. Unfortunately, in most instances, those assumptions have shown to be very wrong. (Schnaars, 1989, 9-10) It should be realised that technology is not only here and now, and every modern device has a long development history, which is inextricably linked with the history of its users and developers. It must be noted that no technology may replace interpersonal relations. Thus, in the course of history, the development of communication technology has been a story of interaction between systems and people. (Viherä, 1999, 340) As mentioned before, one objective of current research is to explain why market and customer orientation is important in traditionally technology driven the telecommunications sector.

Already, the concept of technology and market uncertainties shows that when a product is completely new, it usually is not considered perfect by its first adopters no matter how much work has been done in its R&D phase. The great challenge in innovation is linking emerging technologies with emerging markets: as technologies emerge, they affect the markets, and perhaps even more importantly, as markets emerge, they influence the technologies. (Brown, 1997)

When considering customer and innovation orientations, managers must realise that they are not looking at an either/or decision, but rather they must ask which strategic posture will best help fulfil their companies' future goals and objectives. This means that managers and their companies should learn from the market at the same time as the

market, i.e. customers, learns from new technologies and the associated products. Importantly to current research, *a synthesis of technological and customer orientations is especially well suited to markets where uncertainty is high*. By dichotomising these dimensions, four strategic orientation modes for the firm may be identified. See Figure 8 on page 8. (Berthon, Hulbert & Pitt, 1999, 43-44, 53)

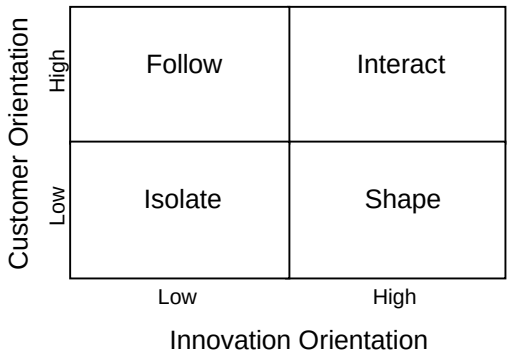

Figure 8. Strategic orientation modes (Berthon, Hulbert & Pitt, 1999, 44)

In industries where innovation orientation is low, either the organisation itself becomes organocentric and there is little or no meaningful communication between innovation and the customer (*isolate mode*) or the organisation relies heavily on structured or unstructured market researches and the customer drives the innovation (*follow mode*) (Berthon *et al.*, 1999, 44-45).

When combining high innovation orientation and low customer orientation, the organisation follows a *shape mode*. In the shape mode, innovative technology shapes the market as potential customers may not have even been aware that they needed or wanted the benefits derived of a particular technology until it became available. The word 'shape' suggests that technology defines human needs and hence determines the nature of customer demand by providing new products and services that include changes in basic human behaviour. The shaping mode of strategy manifests itself in two distinct forms: defining and influencing. The defining strategy is one in which entrepreneurial imagination and action combine with often-serendipitous series of events, and lead to a product defining the market. In the influencing mode, products influence market expectations and trends, but do not define the market, nor necessarily capture it. (Berthon *et al.*, 1999, 45-47)

All shaping strategies are not good and productive. The failure may occur because of *technophilia* and because of so-called innovators' poor understanding of market and customer learning processes. Thus, successful shaping requires the placing of two large bets, one on technology and the other on the market. (Berthon *et al.*, 1999, 45-47)

In *interact mode*, a true dialogue, i.e., a *two-way flow of information*, is established as both organisation and customers offer, modify and evolve development ideas regarding the design of a product or service, its delivery, and methods of payment. In addition, the customer not only is a co-creator of his service and enjoyment, but he also produces a very valuable and saleable information service to the organisation. (Berthon *et al.*, 1999, 47-49)

There is no wrong or ideal focus for an organisation, but for any one organisation, the degree of focus on innovation and/or the customer can vary substantially. Before considering change of mode, managers should review the conditions that might lead them to choose one mode over another. For example, in contexts of rapidly evolving technology, a shape strategy would be most suitable. Finally, where customer needs and wants proliferate and a wide variety of substitutable technologies are present, an interaction approach would be appropriate. In highly competitive industries such as computer hardware and software or Internet-based industries, shape or interact modes would appear to be more likely to succeed. (Berthon *et al.*, 1999, 49-53)

In general, neither manufacturers nor customers know how or why the innovative products or services will be used, and hence do not know what specific features of the innovation will and will not ultimately be valued. Building such uncertain markets entails a process of mutual discovery by both customers and manufacturers - *and this simply takes time*. The fact is that not only are the market applications for disruptive technologies unknown at the time of their development, they are unknowable. (Christensen, 2000, 131-143) The next chapter discusses adoption of innovations, and the need of interaction between markets and technology developers is emphasised further.

3 ADOPTION PROCESS OF INNOVATIONS

Adoption process is a *micro process* and adoption of an innovation is the *result of a personal mental process* (Wilkie, 1994, 328). This chapter presents the factors behind adoption of innovations in order to form the theoretical frame of reference in chapter 4.3.

3.1 Individual's adaptiveness and relative innovativeness

After identifying some possible characteristics of innovative services in chapter two, it is easier to determine whether an innovation may be seen as acceptable. Experiences from the past show that only one thing is eventually certain: whatever the nature of an innovation, not all people will accept it and those who do, will not accept it at the same time (Spence, 1994, 41). At the moral or ethical level, the introduction of an innovation involves always the attempt to change the behaviour of human beings, often in rather fundamental ways. The ability to introduce them effectively may be taken as the ability to change how a society is organised, because the desire in most diffusion research is to persuade people to accept new products and practises. (Engel *et al.*, 1986, 524)

Individual's *innovativeness* can be viewed in different ways. Midgley and Dowling (1978) have defined innovativeness as a personality trait reflecting the willingness to form new ideas and to take innovative decisions independent of what other people say or do. Rogers and Schoemaker (1971) introduced the notion of individual's relative innovativeness, i.e., the degree of which an individual adopts an innovation relatively early in comparison with other consumers. (Antonides, Amesz & Hulscher 1999, 1125) Spence (1994) has identified factors behind individuals' innovativeness, or in other words, their *progressiveness* towards innovations. They include predispositional variables, personal variables, and situational variables, intervening variables and behavioural variables, each of which influences one another. The result of the process over time is an outcome variable, which is produced by the interaction of other five variables groups. It is an important variable, because it may cause unexpected changes in future attitudes towards trials, level of adoption, consequent standard of income and resulting quality of life of the individual. (Spence, 1994, 47-49)

Because numerous variables influence individual's adaptiveness, it seems logical to argue

that people differ markedly in their *readiness to try* new products and services. Titles of adopter categories have been numerous. The most innovative individuals have been named 'progressists', 'high-tiers', 'experimentals', 'lighthouses', 'advanced scouts', and 'ultra-adopters'. The least innovative individuals have been named 'drones', 'parochials', and 'diehards'. (Rogers, 1995, 257, 263) Nowadays, the most widely used classification is probably that of Rogers', which is based on the technology adoption life cycle.

Five adopter categories are *'ideal types'*, which are conceptualisations based on observations of reality. Figure 9 shows the normal frequency divided into five adopter categories, with which the approximate percentage of individuals included in each, are located on the normal adopter distribution. From the left, the first 2,5 percent of the individuals of a system are called the '*innovators'*. The next 13,5 percent are the '*early adopters'*. The next 34 percent of the adopters are called '*early majority'*. Between the mean and one standard deviation to the right of the mean are the next 34 percent to adopt the new idea, the '*late majority'*. The last 16 percent are called '*laggards'*. (Rogers, 1995, 262-263) Each group represents a unique psychographic profile that makes its marketing responses different from those of the other groups (Moore, 1999, 11).

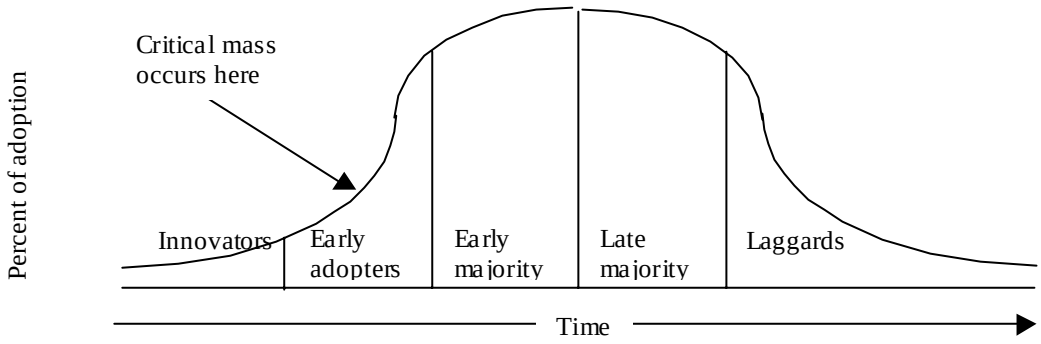

Figure 9. Adopter categorisation on the basis of innovativeness (Modified from Rogers, 1995, 262-314)

The 'innovators' are not the inventors or the initiators of an innovation. They are simply the first people to be persuaded that there is advantage to them in incorporating a particular innovation into their personal way of life. (Spence, 1994, 41-42) They are almost obsessed with venturesomeness. Communication patterns and friendships among a clique of 'innovators' are common, even though the geographical distance between them may be considerable. Usually they are well off young cosmopolites, who are not

restricted to a local social network of family, relatives and friends. They are technically aware of new products, and the uncertainty of newness does not bother them. Importantly to the diffusion process, 'innovators' play the roles of *gatekeepers* in the flow of ideas into a system. (Rogers, 1995, 264) They will forgive ghastly documentation, horrendously slow performance, and ludicrous omissions in functionality, and bizarrely obtuse methods of invoking some needed function. They make great critics because they want to improve the technology. For any innovation, there will always be a small class of technology enthusiasts who will want to try it out just to see if it works. These people are not powerful enough to dictate the buying decisions of others. (Moore, 1999, 31-33)

The 'early adopters' are more locally integrated to social system than the 'innovators'. They have *the greatest degree of opinion leadership* in most systems. They are respected *change agents* and *role models* in the society. (Rogers, 1995, 264) The 'early adopters' are just a little more cautious than the 'innovators' although well ahead of the average person in their readiness to accept and adjust to change. Many of them manage to be securely integrated with the local social system in a way that the 'innovator' never has been and is never likely to be. (Spence, 1994, 44) These people expect a radical discontinuity between the old ways and the new, and they are prepared to champion this cause against entrenched resistance. Being the first right after the 'innovators', they also are prepared to bear with the inevitable bugs and glitches that accompany any innovation just coming to market. Because they see a vast potential for the technology they dream about, they are the least price sensitive of any segment of the technology adoption curve. Thus, they are easy to sell but very hard to please. (Moore, 1999, 20, 35)

The 'early majority' adopts new ideas just before the average member of a system. They are the most numerous adopter categories, even though they may deliberate for some time before completely adopting a new idea. (Rogers, 1995, 264-265) By occupying a position which lies between the progressive and the traditional, the 'early majority' serve a very useful and necessary function as they are well known as providers of information to many people who would look to them for guidance when personal decisions might have to be made. (Spence, 1994, 45) On the contrary to the 'early adopters', the 'early majority' wants to buy a productivity improvement for existing operations. They are looking to minimise the discontinuity with the old ways, and they desire rather an evolution, not revolution. This is why 'early adopters' do not make good references for the 'early majority'. (Moore, 1999, 20)

The 'late majority' adopts new ideas just after the average member of a system. Adoption may be an economic necessity or the result of increasing network pressures from near-peers. The 'late majority' approaches innovations with a sceptical and cautious air, thus they do not adopt until most others in their system have done so. The weight of system norms must definitely favour an innovation before the 'late majority' are convinced, and the most of the uncertainty about a new idea must be removed before they feel that it is safe to adopt. (Rogers, 1995, 265) Generally the 'late majority' will use every possible delaying tactic to extend the limit required for decision making. They are not particularly receptive to mass media and tend to ignore or discredit anything transmitted via the television, the radio or the press. Their acceptance of any new practice is determined by basic financial considerations. (Spence, 1994, 46) Individual's information channels are discussed further on in chapter 3.3.

The 'laggards' are the latest in a social system to adopt an innovation. The point of reference for 'laggards' is the past. They tend to be suspicious of innovations and change agents. System-blame describes most accurately the reality of the situation of the 'laggards'. (Rogers, 1995, 265-266) The group of 'laggards' could actually include (idealistically) small sixth category, that of the resistors, since complete adoption is unusual (Spence, 1994, 43).

3.2 Individual's decision process

No matter how innovative an individual is, when adopting an innovation, he moves through five stages, which sellers should follow when discussing with him. The classic model of adoption was originally published in US in the mid-1950s. It was first defined in the rural sociology literature, and it identified five sequential stages or segments of a process (e.g. Robertson, 1971, 58 and Spence, 1994, 56 and Kotler, 1994, 348 and Aggarwal *et al.*, 1998, 364):

1. *Awareness* as the customer becomes aware of the innovation but lacks information about it - seller should explain unique attributes of the innovation
2. *Interest* as the customer is stimulated to seek information about the innovation - seller should give relevant information and start educating
3. *Evaluation* as the customer considers whether to try the innovation - seller should increase salience of benefits of the innovation

4. *Trial* as the customer tries the innovation to improve his estimate of its value - seller should generate positive attitudes, make cross-category comparisons
5. *Adoption* as the customer decides to make full and regular use of the innovation - seller should help make a choice and the purchase act

Lai (1991) has presented a Situation-Product-Consumer-Intention (SPCI) model, which he had modified from the traditional stimulus-organism-response paradigm. Stimulus, which inputs act on a consumer, is described as 1) incoming information of an innovation and 2) perceived situation needs. The consumer reacts to these two stimuli and makes his decision based on his knowledge about the product category and his individual characteristics to either adopt or reject the new product. (Lai, 1991, 57) See Figure 10.

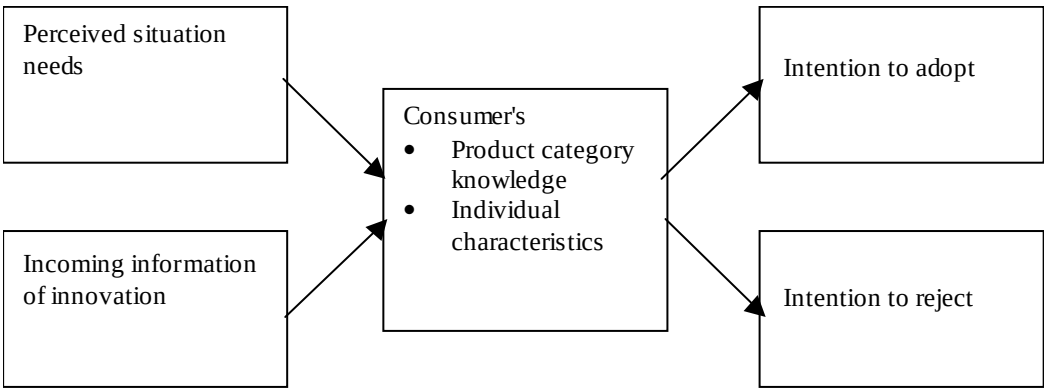

Figure 10. SPCI model (Modified from Lai, 1991, 57)

Lai (1991) has concluded that the potential of situations to affect the adopting intention for a new product depends on the *general attitude to the product* and the latitude in adopting it. In addition, *product category knowledge* is a mediating factor for the intention to adopt the new product. (Lai, 1991, 65-66)

Rogers (1995) argues that the innovation decision process is a process through which an individual first passes from the *knowledge* of an innovation to forming an *attitude* toward the innovation, and further on to forming an attitude, which follows with a *decision* to adopt or reject. In the case of adoption, the individual implements a new idea, and confirms his decision. This is not a simple process, but it consists of a series of actions and choices over time. The individual has also to process his *uncertainty* that is inherently involved in deciding about a new alternative to those previously in existence. The present

model shown in Figure 11 suggests that there are five stages in the conceptualisation of a technological innovation (Rogers, 1995, 161-168):

1. *Knowledge* occurs when an individual is exposed to an innovation's existence and gains some understanding of how it functions.
2. *Persuasion* occurs when an individual forms a favourable or unfavourable attitude toward the innovation. It requires from the individual an ability to think hypothetically and counter-factually and to project into the future.
3. *Decision* occurs when an individual engages in activities that lead to a choice to adopt or reject the innovation
4. *Implementation* occurs when an individual puts an innovation into use
5. *Confirmation* occurs when an individual seeks reinforcement of an innovation-decision already made, or reverses a previous decision to adopt or reject the innovation if exposed to conflicting messages about the innovation.

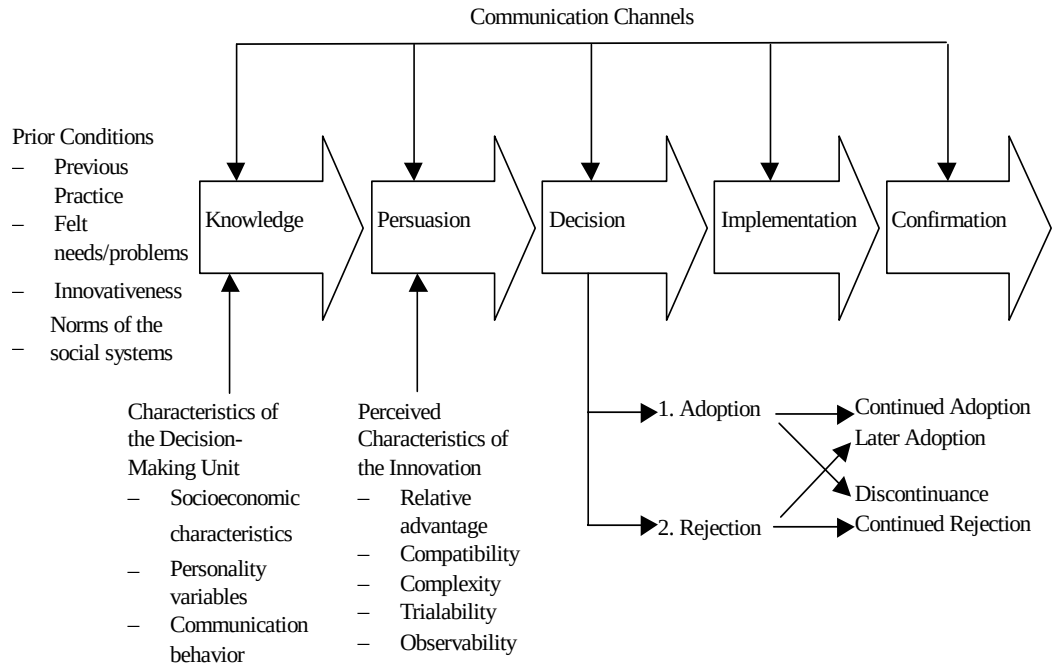

Figure 11. Stages in the innovation-decision process (Rogers, 1995, 163)

The innovation-decision process may either lead to adoption or to rejection, which both may be reversed at a later point. Discontinuance is a decision to reject an innovation after it has previously been adopted. Later adoption as well as discontinuance occurs during the confirmation stage of the information-decision process. In any case, the type of innovation-decision process is related to an innovation's rate of adoption. The rate of

adoption is the relative speed with which members of a social system adopt an innovation. Generally it is measured as the number of individuals who adopt a new idea in a specific period. (Rogers, 1995, 206-207)

Fishbein and Ajzen (1975) have estimated the problems in studying consumer behaviour. They suggest that there is no evident continuum between consumers' beliefs about his further behaviour, his intentions to behave in a certain way and realisation of his behaviour concerning an adoption process. (Uutela, 1976, 50) See Figure 12.

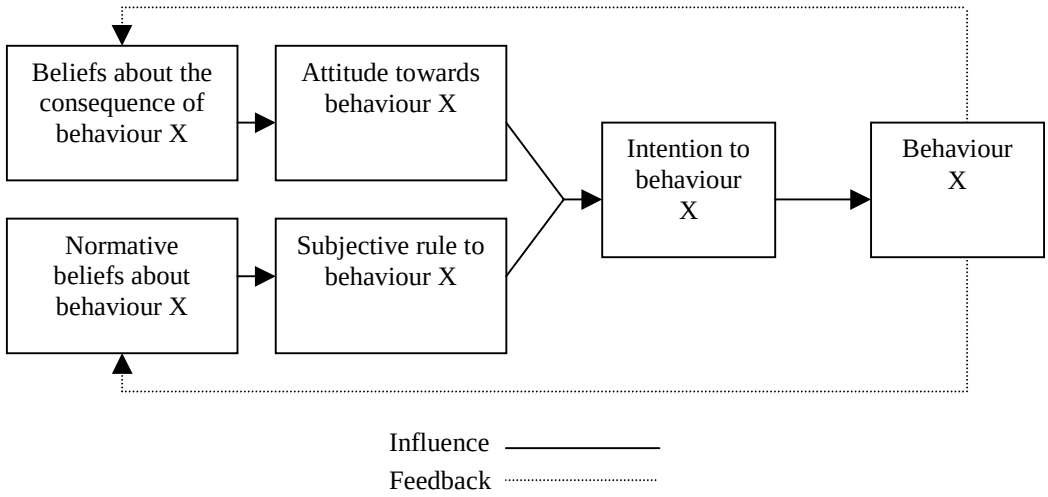

Figure 12. Relationship between consumers' intentions and behaviour (Uutela, 1976, 50)

This finding suggests that especially in case of innovation or a new service, questioning polls about consumers' intentions to adopt do not bring in the trustworthiest information about an innovation's success in the future. In addition, the number of persons involved in the decision process influences the result. In general, the more persons involved in making an innovation-decision, the slower the rate of adoption. (Rogers, 1995, 21) Marketers need to understand who initiates the decision to adopt a high technology product, what is the role of a particular product or service within the lifestyle of a particular nationality. It is important to understand the situation in individuals' home country as well as in countries to which these people have migrated. Research needs to be undertaken for each market segment, since cross-culturalisation can impact on the purchasing behaviour of different groups. In addition, different components of culture have varying levels of impact on purchasing behaviour. (Slowikowski & Jarratt, 1997, 104) First, individual's information channels are presented in chapter 3.3, and then the

influence of reference groups' opinions and opinion leaders' in individuals' decision process is discussed in chapter 4.1.

3.3 Individual's information channels

Communication methods can be classified along two dimensions: extent of marketer control and type of influence on the consumer. See Figure 13. During the concept testing stage to the market introduction stage, marketers usually are the initiators of communication about the innovation. Usually two broad categories of marketer-controlled communication methods are used: *change agents* and *mass media advertising*. On the other hand, marketers have little control over communication methods, which have been shown to have significant effect on innovation acceptance. This is because *word-of-mouth* and *opinion leadership* involve direct contact between the consumer and the source of communication, which usually is a friend, near-peer or a member of other reference group. Importantly to the diffusion of innovations, these types of communication are typically effective at later stages of the adoption process, after the innovation has gained acceptance among ‘innovators’. (Ram, 1989, 22)

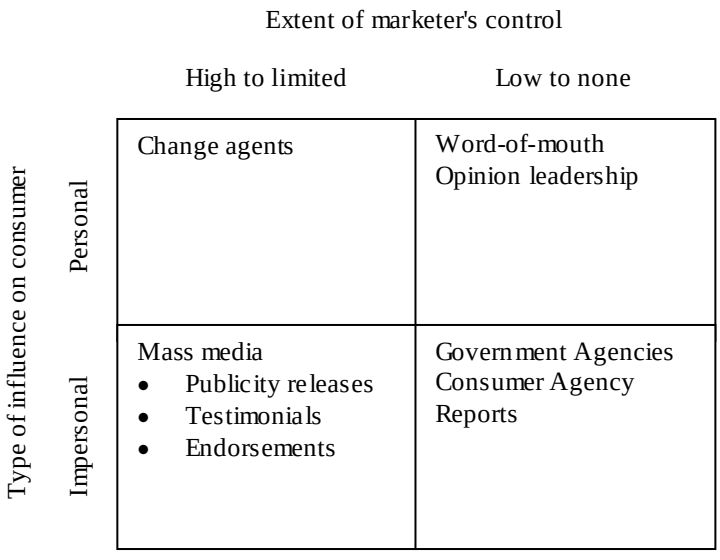

Figure 13. Influence on consumer of diverse information channels (Ram, 1989, 22)

There are different types of people in terms of seeking for knowledge. The characteristics of *'earlier knowers'* of an innovation are similar to the characteristics of ‘innovators’, which were presented in chapter 3.1. The earlier knowers of an innovation have

generally 1) more formal education, 2) higher socio-economic status, 3) more exposure to mass media channels of communication, 4) more exposure to interpersonal channels, 5) more social participation, 6) more cosmopolite characteristics than '*late knowers*'. (Rogers, 1995, 166-167)

In Rogers' (1995) model of conceptualisation of technological innovations, which was presented in Figure 11 on page 8, different phases in utilisation of information channels may be identified. First, at the knowledge stage, an individual mainly seeks *technological information from the mass media* about the innovation, such as what it is how and why it works. This reduces uncertainty about the cause-effect relationships involved in the innovation's capacity to solve an individual's problem. Then, at the persuasion and the decision stages, an individual seeks *innovation-evaluation information from his interpersonal networks* with near-peers, such as advantages and disadvantages in his own situation, in order to reduce uncertainty about an innovation's expected consequences. (Rogers, 1995, 21)

Lutz (1975) has stated that *word-of-mouth* is especially powerful in cases where the consumer is relatively unfamiliar with the product category or when the product is totally new or is technologically complex. This is why especially in the diffusion of technological innovations it is important to be aware of the fact that negative word-of-mouth is weighted more heavily by consumers than are positive comments. Already when making a decision about trying a product information, the consumer is more likely to pay attention to negative information than positive information and to relate news of this experience to others. (Solomon *et al.*, 1999, 282) In addition, when validating innovative services, consumers have the tendency to believe *personal sources* more than non-personal sources as they are dealing with intangibles. It is therefore advisable to stress the few tangible cues the particular service includes. Service provider's strong image may also help in the customer buying decision process. (Zeithaml *et al.*, 1985, 35) The spread of negative word-of-mouth and the influence of opinion leaders and reference groups are explained more thoroughly in chapter 4.1.

Engel (1986) has argued that "all human behaviour takes place in a social and cultural context. No understanding can be complete without a grasp of how these broad environment variables shape and constrain consumer choice." (Engel *et al.*, 1986, 267.) Dawar (1996) has then found out that there are cultural differences in people's trust in

impersonal versus personal information. The western cultures most characterised by the use of impersonal information seeking are shown to be Denmark, Norway, Sweden and Finland, whereas the countries least characterised by impersonal information seeking are Italy, Portugal and Spain. (Solomon *et al.*, 1999, 287) Even in the new information society, only a part of confidence-building process is technical. This occurs only when people want to be sure that they are communicating with the right person. The major part of confidence is built on the *trust between people* and is therefore dependent on communicators' personal qualities. (Viherä, 2000) Communication in western societies is discussed further on in chapter 4.1.

3.4 Resistance to innovations

Transition from the old market structure to a new one may take some time. This may cause difficulties to consumer, which further on may act as a barrier to the adoption of an innovation. *The partial development of the market structure*, where infrastructure for the old products is working well and the new one is still in its infancy *is likely to hamper the adoption process*. (Aggarwal *et al.*, 1998, 361) A true innovation represents a significantly different way of satisfying the same need or of performing the same function as it is a substitute technology, not just another variation of the same product. It may be recognised that customers do not necessarily resist a particular innovation because they dislike it, but they may resist it because of innovations create change and structural discontinuities, which means changing comfortable life patterns. (Sheth & Ram, 1987, 66)

Current research concentrates in all *in western cultures*, where traditionally the resistance to technological innovations is *relatively low* as may be seen in further discussion, but it is important to understand that innovation resistance is still a *normal consumer response to innovations*. If an innovation meets with resistance from consumers, the adoption process can be expected to begin only after this resistance has been overcome. If resistance cannot be broken down, adoption slows down, and the innovation is likely to fail. (Ram, 1989, 21)

As mentioned before in chapter 3.1, the result of the diffusion process indicates that some members of the social system are adopters, who make easily a decision to try and continue using an innovation, as the other people are non-adopters, whose decision not to

adopt may occur for many reasons. (Engel *et al.*, 1986, 529) Consumer resistance may eventually lead to rejection of an innovation. In fact, many consumers reject newness of products and services; thus marketers must not be misled by the acceptance patterns of a visible minority, in other words, the group of 'innovators', who naturally are keen on technological innovations (Robertson, 1971, 15). Eveland (1979) has classified two different types of rejection (Rogers, 1995, 172):

- ✓ *Active rejection*, which consists of considering adoption of the innovation (including even its trial) but then deciding not to adopt it
- ✓ *Passive rejection* (also called non-adoption), which consists of never really considering the use of the innovation

In general, consumers are likely to resist an innovation if they perceive that it will not meet their needs. It should be noted that two consumers may resist the same innovation for different reasons, and these reasons have effects on the adoption processes of each consumer. This is why marketing firms need to identify the different sources of consumer resistance to innovations in order to minimise the possibility of product failure. (Ram, 1989, 21) Several reasons why antagonism may be raised to new innovations have been outlined (Spence, 1994, 80):

- ✓ People want to protect their social status and their existing way of life
- ✓ People want to prevent devaluation of capital invested in an existing facility or in a supporting facility or service and thus avoid expenditures such as the cost of replacing existing equipment, and of renovating and modifying systems already in operation to accommodate or to compete with the innovation
- ✓ People want to prevent a reduction of livelihood because the innovation would devalue the knowledge or skill presently required as well as their jobs or professions
- ✓ Organised groups have a tendency to force conformity and rigidity inherent in large or bureaucratic organisations
- ✓ Personality, habit, fear, equilibrium between individuals or institutions may cause resistance to an innovation as well as individual's status or similar social and psychological considerations
- ✓ There is a reluctance of an individual or group to disturb the equilibrium of society or the business atmosphere especially if the innovation conflicts with existing laws

So, when consumers resist from adopting an innovation, they are exhibiting resistance to the innovation. This resistance is behavioural and may thus be referred to as *behavioural*

resistance, which is a function of two factors: perceived risk in adopting an innovation and consumers' reluctance to change from current practice or routines to which he has become accustomed. Behavioural risk may also be classified by its cause. If perceived risk is the dominant cause to resist an innovation, the resultant resistance is *risk resistance*. If both perceived risk and habit are present, the resistance is likely to be the highest, i.e. *dual resistance*. The resistance to change based on the consumer's cognitive elements, is termed cognitive resistance, which has two components: 1) need for additional information and enhanced cognitive processing, and 2) prior belief structure. See Figure 14. (Ram, 1989, 23-24)

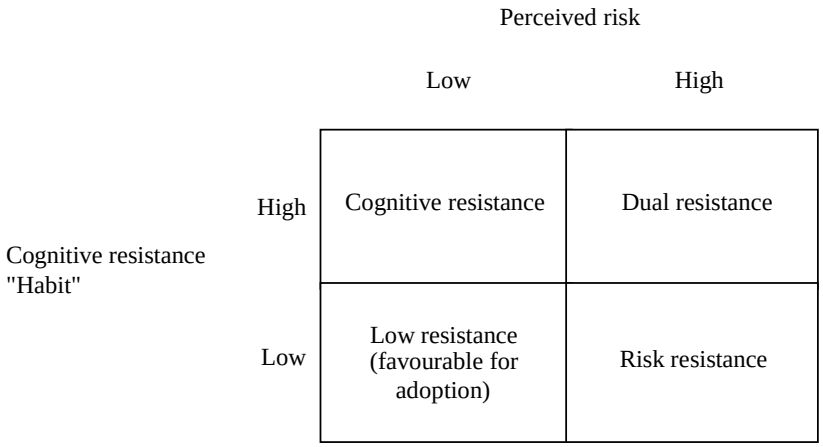

Figure 14. Types of consumer resistance to innovations (Ram, 1989, 24)

All in all, marketers' answer to successful innovation lies not in bowing down to consumer resistance, but rather in understanding the causes of the resistance and making a frontal attack to them (Ram & Sheth, 1989, 13). Following chapters present five areas of customer concern that are sufficiently strong to rise up barriers to the adoption of innovations (Sheth & Ram, 1987, 99):

1. Usage barrier (disruption of existing work flows, practises, and habits)
2. Value barrier (low performance-price ratio)
3. Risk barrier (waste of money, physical damage, or performance uncertainty)
4. Tradition barrier (social norms and cultural attitudes dictating usage)
5. Image barrier (taboos, stereotyping, and negative associations)

These barriers are be classified into two groups in the following chapters, 1) practical objections and 2) psychological blocks.

3.5 Practical objections

As mentioned before, consumer resistance to an innovation can be very intense because innovation disrupts people's lives and at the same time may also be hard to control. According to previous research, consumers in industrialised countries are culturally pro-innovation, as they believe that technology, if properly harnessed, is good for mankind. Thus, the resistance to innovate comes mainly from structural elements. In consumer level it means structural barriers in usage, value, risk, tradition, and image, which are explained further on in the following chapters. (Sheth & Ram, 1987, 27-95)

3.5.1 Usage barrier

The *incompatibility* between innovations and their associated product categories is likely to affect the way in which consumers evaluate them. As the level of incompatibility and perceived (performance, financial, product category and product specific) risk is very high especially in the case of innovative *services* as mentioned in chapter 2.2, consumers are likely to evaluate them unfavourably. As a consequence, innovative services are likely to enter the market at an inherent disadvantage in terms of favourable evaluations from potential consumers. Natural consumer behaviour consists that innovations are viewed with *doubt and scepticism* when they are introduced for the first time. (Aggarwal *et al.*, 1998, 359-360)

Also, Sheth and Ram (1987) estimate that the most common reason for customer to an innovation is that it is not compatible with existing workflow, practises, and/or habits. Innovations that require significant changes in the daily routine require a long market development process, often *extending over generations*. Perhaps field testing the innovation in order to observe how it fits into the customer's operational routine discovers the only solutions to usage barrier problems. Unfortunately, ‘innovators’ must learn by trial and error because it is impossible to anticipate all the problems the customers are likely to experience as they use an innovation for the first time. (Sheth & Ram, 1987, 66-67, 70)

Customers often do not know the capabilities of a technological innovation, and therefore cannot understand its potential benefits. In addition, the problem of '*customer's technical incompetence*' is so great that no standard survey research may be used to assess customer

interest in a new technology. Instead, it becomes increasingly necessary to provide *free trials* so that potential customer can actually use the technology in their natural environment. Thus, *observing* what they do is much better way of developing new product features than asking what they would like to do with a product that breaks new ground. (Sheth & Ram, 1987, 65) Several approaches are useful for helping predict into the future of innovation resistance or adoption (Rogers, 1995, 211):

- ✓ Extrapolation from the rate of adoption of past innovations into the future for other similar innovations
- ✓ Describing a hypothetical innovation to its potential adopters, and determining its perceived attributes, to predict its rate of adoption
- ✓ Investigating the acceptability of an innovation in its pre-diffusion stages, such as when it is just being test-marketed and evaluated in trials.

Current research investigates the results of a survey conducted in Finland, which is one of the leading countries in mobile commerce development. The survey has been executed among the first consumers testing new innovative services over wap-technology. In addition, consumers' perceptions over electronic commerce services is investigated from the results presented in the United States, because that is where electronic commerce trends and businesses models have usually derived from. Also, an extrapolative discussion of current and innovative financial systems is arisen in reference to the innovative mobile payment services.

3.5.2 Value barrier

According to Engel (1986), the most important question to ask in evaluation of the potential success or failure of a new product is "Will it be perceived to offer substantially greater advantage than the product it supersedes?" The issue is not whether the product is objectively better than the existing product but whether consumers are likely to perceive a *relative advantage* or not. It must be held in mind that innovations, which more likely are to succeed, are those that appeal to *strongly felt needs*. (Engel *et al.*, 1986, 532)

Consumers judge innovations against the way they currently do things. Bright future should not be forecasted for new products that offer consumers no advantage over existing products, because naturally, consumers do not bother to adopt them. The innovation fails, because it offers benefits that are unwanted at any sensible price. To

avoid offering consumers innovations that cost too much for the additional benefit they provide, the 'innovators' should ask some simple questions: 1) What additional benefit does this product offer to existing entries? 2) Will consumers have to, and be willing to, pay extra for it? 3) Does the product offer a benefit over existing products that justifies a higher price? (Schnaars, 1989, 77-78) Sheth and Ram (1987) agree to Schnaars as they state that the most important function of innovation is creating value for the customer by improving the performance-price index of existing alternatives. An innovation must offer additional functions or features at the same price, or the same features and functions at a lower price. Unless the innovation either offers a strong performance and/or a strong price values to the customers, there is no incentive for them to change their buying habits. For example, one may question why would anyone like to do business with an automatic teller machine (ATM) unless he hates people. It would appear that the best way for ATMs to provide extra value is not to function as a replacement of the human teller but as an added benefit to the customer in places and at times when customers do not have access to the human tellers. (Sheth & Ram, 1987, 71-72)

3.5.3 Risk barrier

The risk barrier arises because all innovations represent *uncertainty* and pose potential *side effects* that cannot be anticipated completely. Customers know there are risks and try to postpone adopting an innovation until they can learn more about it. This may mean perceived performance uncertainty as the customer worries that the technology may not be as yet fully tested and tried and therefore they think that the product or service may not function *properly and reliably*. Performance uncertainty commonly creates risk-aversion barriers in the area of international trade. Some ways to knock down the risk barriers is to give free trials, testimonials, and do system packaging. (Sheth & Ram, 1987, 78-82) As discussed earlier in chapter 2.2, the risk barrier is even higher when the innovation in question is an intangible *service*.

The risk barrier is closely related to the studied telecommunications sector, where the risk tends to be in information security, which is formed up by several factors. These include *confidentiality* (privacy protection, preventing knowledge leaks to strangers), *authentication* (identification of identity of the end-user, identity verification), *authorisation* (giving access to certain persons to specified parts of confidential information), *data integrity* (restricting possibility to change information without

permission), *non-repudiation* (restricting possibility to change information or functions without permission, and assuring that agreements made are legally binding), and *privacy* (ability to decide when and to whom to pass information). Also, access control and the certainty of the usability of the gathered information are important factors in information security development. Unfortunately, in electronic commerce, which is the precedent of mobile commerce, there is a clear conflict between usability and information security. This may influence also the development of the focus of current research, mobile Internet. See Figure 15. (Ojala, 1998, 26-27)

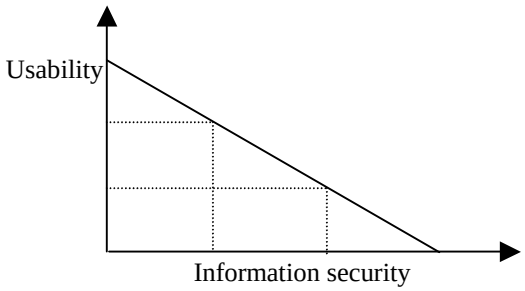

Figure 15. Information security versus usability (Ojala, 1998, 27)

Usability is a concept, which is related merely on terminal development so that systems may be easy to use as well as easy to learn. This notion includes flexibility, consistency, and low level of failures, low level of complexity, easiness to remember, and end-user satisfaction in general. In the worst case scenario, technically excellent innovation does not have success in the markets because of its low usability, which may be related to hardware as well as software usability. There is no easy compromise lowering the perceived risks concerning the information security, but one should at least try to define the levels of *psychological acceptability and psychological security* of an innovation in order to help decision making. (Ojala, 1998, 27-36)

3.6 Psychological blocks

In addition to practical objections, consumers may resist innovations due to the variables related to their psychosocial background, which are explained further in the following chapters.

3.6.1 Tradition barrier

The first major psychological source of customer resistance comes from the cultural change necessitated by the innovation. An innovation is resisted when it requires making changes in the traditions established by the societal culture. In general, one may conclude that the greater the change, the greater the resistance. Diffusion process requires *long cycles of market development*, because it takes a long time for customers to break their traditions and switch to a new technology. It may be stated that time eventually erodes traditional barriers. Besides the virtue of patience, marketers of innovative products need to cultivate the basic values of *respect*, *understanding*, and *education*. (Sheth & Ram, 1987, 84-87)

For example, the videotex, which offers in-home shopping services, met with high consumer resistance because of the changes it created in shopping behaviour. The barrier to use the service was basically its anonymity and the lack of interaction, as consumers could not communicate with personnel to get helpful information. Also the usage of videotext would have required foregoing the enjoyment of the attractive atmospheres of the store. (Ram & Sheth, 1989, 6)

3.6.2 Image barrier

Image is by definition more perceptual than real. One of the great discoveries of the twentieth century has been that images can be consciously altered, even completely fabricated. Innovations acquire a certain identity at inception solely from their origins: product class, industry, and country. If these associations are unfavourable as a result of stereotyped thinking, they create barriers to adoption. (Sheth & Ram, 1987, 90-93)

The image of mobile telecommunications and technological innovations in western cultures is discussed further on in chapters 4.2 and 6.4.

3.7 Cultural influences on the adoption of innovations

As a common social science term, culture refers to the system of values and beliefs, which identify the way of life of people in a particular context. This owes a lot to history as the beliefs, attitudes and practices are mostly inherited from the past. Culture may also

be sensed in relation to the degree of freedom in the society permitting an individual to be 'different'. Previously presented individuals' adoption process is fundamental in innovation studies, but both the physical and the social environment often condition individual actions, as individuals do not normally choose to live in isolation. Thus, innovation studies should always bare the aspect of individuals in a society, because the relationship between the individual and the social environment is of prime importance in trying to understand what forces assist or retard the acceptance of innovations. (Spence, 1994, 49-75)

Slowikovski and Jarratt have proven in their cross-cultural studies that culture and nationality have an impact on the total adoption of technological innovations (Slowikovski & Jarratt, 1997, 104). On the contrary, Huber (1995) has found out that not all people adopt an innovation at the same rate even within the same culture. Some do so quite rapidly, and others never do at all. Cultural differences should be analysed when profiling individuals due to their relative innovativeness. For example, in the American context, ‘innovators’ are likely to have higher educational and income levels and to be socially active. On the contrary, in a European study the same correlation between socio-demographic variables and relative innovativeness has not been found. (Solomon *et al.*, 1999, 293)

In any case, previous research has proven that culture is the most fundamental determinant of individuals' wants and behaviour. Still, it does not exclude the fact that an individual acquires his set of values, perceptions, preferences, and behaviours through several institutions. See Figure 16. (Kotler, 1994, 174)

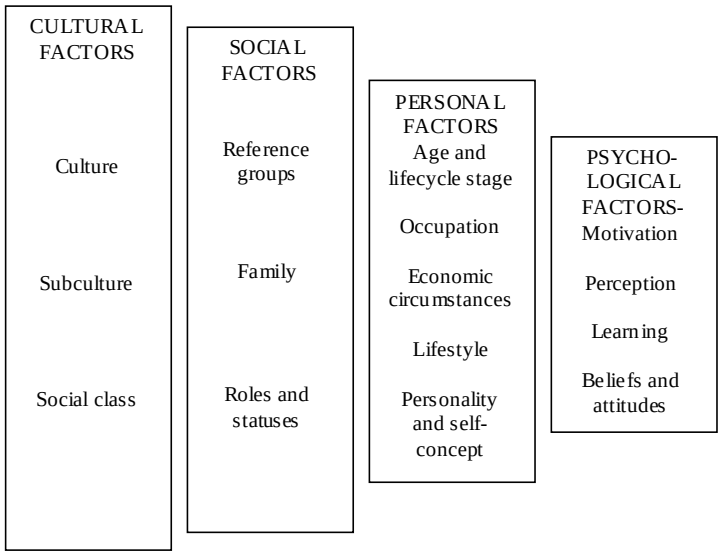

Figure 16. Model of factors influencing consumer behaviour (Modified from Kotler, 1994, 174)

Cultural factors are delivered between individuals in a society through diverse channels. Social existence begins whenever two or more people establish some form of relationship or mode of interaction. This means that all communication may be classified being a social activity, and the physical and mental environment within it is made possible should be called a social structure. The commonest examples of social structures are groups, communities and societies. (Spence, 1994, 75) Therefore, a logical continuation to current research is a discussion of innovations' diffusion in western cultures.

4 DIFFUSION OF INNOVATIONS IN WESTERN CULTURES

Diffusion process is a *macro concept*, where a *new idea* is spread from its *source* to the *ultimate users* by a *certain manner* related to the *specific culture*. (Wilkie, 1994, 328) This chapter presents the factors behind the diffusion of technological innovations in order to form the theoretical frame of reference in chapter 4.3.

4.1 Communication and learning in the society

Communication is the process by which customers and marketing organisations share information with one another to reach a mutual understanding. It is critical to the widespread acceptance of innovations. (Engel *et al.*, 1986, 534) In addition, consumers share their experiences with innovations with each other. It is extremely important in the early stages of the diffusion process that the focus of marketers is on satisfaction of the 'innovators' and the 'early adopters', who tend to be the opinion leaders in a society. In the case of *dissatisfaction*, consumer either takes external action or not. By taking no action, the consumer decides to 'live with' the unsatisfactorily situation. Naturally, consumers who take action are more damaging to the diffusion process. Therefore, whenever consumer expectations are not met, marketers should respond rapidly and fairly to consumer complaints. (Hawkins *et al.*, 1995, 168, 523) See Figure 17.

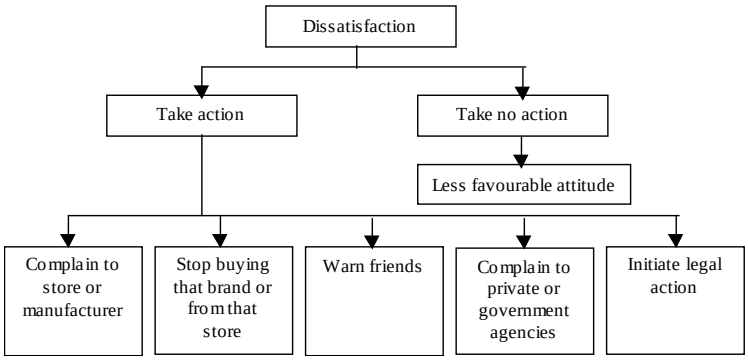

Figure 17. Consumer's responses to an unsatisfactorily situation (Hawkins, Best & Coney, 1995, 523)

Customer decisions about innovative services must be studied somewhat differently than that about other services, because of the emphasis needed on communications within the

social structure rather than on individual information processing. (Engel *et al.*, 1986, 528) One of the most distinctive problems in the diffusion of innovations is that the potential end-users are usually quite *heterophilous*. This difference frequently leads to ineffective communication, as the participants do not talk the same language. (Rogers, 1999, 19) Spence has introduced a model for contextual decision-making, where he combines both individual's and society's innovativeness levels (Spence, 1994, 51). See Figure 18.

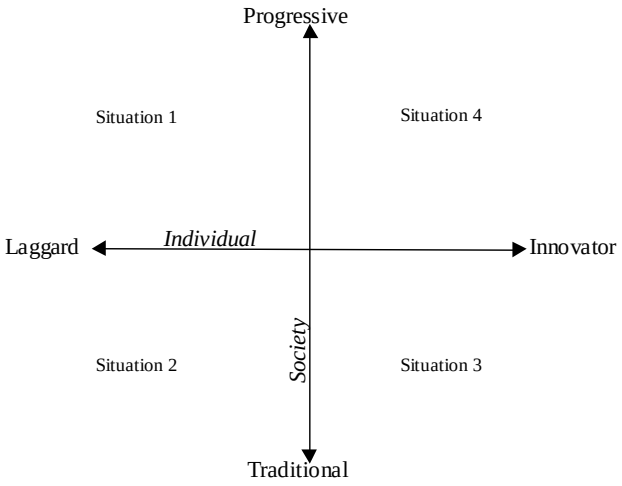

Figure 18. Individual's contextual decision-making in a society (Spence, 1994, 51)

Spence's (1994) frame of reference is very much simplified, but it gives ideas for considering the influences, which might affect the judgement of an individual in a decision-making context within his social environment. Even if most people fall somewhere between, from the extreme ends of the continuums, one may find four contextual situations (Spence, 1994, 51):

1. A less innovative person in a progressive society
2. A less innovative person in a traditional society
3. A more innovative person in a traditional society
4. A more innovative person in a progressive society

As current research concentrates on western cultures, on the basis of the discussion in chapter 1.3, one may argue that situations 1 and 4 are more relevant in the further discussion than situations 2 and 3.

4.1.1 Learning in western cultures

Kim and Mauborgne (1997) have argued that one aspect of the social dimension of an innovation is the pitfall of being caught up in too many continuous innovations due to an ever-finer market segmentation and customisation approach. This may take resources away from more strategic considerations of changing individuals' daily life. (Solomon *et al.*, 1999, 297)

On the other hand, Mahajan and Peterson (1985) have presented that innovations are neither introduced into a vacuum, nor do they exist in isolation. Other innovations exist in the social system and may have an influence on the diffusion of the new innovation. Four categories of innovation interrelationships can affect the adoption rate as well as the cumulative number of adoptions of an innovation. Thus, innovations may be (Mahajan & Peterson, 1985, 39):

- ✓ *Independent* of each other in a functional sense, even though adoption of one may enhance adoption of others
- ✓ *Complementary* to each other as increased adoption of one innovation result in increased adoptions of other innovations
- ✓ *Contingent* on each other if the adoption of one innovation is conditional on adoption of other innovations
- ✓ *Substitutes* to each other when increased adoption of one innovation result in decreased adoption of other innovations.

To support this finding, several product innovations have been consecutively and successfully introduced in the telecommunications sector to the extent that people already use these products, such as fax, teletext, e-mail and the Internet, as well as mobile phones and ISDN technology. This is one of the reasons why one may argue that in western cultures, consumers may adopt new innovations relatively easily. (Antonides *et al.*, 1999, 1123)

A social psychological theory with direct adaptability to diffusion networks is social learning theory, which looks outside of the individual at a specific type of information exchanges with others to explain how behaviour changes. Bandura (1977) is one of the supporters of the theory, which suggests that an individual learn from another by means of *observational modelling*. This means that one observes another person's behaviour,

extracts the essential elements from the observed behavioural pattern, and then does something similar. This could mean that in diffusion processes, any verbal exchange of information does not necessarily have to happen. (Rogers, 1995, 300)

One may argue that humans are social animals. Individuals belong to groups, *try to please others* and pick up cues about how to behave by observing the actions of those around them. The primary motivation for many of individual's purchases and activities is people's *desire to 'fit in'* or to identify with desirable individuals or groups. (Solomon *et al.*, 1999, 269) Innovations may possess a symbolic importance for consumers simply because they are new, and therefore commonly used products and services are replaced by an innovation only for the sake of its newness. It is also possible that new product purchases are seen by some consumers as a path toward status, recognition, and the esteem of family and friends. But still the item must satisfy some need of the consumer. To the extent that innovations are visible to others, they are also a means of conspicuous consumption and subject to imitation. (Robertson, 1971, 14-15) It is possible that innovative services as being intangible and not necessarily visible to others are not likely to be imitated as rapidly as innovative products.

Kotler (1994) has seen individuals' adoption process in a simplified way: *when people act, they learn*. Learning describes changes in an individual's behaviour arising from experience, i.e. most human behaviour is learned. The learning process consists of the interplay of drives, stimuli, cues, responses, and reinforcement. If, for example, an individual has a drive toward self-actualisation, he has a strong internal stimulus impelling action. Thus, person's drive becomes a motive when it is directed toward a particular drive-reducing stimulus object, such as a mobile phone. Whether the individual buys the object, depends on the surrounding cues, which are minor stimuli determining when, where, and how the individual responds to his drive. Stimuli comes from external sources like 1) *commercial sources* (advertising, salespersons, dealers, packaging, and displays), 2) *personal sources* (family, friends, neighbours, and acquaintances), 3) *public sources* (mass media, customer-rating organisations), 4) and *experimental sources* (handling, examining, and using the product). (Kotler, 1994, 187-194)

4.1.2 Influence of reference groups and opinion leaders

According to previous research, information obtained from people who western

individual knows or talks to directly tend to be more reliable and trustworthy than that received through more formal channels. In addition, informal information is often backed up by *social pressure* to conform to the recommendations. This is partly due to the decline in people's faith in institutions. As traditional endorsers are becoming increasingly problematical to use and people are becoming more cynical about all sorts of commercial communications, they turn to sources which they feel are above commercial exploitation, such as friends and family. The trend today in western cultures is that even celebrities are felt to be unreliable. It has been estimated that today, 80 per cent of all buying decisions are influenced by someone's direct recommendations. (Solomon *et al.*, 1999, 281) The influence of opinion leaders and diverse reference groups in individual's adoption process is obvious. For example, Finland being a Scandinavian country is generally classified as an individual culture, but the way Finnish people communicate indicates that it is rather a *culture of strong communities* (Viherä, 2000).

Rogers (1983) has argued that *opinion leaders* are people who are knowledgeable about new products and whose advice is taken seriously by others and who are frequently able to influence others' attitudes or behaviours. (Solomon *et al.*, 1999, 286) Opinion leaders *often but not always are among the first to buy new products*. Simultaneously the *risk* they absorb reduces uncertainty for others who are not as courageous and their hands-on experience makes them more likely to impart both *positive and negative information* about product performance. Antonides's and Asugman's further research published in 1995 has shown some evidence that the flow on influence is not one-way but two-way communication. Thus, the opinion leaders may be influenced by responses of their followers. Also Belk (1971) stated that opinion leaders are likely to be *opinion seekers*, which means that they actively seek for information and therefore are more likely to talk about products with others and to solicit others' opinions as well. (Solomon *et al.*, 1999, 286, 288)

Gergen and Gergen (1981) have defined a *reference group* as an actual or imaginary individual or group conceived of having significant relevance upon on individual’s evaluations, aspirations, or behaviour. The term is used to describe any external influence that provides social cues. The referent may be a cultural figure and have an impact on many people or a person or a group whose influence is confined to the consumer's immediate environment. There are three reference group influences: *informational*, *utilitarian* and *value-expressive*. Informational influence is in question when the

individual seeks information from *experts* or *professionals* or from *near-peers* who have reliable information about products and brands. Utilitarian influence means that the individual wants to satisfy the expectations the near-peers have of him or that his decision process is influenced by the preferences of the near-peers. Value-expressive influence covers individuals *desire to show others what kind of a person he is* by buying things that admired persons are expected to buy. The individual feels that the purchase or the use of a particular product or a brand will enhance the image others have of him. (Solomon *et al.*, 1999, 269-270)

It must be added that reference groups may exert either a *positive or a negative influence* on consumption behaviour. In most cases, consumers model their behaviour to be consistent with what they think the group expects of them. In some cases a consumer may try to distance himself from other people or groups who function as avoidance groups. Gergen and Gergen (1981) have stated that many people even pride themselves on their independence, unique style or ability to resist the best efforts of salespeople and advertisers to buy products (Solomon *et al.*, 1999, 273, 280). Brehm (1966) has stated that there are people who will go out of their way not to buy whatever happens to be in fashion. They spend a lot of time and effort to ensure that they will not be caught in style. Also the fact that people have a *deep-seated need to preserve freedom of choice* may influence the influence of reference groups on individual's decision process. If individual is threatened with a loss of freedom, they try to overcome this loss. This negative emotional state is reactance. (Solomon *et al.*, 1999, 280)

Bearden and Etzel (1982) have stated that reference groups' effects are more robust for purchases that are luxuries rather than necessities and that are socially conspicuous or visible to others (Solomon *et al.*, 1999, 273). Mobile commerce services may be classified as luxuries or at least as services that offer ways of satisfying esteem and self-actualisation needs. This supports the argument that mobile commerce services might be adopted first in the developed countries rather than in developing countries, and that the influence of reference groups and opinion leaders in the diffusion of mobile commerce services is of great importance.

4.2 Elements of the diffusion of innovations

Different diffusion models have been created over time: dynamic diffusion models, multi-

innovation diffusion models, space and time diffusion models, multistage diffusion models, multi-adoption diffusion models, and diffusion models that incorporate influencing or change agents. (Mahajan & Peterson, 1985, 35-36) All in all, four main elements in the diffusion of innovations have been proven to include (Robertson, 1971, 43-53):

1. The innovation (new product, service, idea)
2. The communication through certain channels
3. Time at which individuals decide to adopt the product
4. The social system (interrelated people, groups, or other systems)

Thus, a successful innovation (which most innovations are not) spreads through the population. First it is bought and/or used by only a few people. Then more and more consumers decide to adopt it, until in some cases, it seems that almost everyone has bought or tried the innovation. (Solomon *et al.*, 1999, 292) Thus, diffusion is the process by which an innovation is communicated through certain channels over time among the members of a social system. It is a certain type of *two-way communication*, where messages are concerned with new ideas. The newness of the idea means that some degree of uncertainty is involved in diffusion. *Uncertainty implies a lack of predictability, structure, or information*. (Rogers, 1995, 5-6)

"The idea of an S-shaped diffusion process seems to have originated with the sociologist Gabriel Tarde (1903)" (Robertson, 1971, 32.) Since then, numerous hypotheses and interpretations have been set forth to explain the S-shaped nature of the diffusion curve. Mansfield (1961) hypothesised that the rate of diffusion is 1) a function of the extent of economic advantage of the innovation, 2) the amount of investment required to adopt the innovation and 3) the degree of uncertainty associated with the innovation. Cassetti and Semple (1969) and Sahai (1981) employed 4) a learning perspective when explaining diffusion patterns. Hagerstrand (1967) and Bernhard and McKenzie (1972) offered 5) an information transfer explanation. Finally, Rogers (1983) has offered 6) a communications-based theory interpreting the diffusion of diverse phenomena. (Mahajan & Peterson, 1985, 9-10)

Antonides, Amesz, Bas and Hulscher (1999) support Rogers' sociological interpretation of the diffusion process as they state that the type of innovation together with the type of society defines the shape of the adoption curve. Simple innovations are relatively easy to

adopt, and the diffusion process is likely to be exponential. However, because complex innovations require learning, their adoption curves are more likely to be S-shaped. In addition, uncertainty about the adoption has a delaying effect because more information is needed before adoption. The type of society has proven to affect the adoption process, because in a homogeneous social system, the adoption curve has found to be S-shaped, as social imitation will cause a snowball effect. In a heterogeneous system the adoption will proceed at a constant rate, and therefore an exponential form of the adoption curve is more likely. (Antonides *et al.*, 1999, 1125) All in all, no matter which innovation is being studied or which social group is involved, the diffusion process appears to follow a similar pattern over time. First, one may define a period of relatively slow growth, which is then followed by a period of fast growth, and further on, followed by final period of slower growth. (Hawkins, Best & Coney, 1995, 174). See Figure 19 below.

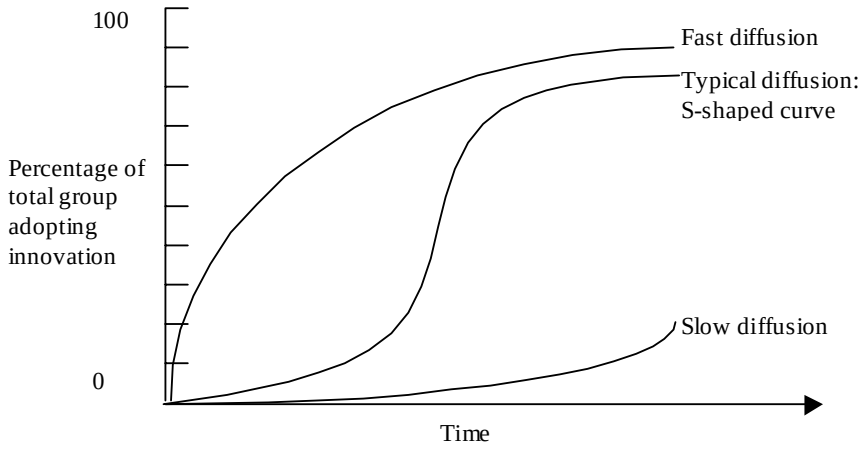

Figure 19. Diffusion rate of an innovation over time (Hawkins, Best & Coney, 1995, 174)

Downes and Mui (1998) have combined the Moore's Law of increasing velocity and Metcalfe's Law of early adoption in order to form a new law, the Law of Disruption. It says that *technology changes exponentially, but social, political, and economic systems change incrementally*. Changes in technologies follow the track of Metcalfe's curve. On the contrary, society changes over time and on incremental basis. Law, for example, evolves to encompass the unique features of innovative technologies at an 'agonisingly slow pace'. See Figure 20. (Downes & Mui, 1998, 29)

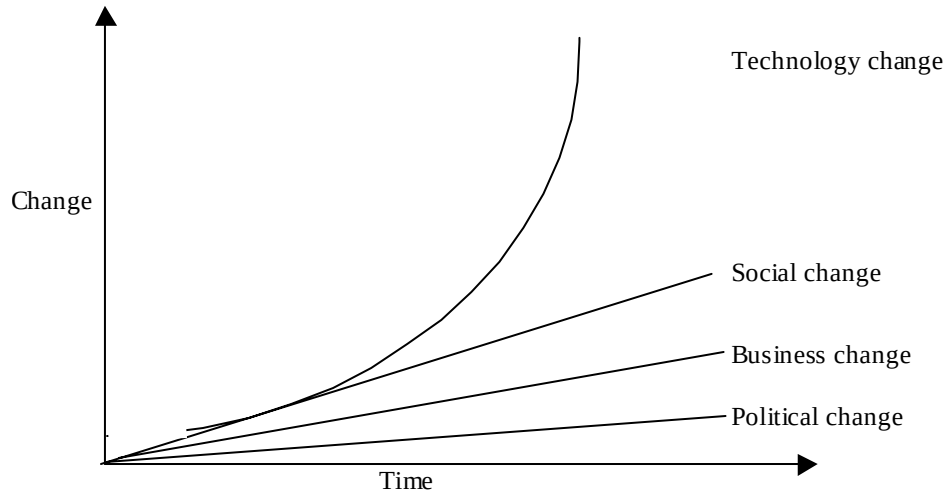

Figure 20. The law of disruption (Downes & Mui, 1998, 30)

Related to that, barriers to the wider diffusion and adoption of advanced information technology-based systems can be attributed to *market conditions*, the *regulatory and legal environment* and the growing complexity of the *role of standards*. One may say that in Europe a sea of regulations governs technological innovations. Current situation is even characterised being 'hyper-regulation', i.e. an environment where the growth in the quantity and complexity of laws and regulations makes it difficult for developers and users to know what the law is and to cope with its effects. The combination of hyper-regulation and the lack of formal procedures for disseminating legal judgements are exacerbating a paradox in the operation of the legal services. (Credé, 1989, 58-59)

Still, as the rate of technological change increases relative to social rates of change, the incidence of killer applications increases. Thus, the killer applications are manifestations of the Law of Disruption, the visible catastrophes that punctuate the invisible workings of Moore's Law and Metcalfe's Law. They are the collisions between exponential technology adoption and systems that prefer to change in even, incremental measures. The degree of disruptiveness of an innovation depends on where in the technology curve they are introduced. As the speed of killer applications' releases increases, the mean time to death of the old technologies decreases. Therefore one may expect that for example e-mail will take less time to ‘kill’ the post office than automobiles took to ‘kill’ the horse and buggy. (Downes & Mui, 1998, 33) Still to reach rapid diffusion, many determinants should be favourable to the adoption of an innovation (Hawkins *et al.*, 1995, 175-177):

1. Easy trial and easy decision for individuals to adopt
2. Extensive marketing effort in change-prone target market
3. Strong felt need
4. High compatibility and observability
5. Large relative advantage, low complexity and low risk

All of these determinants are presented in the context of mobile communications services' diffusion in chapters five, six and seven.

4.2.1 Crossing the chasm in order to reach critical mass

The critical mass occurs at the point at which enough individuals have adopted an innovation so that the innovation's further rate of adoption becomes self-sustaining. The critical mass is particularly important in the diffusion of interactive innovations like e-mail, mobile telephones, and teleconferencing, where each additional adopter increases the utility of adoption for all adopters. Until a critical mass occurs at a relatively early stage in the diffusion process, the rate of adoption is slow. (Rogers, 1995, 313-333) Metcalfe's Law (created by Robert Metcalfe) demonstrates why computers, telecommunications services, and data storage systems have a tendency to spread rapidly and how they move from early adoption to widespread acceptance in great leaps rather than smooth intervals. It states that the more people use one software or network or standard or game or book, the more valuable it becomes, and thus more new users it will attract increasing both its utility and the speed of its adoption by still more users. In other words, utility = users^2. The essential lesson is that the *time* when the critical mass is reached and thus the speed of adoption *depends on the price* of the product or service for new users. (Downes & Mui, 1998, 12-25)

Moore (1999) argues that there is something wrong with the high-technology marketing model presented earlier in chapter 3.1, which has its origins in the adoption of new strains of seed potatoes among American farmers. As he has studied diverse segments of high technology marketing since 1980's, he argues that every truly innovative high-technology product starts out as a *fad*, which generate a lot of enthusiasm within *narrow markets*, which may be defined as early market. Then comes a period during which the rest of the world watches to see if anything can be made of the innovation. This period is called a *chasm*. It is a period where an unusual degree of company unity is required so that

everyone focuses on making as few mistakes as possible. Thus, he would place *between any two psychographic groups a gap* the first being between the 'innovators' and the 'early adopters'. It is a gap that occurs when the 'innovators' have got enthusiast about the innovation for its architecture, but nobody else can figure out how to start using it. Another gap is between 'early majority' and the 'late majority'. By this point in the technology adoption life cycle, the market is already well developed, and the technology has been absorbed into the *mainstream*. The chasm, which needs the most efforts from marketers, is between 'early adopters' and 'early majority'. (Moore, 1999, 6-19) See Figure 21.

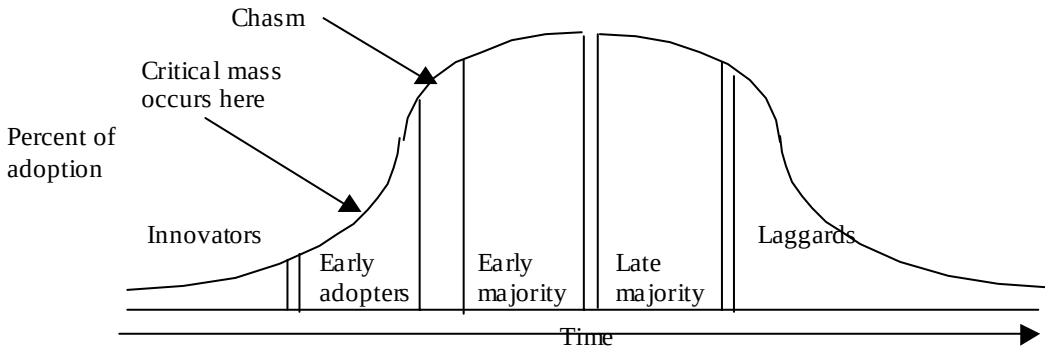

Figure 21. Gaps and the chasm in technology adoption life cycle (Moore, 1999, 17)

The chasm is, by any measure, a very bad place to be. The first peril in the development of a high technology market lies in making the transition from an early market dominated by a few visionary customers to a mainstream market dominated by a large block of customers who are predominantly pragmatists in orientation. Therefore, crossing the chasm must be the primary focus of any long term high technology marketing plan. (Moore, 1999, 5)

Even though Moore's studies have focused mainly on business-to-business environment, his extension to Rogers' adoption categorisation and diffusion curve may be adopted to consumer markets to help managers see the specific features of high technology markets one of the most important being discipline, which high technology management shows most lacking when making high-risk low data decisions. Among other things, he has identified three reasons why companies should focus exclusively on achieving a dominant position in one or two *narrowly bounded strategic target market segment and its target customers* instead of focusing on target markets or target segments when trying to reach

the critical mass and mainstream market for a technological innovation. These are 1) whole product leverage, 2) word-of-mouth effectiveness and 3) perceived market leadership. In addition, since high technology companies do not have real customers in the beginning of the process, they must make them up by imagination after which those target customers can guide companies to developing a truly responsive approach to customer needs. (Moore, 1999, 66-94)

Previous marketing research (e.g. Levitt and Davidow) has presented a concept of a whole product (Moore, 1999, 108). See Figure 22.

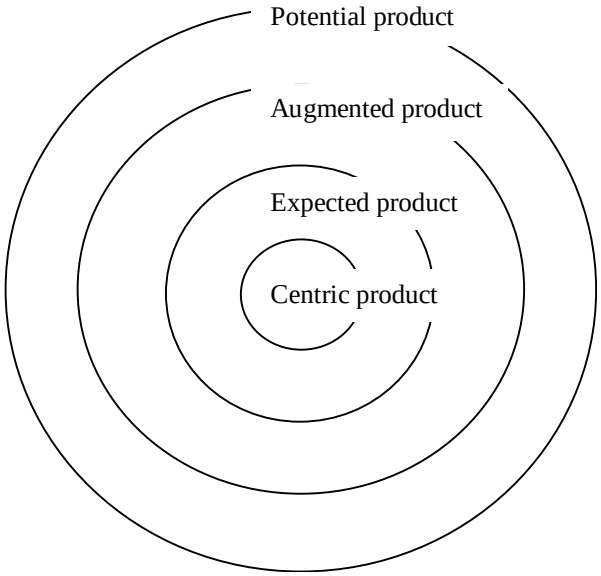

Figure 22. The concept of a whole product (Levitt in Moore, 1999, 109)

The generic product is covered by the purchasing contract. Expected product is what the consumer thinks he is buying when buying the generic product. It is the minimum configuration of products and services necessary to have any chance of achieving the buying objective. Augmented product is fleshed out to provide the maximum chance of achieving the buying objective including additional services. Potential product represents the product's room for growth as more and more ancillary products come on the market and as customer-specific enhancements to the system are made. Moore (1999) argues that at the introduction of any type of an innovation, the marketing battle takes place at the level of the generic product. This is the phase of early market. But as marketplaces develop when entering the mainstream market, the battle shift increasingly to the outer circles. One may generalise that the outer circles of the whole product increase in

importance as one moves from left to right in the technology adoption life cycle. Therefore, to cross into the mainstream market, companies have to first meet the demands of the pragmatist customers, who want the whole product to be readily available from the outset. (Moore, 1999, 110-111)

Moore (1999) argues that with scarce resources companies must operate in tightly bound market to be competitive. This is why by simplifying the initial challenge, the enterprise can efficiently develop a solid base of references. The more tightly bound the market is, the easier it is to create and introduce messages into it, and the faster these messages travel by word-of-mouth. The early market can be reached through the technical press and related media, but numerous studies have shown that in the high technology buying process, word-of-mouth is the number one source of information buyers reference. Therefore, a market-driven company need to establish a strong word-of-mouth reputation among buyers. For an effective word-of-mouth to develop in any particular marketplace, there must be a critical mass of informed individuals who reinforce the positioning of an innovation. Only a segment-targeting company can expect word-of-mouth leverage early in its crossing-the-chasm marketing effort. (Moore, 1999, 66-69)

Moore (1999) argues that pragmatist customers want to buy from market leaders. One of the main reasons why chasm exists is they delay of their buying decisions at the beginning of the introduction of an innovation. They need to get a fix on who the leader will be. This is why segmentation is the only way of 'owning' the market and customers. It should be noted that mainstream customers like to be 'owned', because it simplifies their buying decisions, improves the quality and lowers the costs of whole product ownership, and provides security that the vendor is here to stay. (Moore, 1999, 70-71)

4.2.2 Importance of knowing the core values of the society

When analysing markets on a global basis, customer analysts need to be sensitive to the core values of each culture. Marketing practitioners need cultural empathy or the ability to understand the inner logic and coherence of other ways of life. Further on, the norms and values of specific groups within the larger society are called ethnic patterns. *Ethnic groups* may be formed around *nationality*, *religion*, *physical attributes*, *geographic location*, or other factors. As individual customers may be influenced only slightly by identity with ethnic groups or the ethnic group may be a dominant force on the life-style

and consumption patterns of an individual, it is important to take ethnic influences on customer behaviour into consideration. The core values of a *nation* or *smaller homogenous groups* inside the society are important to marketing strategies for several basic reasons, e.g. (Engel *et al.*, 1986, 364-405):

- ✓ Core values define how products are used in a society
- ✓ Core values provide positive and negative valences for brands and for communications programs
- ✓ Core values define acceptable market relationships

Forecasts of the success of innovations have shown to fail because they mistakenly assume the continuation of long-standing demographic, social, or political trends. Often the opposite occurs, because long-term trends may shift suddenly and unexpectedly. Especially predicting social trends is difficult to make, because people do not behave according to any physical laws. In addition, people's opinions and beliefs may change very soon. (Schnaars, 1989, 97, 100) To complete the theoretical analysis of the diffusion of innovative services, current trends in western cultures are discussed in the next chapter.

4.2.3 Trends in western cultures

One may reasonably speculate that historians will regard the 1990's as one of the most politically, socially and economically turbulent decades in modern history. Radical political and market changes throughout Western and Eastern Europe are reflections and outcomes of intense social change in European societies that have been underway since the 1950's. (Solomon *et al.*, 1999, 303-304) As we live in an age of anxiety, where fast changes to social, economic, and political systems have been shaped by digital technologies, *most people are feeling dazed* (Downes & Mui, 1998, 11). Especially older people are lost in the fast development of electronic and mobile telecommunications in new information society (Viherä, 1999, 2000).

4.2.3.1 Revolution towards information society

Today western cultures are governed by the lack of prospect, void of values and collapsed authorities. It is characteristic to the current modern society to have a sovereign conflict of values, ideas, and notions. Money as an instrument is taking an even stronger status in our post-modern society. People are moving from the real, concrete world to digital,

virtual reality. Where the 80s were the phase of computer revolution and the 90s were the phase of multimedia revolution, the beginning of the new millennium is predicted to be the beginning of the revolution towards information society. Sociologists see the change from diverse perspectives. At the same time technophile optimism (e.g. Attali (1990)) and nihilistic pessimism as well as cynical fear of the future (e.g. Postman (1985-1992) and Roszak (1988-1992)) are arisen to global discussion. (Inkinen, 1993, 19-23)

Not so different from Western Europe, the United States is so large and diverse that it encompasses many values (Engel *et al.*, 1986, 365). Schiffman and Kanuk (1987) have concluded that American individuals are exposed to the following values: achievement and success, activity, efficiency and practicality, progress, material comfort, individualism, freedom, external comfort, humanitarianism, and youthfulness (Kotler, 1994, 174). For Americans the most important values in life seem to be effort, entrepreneurship and work towards material well being, two-fold moralising, mastery over nature, optimism, egalitarism, and humanitarianism (Engel *et al.*, 1986, 365-371).

Ger and Belk (1996) have found out that western products are admired in many contexts in Asia or Africa. Also in the developing economies of Eastern Europe, western products are seen as 'better', more 'developed', and generally of a higher status. Likewise, in Western Europe, the American way of life has a significant impact on the adopting behaviour of various groups in society although a lot of differences may be found between Western European countries (Solomon *et al.*, 1999, 297).

The Ministry of Education in Finland defined the needed level of communication skills in the information society in 1996. It classified the concept in three levels: 1) personal communication skills of an individual, 2) professional communication skills and 3) reading and writing skills in the interactive media. Today, in the beginning of the information society, one may see lots of alarming differences between individuals' communication skills. (Viherä, 2000, 124) In previous research, only little attention was paid to individuals' communication capabilities, because they were expected to change and develop as if on their own accord. Communication technologies are nevertheless changing faster than people's everyday habits and routines. Viherä's research of contemporary Finnish society show that on a wider scale, people do not yet possess the communication capabilities required fulfilling the promises inherent in the concept of information society. Even the interviewed opinion leaders wished they could use

innovative communication technologies better. (Viherä, 1999, 337-345) This finding is shocking for the forecasters of mobile communications services future when bearing in mind that Finland is reportedly one of the top countries in the world with regard to the frequency of mobile telephone extensions.

At the same time, personal mobility with ubiquitous access to telecommunication services has become the vision for the leading edge telecommunications players world-wide (Romtec, 1999, 2). According to Merrill Lynche's studies in 1999, the following trends in the society changes the way people view technology and mobility (Farrell, 2000):

- ✓ The emerging society is more computer literate especially in Europe and the United States and in some Asian markets.
- ✓ There is an increase in travel and being mobile or on the move.
- ✓ In some circumstances especially amongst self-employed workers, there is a blurring between personal and professional lives.

It is important to note that utopias and dystopias are continuously being born and dying, and the concept of western information society is a part of the continuous utopian tradition, which is a trademark of the history of western civilisation (Inkinen, 1999, 274).

As a conclusion, people in the information society are required to adopt new technologies more and more rapidly. Unfortunately, this may cause slowing down the diffusion of mobile commerce services as the time needed to learn how to use new applications may not be enough before even newer applications already arrive into consumer markets. Also, social learning requires time especially in the diffusion of intangible services.

4.2.3.2 Heterogeneity of people

Current research is limited to those countries presented in the chapter 1.3. When analysing trends in western cultures, one basic factor is the level of homogeneity. Globally, it may be presented for example by the amount of people living in towns, which indicates the relative amount of urban population. Figure 23 shows that over half of the population in each country included in current research lives in a town. This indicates one aspect of the level of homogeneity in western cultures, as one may assume that people live close to each other, which leads to more effective social learning processes.

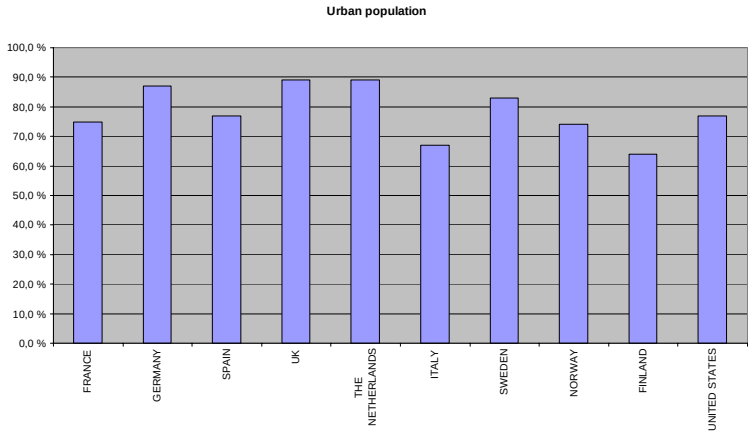

Figure 23. Urban population in western countries included in current research (Modified from Sonera Research Services, 10/2000)

It has been argued that members of families make most purchases of consumer goods and related innovations. Therefore, it would be essential that consumer analysts understand how buying occurs within families. What these families spend is influenced heavily by what they earn which in turn is heavily influenced by characteristics of the family: number of earners, presence of children, education, and so forth. (Engel *et al.*, 1986, 269) On the other hand, there is a great deal of *family diversity* throughout western cultures, and the conceptualisation of family is based on ideology, popular mythology and conventions that are firmly rooted in each country's historical, political, economic and cultural traditions. Figure 24 provides an overview of the many components, which make up notion of a modern household (Solomon, Bamossy & Askegaard, 1999, 304-305).

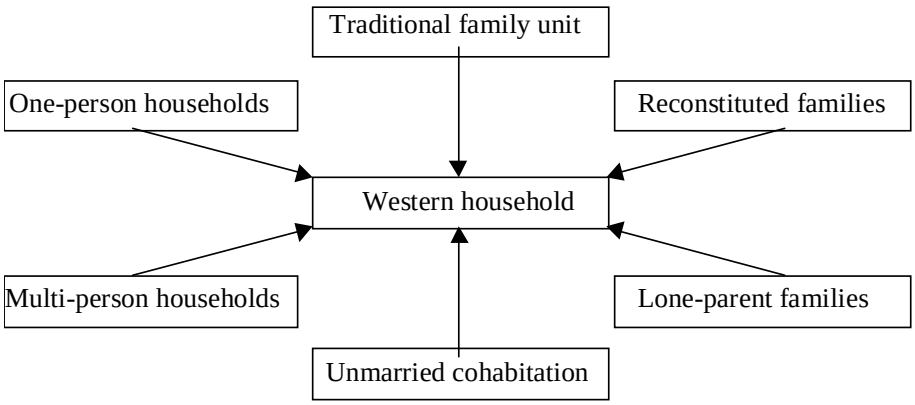

Figure 24. Components of the modern family in western cultures (Modified from Solomon, Bamossy & Askegaard, 1999, 305)

Eggerickx and Bégeot (1993) have concluded that despite of a long history of international collaboration and the growing need for reliable information about demographic trends in Europe, by the mid-1990's data on households and families in the European Union were still far away from comparable. Boutilier (1993) has argued that as traditional family living arrangements have declined, people are placing even greater emphasis on the role of siblings, close friends and other relatives to provide companionship and social support (Solomon *et al.*, 1999, 304-305). In addition to that, as the post-World War II consumer was typically part of a middle-class family with two or three children, this is no longer the case, because since then, demographic patterns have shifted dramatically leading to market diversity in terms of needs, wants and resources of consumers. (Sheth *et al.*, 2000, 59)

Four major demographic variables are increasing the variance in consumers' needs, wants and resources in the United States: *life-style diversity*, *ethnic diversity*, *income diversity*, and *age diversity*. The traditional family (breadwinner, homemaker, and children) is a small minority today. As a result, there will be greater emphasis on time and place convenience. The United States is also moving toward ethnic pluralism, as some minority groups grow rapidly. This will greatly raise the diversity in demand. At the same time, American society is increasingly polarised in terms of income levels with the decline of the middle class and the rise of the affluent and the 'new poor'. As a result, simultaneous extremes in product categories should be developed: more premium products and more economical ones. Today, there are five adult generations coexisting and co-living for the first time: pre-war (before 1914 birth rate), silent majority (1914-1946), baby boomers (1946-1964), generation X (1964-1980), and generation Y (born after 1980). This has created huge diversity in demand. For example, baby boomers are typically dual earners for whom time and convenience are very important. In contrast, the needs and wants of older generations focus toward health, wealth, safety-security, and recreation. All in all, demographic diversity in consumer markets has led to a high level of diversity in needs, wants, and such resources as time, expertise, and money. (Sheth *et al.*, 2000, 59-60)

Current trend in a western European society is a weakening importance of traditional communities such as stability in working environment and deep relationships with colleagues or a strong sense of family or neighbours. New communities are based on unifying forces of different lifestyles, economical or ideological objectives. In order to live in a community, individuals do need to strengthen their relationships to others by

different communication methods. This means that individuals need to rely on strangers more and more often as there is no more communities with strong feeling of trust and companionship. Now, in the beginning of information society, researchers have started to speak paradoxically about communities - in a virtual environment. In modern communities the bonds between people are not as strong as they have used to be in agricultural or industrial societies. Weak bonds between acquaintances are related to the fact that people are not in tight and frequent relations with each other. Still individuals, who do not have many weak bonds, drop out of the development of the society. This is why diffusion of new ideas and scientific breakthroughs takes a long time. Also the segmentation of people in diverse sub-cultures and groups may slow down innovation diffusion processes. On the contrary, young people seem to have extremely good capabilities to create massive electronic networks with weak bonds. This explains partly why such innovations as the Internet, electronic mail or mobile phones have been a success especially among youngsters. (Viherä, 2000, 90-95)

As a conclusion, even though western cultures are quite similar with each other when compared with Asian or African cultures, previous research suggest that western cultures included in current research are not homogeneous inside its cultural limits. This finding may mean that communication between members of a western culture is difficult and therefore social learning takes a lot of time. This may result to slow diffusion of innovations in western cultures.

4.2.3.3 Techno-optimism and the role of telecommunications

According to Roszak (1986) an example of techno-optimistic expectations concerning information society is an extreme manifestation of the effect that loving machines are becoming in people's lives. He argues that companies and governments have made people believe that new magical machines would make their lives happy and complete. (Inkinen, 1999, 266-267) Eerikäinen (1994) adds that in western cultures there is a situation where the *techno-philosophers* of our time are presenting viewpoints expressing not only the interrelationship of technological and cultural change, but also the *hopeful image of new technologies*. This includes new forms of media, opening the way from our present situation to a more developed future situation, which we cannot yet experience as present, but which is already formed as conceptual model, as a utopia (Inkinen, 1999, 275).

For example in Finland, where the diffusion of both mobile phone and the Internet are high, almost the whole of the Finnish population seems to support the technology driven trend. This is seen to be a result of the positive effect of the success of Nokia Mobile Phones. An interesting finding is that there are no remarkable differences in how young, middle aged or old people react to the new information age. Whereas women seem to be worried about the potential negative side-effects of the current societal development towards more digital lifestyle, men believe that information technology may even add social interaction between people. (Iloniemi, 1999, 71-74)

In a survey conducted in the rural, suburban and urban households of the United States by Berrier Associates in March and April 2000, American consumers confirm that electronic goods and services have become nearly ubiquitous in North American households. Only those over the age of 55 tended to indicate less favourable attitudes toward technology along with a much lower level of adoption of technology. The formed digital innovation index is considered to be a powerful proof-point of the rapid adoption and the impact of technology throughout American society. It shows that most people are embracing technology, and that is having a positive effect on Americans' attitudes toward life. In any case, Americans are shown not to be technophobes, but open to adopting new technologies. (Berrier Associates, 2000)

Despite of that, it must be remembered that cultural differences are obvious between different countries belonging to the concept of western cultures. For example, adoption of new methods and machines have shown to take much longer time in Germany than in Finland even though German people in general are very keen on electronic equipment. Germans go along with a few technical problems, but they expect business concepts be settled before the launch of innovative services. Yet, German Internet users are demographically identical to Internet users in other western cultures. (Järvinen, 1998, 49-52)

Media researcher Inkinen (1999) states that technology centred arguments often represent 'heavily mythologised' and 'naive' views on contemporary technologies and their cultural implications. This approach includes to the notion of technological determinism. The strategic political decisions of the United States have had a significant influence on the political orientations of other western nations towards the information society. Recent documents, reports and strategies presented in the United States, Asia, and Western

Europe see information and media technologies as new, progressive and even revolutionary tools for community building, telecommuting, tele-democracy, the so-called information society. Naturally, those expressing the greatest interest in the network based multimedia markets of the future are telephone and cable television companies and multinational entertainment concerns. According to political and economic rhetoric, 'Great Change' and 'Great Transformation' are once again being realised. In western countries, humanity is only a part of dramatic and inevitable cycle of events, which are said to shake the very foundations of the western culture. As the new fashion technology and as an important expression of the spirit of the age, it is easy to uncritically believe in the role of computer networks and telecommunications technologies. It is thus not surprising that many new democracies and underdeveloped Asian countries have also put together their own plans for national information highway development. (Inkinen, 1999, 243-257)

Another aspect is the *fear* that the information society to be created is more of an unrealistic utopia. It appears that the computer has brought new social, psychosocial, and ethical problems into western society, such as unreliable programs, computerised crimes, copyright violations, hackers, crackers, computer viruses, questions of privacy and general information overload. (Inkinen, 1999, 273-274)

As a conclusion of the techno-optimism, one may see simultaneous enthusiasm and fear concerning the fast development of information technology. All in all, in western cultures, people have the tendency to be rather open-minded than technophobic. This may accelerate the diffusion of mobile commerce services.

4.3 Barriers in the diffusion of innovative services in western cultures

As mentioned in previous chapters, bringing innovations successfully to market requires some open-mindedness towards change from their potential adopters. Social change on the whole is an orderly process by which an alteration occurs in the structure or function of a society composed of individuals and groups. (Spence, 1994, 16) The following Figure 25 presents an overview of the elements influencing the diffusion of mobile commerce services according to previous research. These elements are then utilised in analysing industry experts' and market research companies' viewpoints on the diffusion of mobile commerce services the new western information cultures.

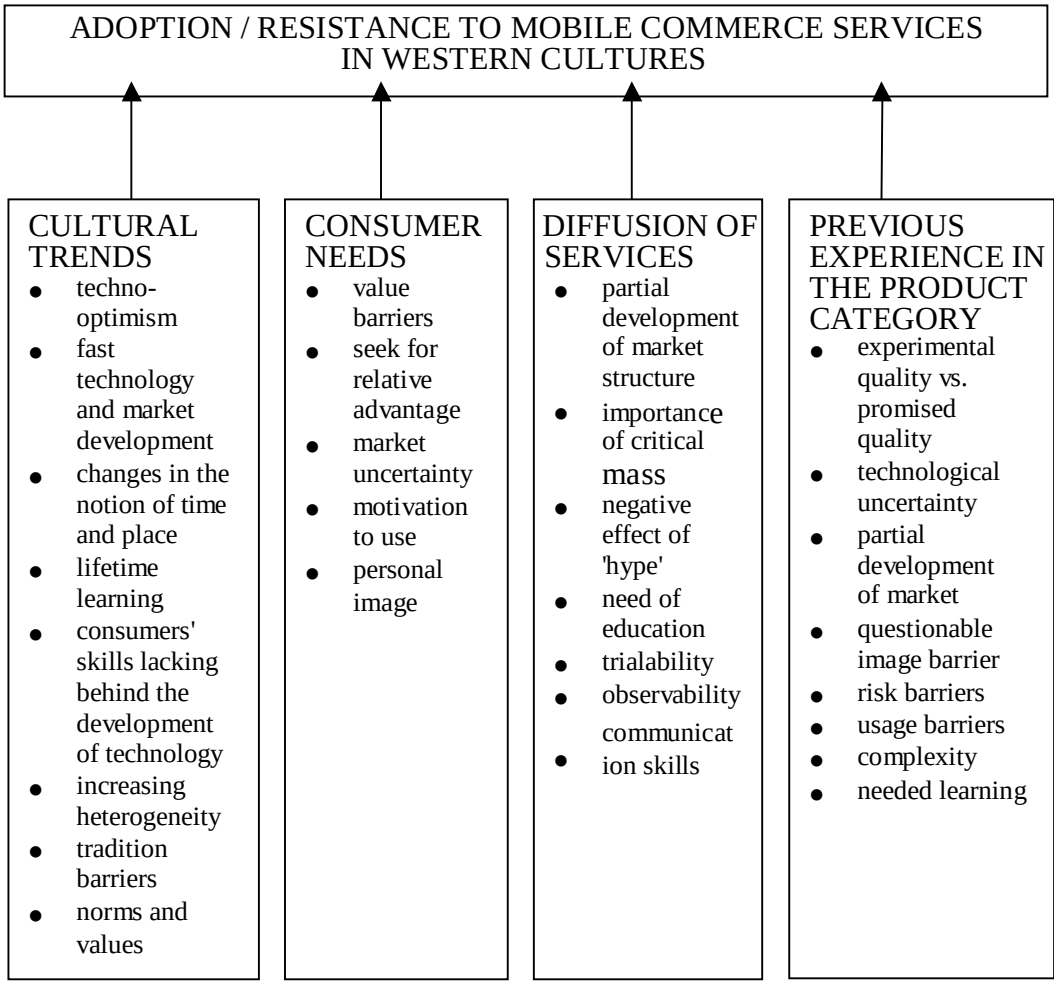

Figure 25. Elements of the diffusion of mobile commerce services

5 TECHNOLOGY AND MARKETS FOR MOBILE COMMERCE SERVICES

In common with the information technology market, the mobile telecommunications sector is experiencing a shift from hardware through software and applications to services. At the same time, the market is becoming more driven by mobile specific content and less by the type of used mobile device. (Jesty, 2000, 1.7) High expectations in rapidly changing business environment have exited global venture capital community by the prospects of potential revenues from mobile commerce services.

In chapters five, six and seven mobile commerce services in western cultures are presented on the basis of a wide range of secondary and primary sources. One may argue that many of these observations are not unique to western cultures, and on the other hand, diverse regional trends may provide some indications of wider mobile commerce market.

5.1 Notion and drivers of mobile commerce services

There is no simple notion for mobile commerce services, because only a few applications have been introduced so far, and it is mainly (only) the technology, which help service providers to concept future services for mobile commerce use. As ambiguity about the type and extent of customer needs that could finally be satisfied by the technology is high in the field of mobile commerce services, one may state the market uncertainty is high. In addition to that, as one cannot know whether the mobile technology can eventually deliver on its promise to meet the articulated customer needs, one may conclude that technology uncertainty in the field is high. Therefore, as mentioned in chapter 2.1, in current research, mobile commerce services are included both in the category of technological innovations and really new products.

Forrester Research concludes the current situation like follows: Early markets predict micro-transactions, not big buys. For example, several million subscribers use mobile Internet services in Japan, but the purchases they make are split between *information services* like real-time stock quotes and *small impulse buys* like cinema tickets. Similarly in Finland, where the diffusion of mobile phones is remarkably high, mobile commerce

sales amount still to car washes and sodas - not to more expensive goods like stereos or sporting goods. (Nordan & Zohar, 2000) Without any monetary transactions, consumers have the ability to conduct simple operations like hotel and car reservations without waiting for an agent. More and more flexibly, one may also buy movie tickets, books and other consumer goods 'on the fly'. (Darrow & Harding, 2000, 39)

With the emerging of new advanced and sophisticated mobile services, the attractiveness of mobile commerce is heightened by combinations of mobile communications to electronic commerce propositions. ARC Group has identified six key drivers to the success of mobile commerce services. They argue that two of the most important drivers are *ubiquity* and *Internet access*, because the combination of these two factors would enable a range of mobile commerce transactions, including retail and financial services on an 'anytime anywhere' basis. (Jesty, 2000, 2.11) See Table 1 below.

Table 1. Mobile commerce market drivers (Modified from Jesty, 2000, 2.11)

Ubiquity	Diffusion of mobile devices bring the 'anytime anywhere' advantages of mobile commerce very apparent
Internet access	The growth of the internet as a world-wide enabler of mobile commerce will continue, and will provide a major reason to use mobile devices
Personalisation	Mobile devices are becoming effectively personal accessories, capable of holding data and enabling access to services, which can be tailored to the needs of the individual
Localisation	Recognising where the user is located and matching services to that location adds a unique value to mobile services
Convergence	Ongoing advances in sophistication, functionality and personalisation will continue to sustain handset renewal in comparison to desktop personal computers

Table 2 presents Durlacher's views on mobile communication and consumers' needs of mobile commerce services for both 'today' and 'tomorrow' (Mueller-Veerse, 1999, 8).

Table 2. Consumers' needs for mobile commerce services today and tomorrow (Mueller-Veerse, 1999, 8-9)

Ubiquity (real-time information anywhere) Reachability (available anywhere anytime) Security (authentication) Convenience (always at hand)	Today
Localisation (tailored services) Instant Connectivity (easier and faster access) Personalisation (customisation and personalisation)	Tomorrow

As previous research shows, consumers have an increasing role in the fulfilment process of services, and therefore companies in the highly innovative field of mobile commerce

services should exercise ‘co-creation marketing’, i.e. the combination of technological and customer orientations in mobile commerce markets where uncertainty is high.

5.2 Innovation interrelationships in mobile commerce sector

According to previous research, four categories of innovation interrelationships can affect the adoption rate of mobile commerce services. As a matter of fact, when adopting mobile commerce services, consumers are dealing with both independent, complementary, contingent and substitutive innovations at the same time, as may be seen from the following discussion.

Clearly, mobile commerce introduces a complex set of services with increased scope to differentiate services portfolios and generate additional traffic, revenue and profits. In the Figure 26, one may see how mobile services may be predicted to evolve over time toward mobile commerce services: 1) Mobile services begin with voice. 2) Then people start using text-messaging services (person-to-person messaging). 3) Further on, information services arouse interest first by 'push'[4]-method, 4) then by more sophisticated 'pull'[5] method. After starting to utilise mobile phone’s value-added services for more than just communicating, people are expected to move towards more close to mobile commerce activities, which are 5) orders and reservations, 6) banking and bill payment, and 7) paying for goods and services. (Bond & Williams, 2000, 4)

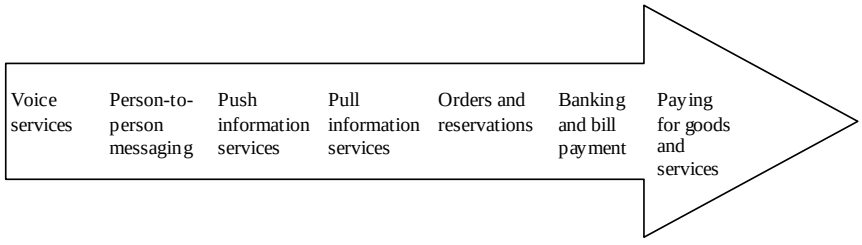

Figure 26. The development of mobile services towards mobile commerce (Bond & Williams, 2000, 4)

[4] So-called 'push' service is a service for which a consumer has a suitable profile and for which he has registered in order to get continuous service. The content of the service depends more on the content provider than on the consumer.
[5] So-called 'pull' service is a service, which consumer orders separately. The content of the service depends on the type of demand of the consumer.

ARC Group (2000) argues that mobile financial services evolution follows a similar pattern of evolution to mobile commerce value added services. In the Figure 27, the services offered by banks and other financial service providers are grouped into four evolutionary stages, from the simplest to the most complex and interactive. Evidence suggests that if banks can eventually achieve a critical mass of customers and services, they will be able to fulfil the role of trusted mobile portal in preference to other players. (Jesty, 2000, 3.2)

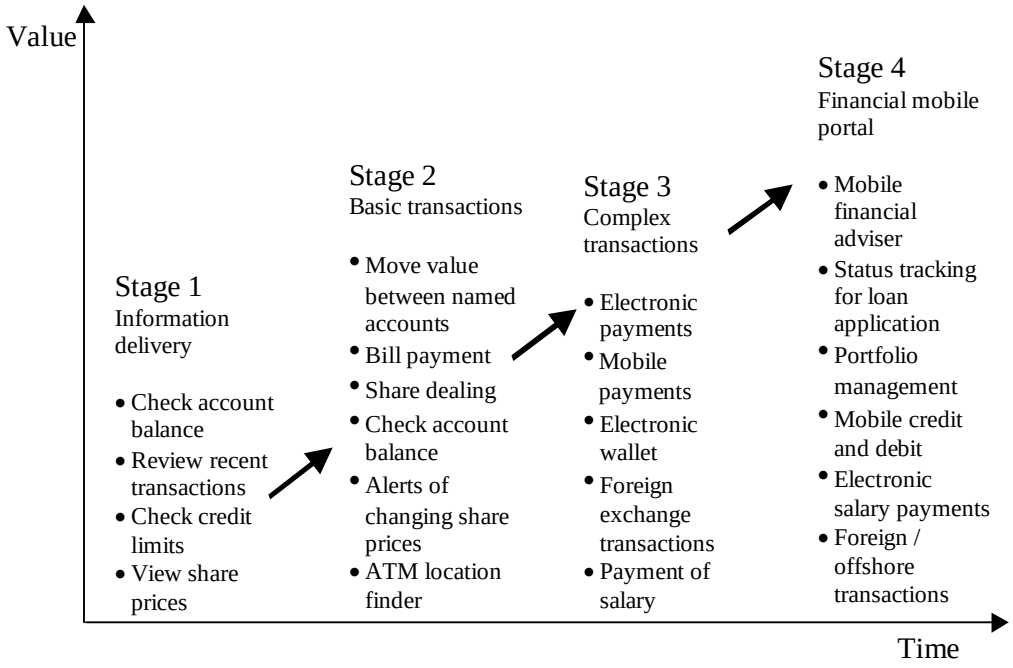

Figure 27. Evolution of mobile financial services (Modified from Jesty, 2000, 3.2)

Romtec's estimation of the mobile commerce adoption cycle for the five years period (1999-2003) combines the potential evolution process of the telecommunications sector and financial sector. See Figure 28.

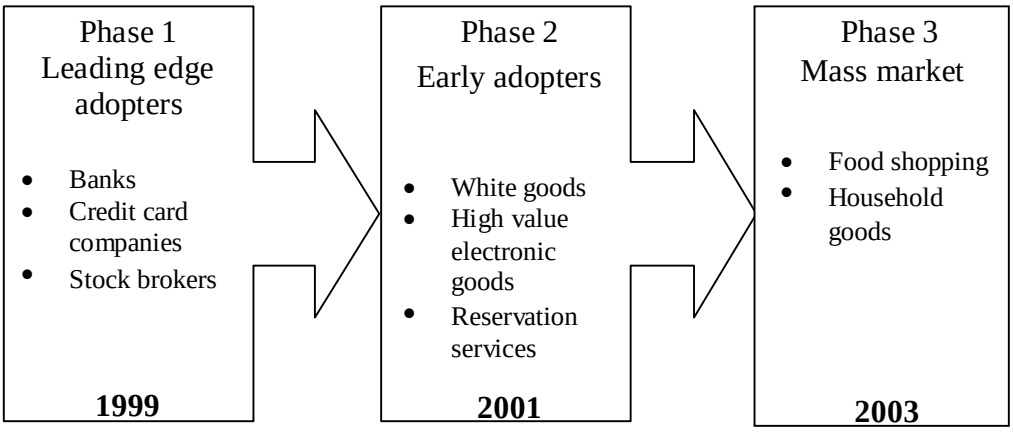

Figure 28. Mobile commerce adoption cycle 1999-2003 (Romtec, 1999, 80)

When thinking about previous research concerning the diffusion of innovative services, the time schedule for the mobile commerce adoption cycle above seems to be too short, as Downes and Mui (1998) have stated in their Law of Disruption that *technology changes exponentially, but social, political, and economic systems change incrementally*. In addition to that, Sheth and Ram (1987) have argued that innovations that require significant changes in the daily routine require a long market development process, often *extending over generations.*

5.3 Technological expectations in mobile commerce services

Durlacher's researchers believe that Western Europe is about to experience an explosion in the uptake of Wireless Application Protocol (WAP) technology, which will lead rapidly to interim capacity constraints requiring investments in more bandwidth capacity. General Packet Radio Services (GPRS) is then believed to be the first *mainstream technology* to bring the real advantage of mobile Internet to the user through its provision of 'always switched on' connections. GPRS or Enhanced Data for GSM evolution (EDGE) technology will enhance theoretical bandwidths to mach those of Universal Mobile Telecommunications System (UMTS). GPRS/EDGE will not provide any large-scale capacity relief, but it is expected to fill up available capacity even further. Bluetooth technology is also believed to emerge as a key enabler for a very wide spectrum of applications. (Mueller-Veerse, 1999, 4) Unfortunately, previous research shows that this kind of partial development of the market structure, where infrastructure for the old products is working well and the new one is still in its infancy is likely to hamper the

adoption process of new innovations. This is why one may easily admit that technology has probably too much weight on the development of new telecommunications services, because often the process has been first to develop the technology and then wonder what to do with it. The inconvenience with newly designed mobile commerce services is that one cannot execute any market researches as practically no consumer knows what he could do with, e.g., UMTS technology, on the whole. (Junkkari, 2000, C8)

One proof of the 'hype' in the field of mobile commerce is that two international market research companies, IDC and Forrester Research, have been studying the development of mobile commerce, and they have concluded two very different scenarios. IDC estimates that the *turnover of mobile commerce* will grow in *Western Europe* about *250 milliard FIM* until year 2004. Forrester Research estimates that the turnover of the electronic commerce will grow *in Europe* about 1035 milliard FIM until year 2005. The *mobile commerce share* is estimated to be only about *31 milliard FIM*. (Torikka, 2000) Nokia, Ericsson, and Motorola announced their co-operation on a single security standard for mobile commerce together with the estimations on *European mobile commerce* by year 2002 to be as high as 30 milliard euros, which is equivalent of about *180 milliard FIM*. For this to occur, money spent via mobile phones would have to outnumber those spent at PCs by three to one, according to Forrester's projections in 2000. (Nordan & Zohar, 2000) The only clear conclusion of this kind of a discussion seems to be that even to industry experts, the level of success of mobile commerce services and the time scale in order to reach the critical mass and mainstream market is difficult to predicte.

As mentioned before in chapter 1.3, generally it is assumed that economical wealth of the society, high levels of the diffusion of personal computers, mobile phones and large numbers of Internet subscribers probably indicate global growth in the key markets that would determine the future of all mobile commerce services. In addition to that, one may argue that the diffusion of diverse digital financial services has an influence on the mobile commerce services' diffusion curve. As a matter of fact, in the past few decades, banks have introduced a number of payment systems, such as cheques, credit cards, automatic teller machines (ATMs), and banker's cards. The situation today in western countries is that 1) cheque use is declining in favour of other non-cash transaction means, 2) desk-money transactions have been replaced by ATMs, and 3) cash-money transactions have been replaced first by money cheques and later by banker's cards. In most western countries, the volume of money transactions by means of plastic cards is increasing.

Logically, one may predict that these innovations will sooner or later be followed by mobile applications including the smart card. (Antonides *et al.*, 1999, 1124)

In addition to the mentioned technologies, global telecommunications players are already foreseeing the development of so-called 4G, fourth generation mobile telecommunications systems. This may have accumulating effects on market uncertainty as well as on technology uncertainty, which were presented in chapter 2.3. Another additional problem from the consumers' point of view is the unsynchronised introduction of new mobile telecommunications networks, new mobile devices and new mobile commerce services (Interviews, 2001). Previous research has shown problems in clarity and mutual understanding between the technocrats and the consumers. Confusing technological terminology created and promoted primarily by the mass media. In addition to that, it has been shown that too much knowledge of an innovation may even dilute the intention to adopt it, since irrelevant information may disturb consumer's decision process. This is one of the reasons why the compatibility of product and service attributes to consumer needs should be investigated more thoroughly.

5.4 Innovators and early adopters of mobile commerce services

Thompson predicts that in most new technology diffusion cases, the ‘early adopters’ of an innovation will be those most familiar with the innovation's predecessor. This means that the ‘early adopters’ of mobile commerce services would be the current hard users of electronic commerce. (Thompson, 2000) Therefore one may argue that mobile commerce pioneers are probably highly educated and well-off young people just like it was with electronic commerce a couple of years ago (Sahilahti, 2000, 8). This means that demographically measured, the focus of marketers should be on generation X (born 1964-1980) and generation Y (born after 1980). The interviewed experts stated that younger generations are more probable to try and adopt mobile commerce services before others as they are not used to be afraid of technology. Therefore the introduction of more complicated services should be started from entertainment sector, which would focus on satisfying youngsters natural restlessness and their need to belong to a group. (Interviews, 2001)

Schnaars (1989) has raised up an important question for marketers and forecasters: will younger 'cohorts' bring learned habits with them as they grow older, or will they adopt the

products of their predecessors. As a matter of fact, the interviewed experts saw that not only young people are the ‘innovators’ and ‘early adopters’ for mobile commerce services. Another interesting target customers could be business users, people living in suburban areas as well as the relatively growing group of older people, who have time and money to spend while in pension. This means already now the silent majority (born 1914-1946) and very soon the baby boomers (born 1946-1964). Additionally, it has been shown that these people are as eager to adopt new technologies as younger people, because of the trend of admiring youthfulness. There is also social pressure, which tells to keep in touch with new things. (Interviews, 2001)

All in all, when designing mobile commerce services to mass markets, one needs to realise that the profile of the current users of the Internet and of mobile services differ somewhat from average consumers (Järvinen, 1998, 48). This means among other things that services should be designed to more and more fragmented markets as heterogeneity is increasing in western cultures. One may see growing importance of such reference groups as technocrats, sportsmen, diverse ethical groups, business people, nature activists, family centred people, religious groups, etc. You may even speak about the birth of tribes. In any case one may conclude that different people have different needs to satisfy which they need differently justified services. (Interviews, 2001)

5.5 Consumer needs and characteristics of potential mobile commerce killer applications

Previous research shows that many information technology products and services have failed planners' or suppliers' predictions in the past. Research indicates that planners and suppliers have either ignored or underestimated potential users' *real-life needs and concerns*. Contrary to the expectations of players in the field of mobile commerce services, Inkinen (1999) argues that an urbanised, stressed-out and mechanised consumer needs more peace and time for himself, less communication and new technology around him. This is one reason why designing innovative mobile telecommunications services to meet the needs of ordinary consumers is extremely difficult.

Today's solutions fall short because they focus on solving technical obstacles while ignoring the *user experience*. It must be remembered that the growth in mobile communication has not been exclusively a result of the technology. The phenomenal

success of mobile phone diffusion has been due almost exclusively to one killer application: *voice*. One may predict that mobile voice-based communications will continue to be the driving force behind mobile usage for some time to come, because one basic need of a human being is belonging to a group and to interact with people who share the same interests. (Interviews, 2001) In general, the offered mobile phone communication services have proven to be successful because consumers find them *valuable*, *convenient* and *easy-to-use*. Also, mobile commerce services should provide a rich, seamless and compelling user experience through *an elegant combination of client software and content-based services*. (Darrow & Harding, 2000, 39-40) It should be noted that people are mobile and want to reach value added services easily regardless of technology, time or place. Therefore services should follow the consumer, not vice versa. This means that device convergence should be increased in order to reach easily free-access service platforms. The probability of finding a killer application increases the more different kinds of people use diverse mobile commerce services. Therefore you may argue that the focus of marketers should be on mass markets, not on highly differentiated niche markets. (Interviews, 2001)

According to the studies of Gartner's research executed *in France*, *Germany*, and *UK*, in 2000 in general, the consumers are interested in cinema and event bookings and traffic information services provided in their mobile phones. See Figure 29 below.

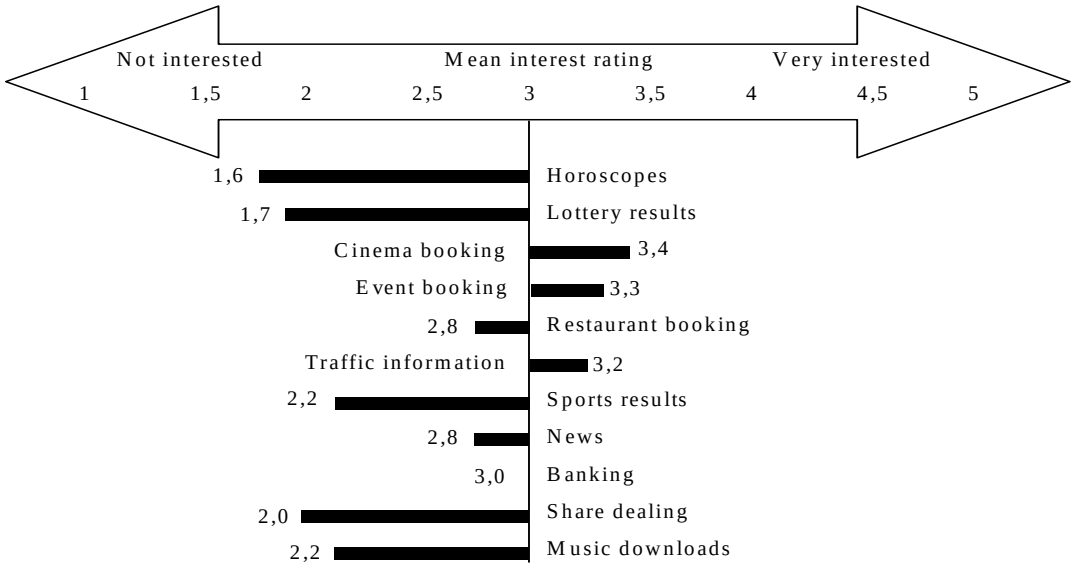

Figure 29. Level of interest in new mobile services (Daum, 2000)

In an opinion poll executed *in Finland* on October 2000, 946 consumers estimated currently available mobile value-added services. When the respondents were asked to choose the three most important features of mobile services out of eight, interests expressed in order of importance were (Taloustutkimus II, 2000):

- ✓ Price level
- ✓ Easiness to use
- ✓ Versatility, fast service without interruptions and utility of the service
- ✓ Informational contents
- ✓ Entertainment contents
- ✓ Way of billing

Clearly, a reasonable price level seems to be the most important feature of mobile value-added services. Women seem to appreciate the versatility and easiness-to-use more than men do. On the other hand, men appreciate the information content more than women do. (Taloustutkimus II, 2000) The result of the questionnaire is interesting, because as much as people told they preferred informational content to entertainment, they told they had mostly been loading ringing tones and operator logos in their mobile phones, which could in fact be classified as entertaining content rather than informational content. This may refer to the phenomenon that people are likely to give a certain idealistic impression out of them, which is something other than what they are or do in the reality. Therefore, as Sheth and Ram (1987) have also suggested, *observing* what consumers do would be much better way of developing new mobile commerce service features than asking what they would like to do with a technological innovation that breaks new ground.

In a questioning poll executed both in the Internet and in personal interviews during spring and autumn 2000, 127 Finnish, Swedish, Austrian, Dutch, Belgian and Irish respondents were asked to measure the importance of described features in a portal of tourism services, which at the time of interviews was under development. No feature was estimated to be extremely important, but on the other hand, respondents' opinions differed a lot. The evaluated features in order of interest were (Koivumäki, 2001):

- ✓ ticket reservations (ice hockey games or movies)
- ✓ hotel room reservations
- ✓ table reservations in a restaurant
- ✓ buying goods or services

In comparison to the questioning poll executed by Taloustutkimus (2000) when international respondents were asked about the importance of barriers in respondents' decision process, the mentioned barriers in the order of importance were (Koivumäki, 2001):

- ✓ high price of the service
- ✓ security problems
- ✓ complexity in using the service
- ✓ lack of Internet access
- ✓ perceived lack of privacy
- ✓ language problems

Interestingly to innovation diffusion studies, particularly young people (24 years and under) expressed their concerns about the high price, complexity, lack of access to services and the lack of privacy. Also, they valued security problems almost as high as the oldest group of respondents (40 years and over). Koivumäki (2001) estimates that especially young people appreciate user friendly applications and services. The result is not so surprising, if you agree with Moore (1999), who argues that the group of 'innovators' make great critics partly because they want to improve the technology.

Still, one may think up several needs, which could be satisfied by mobile commerce services. As previous research has suggested, people have a *deep-seated need to preserve freedom of choice*. This was mentioned also in expert interviews executed in Helsinki in January and February 2001. For example, impersonal, anonymous and secured access to mobile commerce services could help consumers to find certain products and services more easily than in traditional buying circumstances. For example, men might use online auctions to overcome the embarrassment associated with buying romantic items in high street shops, as women might use mobile commerce services to overcome embarrassment associated with buying more technical items such as electrical equipment. Similar situations are imaginable in fulfilling individual's *basic needs* such as sexual drive. Also, related to the need to perceive freedom of choice, mobile commerce services should be designed so that the consumer can himself decide when and how to use the desired services. This means among other things the possibility to switch services in question on and off whenever wanted. (Interviews, 2001)

When developing mobile commerce services, ‘innovators’ should remember that people like *ordinary services* to help them in everyday situations. Such applications would be a possibility to pay for water closet in a shopping centre or replacing the needed coin in a shopping cart by a mobile payment system. Offering the possibility to pay occasional fees for such as public transport or washing houses could be a value added service to make peoples' lives easier. Another complex service to create but easy to use would be a general help line or secretary service under one certain service number through which the consumer could find an answer to any question or problem. As current technology cannot collect 'silent knowledge', and in general people feel more comfortable to communicate with a person than with a machine, this kind of a service includes a lot of human resources. Still, practise has shown that there would be a huge need for this kind of a service. (Interviews, 2001)

Audio and video clips are estimated to be the next wave of applications in the wireless entertainment space. On the other hand, there is scepticism about the short-term (3-4 years) prospects for downloading music and full-length videos. (Interviews, 2001) In addition to entertainment services, mobile banking could be introduced to target young customers, especially in Northern European countries, where mobile phone usage among teens and students is high. This might help to establish *credibility* among young target segments and could begin to cultivate banking *relationships* at the earliest opportunity. (Jesty, 2000, 1.10)

In general, mobile commerce services should focus on satisfying consumers' primary needs. They should be easy-to-use, they should save consumers' scarce resources such as time and money. As a matter of fact, a truly successful mobile commerce service is so easy to use that the consumer does not even realise he is using a new method to access the needed service. As mobile commerce services give the most value added when people are moving from one place to another, service content should be somewhat personal and very local (maximum 30 kilometres from the consumer). Still people who need international or global mobile commerce services are few. Such niche markets could include students, businessmen, successful sportsmen and well off pensioners. In the short run, the ‘innovators’ and ‘early adopters’ are interested in little amusing services such as ringing tones and operator logos. Afterwards, utility services will take the lead, and finally mobile commerce services may offer even truly entertaining services. (Interviews, 2001)

Innovative companies should try to find multiple aspects in defining consumers' needs. New mobile services concept designers should start by studying the needs people have when astir or 'on the road'. (Interviews, 2001) For example, it would appear that the best way for ATMs to provide extra value is not to function as a replacement of the human teller but as an added benefit to the customer in places and at times when they do not have access to the human tellers (Sheth & Ram, 1987, 71-72). Finally, one may conclude that mobile commerce services, which most probably will not reach high success are services that are not time-critical, that require configuration, or the decision process for which depends on touch-and-feel experience (Nordan & Zohar, 2000).

6 ADOPTION PROCESS OF MOBILE COMMERCE SERVICES

According to previous research, in western cultures the resistance to innovations is traditionally relatively low because consumers' perception of new technology having a positive effect on their quality of life. This may eventually accelerate the adoption of mobile commerce services. Still is should be remembered that consumers' resistance to change is a normal and inevitable human response, and that considerable social learning is required before adoption of mobile commerce services may occur. The less technocrats concentrate on consumer needs and the more opinions differ in a social system, the more social learning is required before the reach of critical mass and mainstream market.

6.1 Required learning process

Previous research has shown that during the concept testing stage to the market introduction stage, marketers usually are the initiators of communication about the innovation before social learning process starts by word-of-mouth. In order to help people perceive life somehow differently in current information society, players in the field of mobile commerce should deliver diverse scenarios about the future, utilise 'story tellers' and change agents to deliver diverse public releases, testimonials and endorsements. It must be realised that the image of technological innovations may be highlighted as well as jeopardised by excessive marketing efforts. Marketing should concentrate on concrete, realistic arguments concerning the real value that mobile commerce services could eventually bring to consumers. No groundless promises should be made anymore. Free or low-priced trials may induce people to use services frequently while learning to use them at the same time. An example could be mobile services during the champions league to sportsmen. (Interviews, 2001)

Rogers (1995) has argued that the characteristics of *'earlier knowers'* of an innovation are similar to the characteristics of ‘innovators’. Among other things, they are more exposure to mass media channels of communication and to interpersonal channels than other consumers. A questioning poll executed among the 'innovators' of mobile commerce services in Finland during October 2000 supports this argument. All together 217

employees of a mobile telecommunications operator and students of Internet and multimedia production were asked which was the primary information channel to them concerning wap services. 66% of respondents told that they would have got the most information about services in question from commercial and public sources such as Internet, computer magazines, newspapers and television. 26% told they had got the most information from personal sources such as colleagues and acquaintances. (Soronen & Tuomisto, 2001, 22)

6.2 Several barriers

Ojala (1998) has found out that the first problems in the predecessor of mobile commerce, electronic commerce, occur in the level of end-users *values*, *interests*, and *education*, *level of incomes*, *consumer behavioural questions*, and *liability questions*. Eventually, not many consumers have the possibility to use offered services due to access limitations to the infrastructure. To people who have the access needed, barriers arise around such questions as *easiness to use*, *costs*, and *risks related to information security and privacy*. Still another problem is the *complexity* and *diversity of electronic payment methods*. According to European Commission, there are over 20 different incompatible money-card systems in Europe. Locally this trend may accelerate the utilisation of electronic and mobile commerce applications, but globally a lot more convergency is needed. In addition, it takes a lot of investment and time to *educate* consumers and service providers to use selected payment methods. (Ojala, 1998, 23)

Consumers in contemporary *Finnish society* can be divided into three groups according to their willingness to change social communication patterns (Viherä, 1999, 347):

- ✓ People with access and competence, but without time or motivation
- ✓ People with access and some degree of competence
- ✓ People with no access, no competence and no motivation

When introducing mobile commerce services, consumers need to adopt both tangible products and intangible services. In other words, first they need to buy a mobile device and sign a contract with mobile telecommunications operator giving the access to mobile commerce services. Consumer needs certain means to get an access to new services, and then he is supposed to learn how to utilise the obtained access. Secondly consumer needs to have motivation and some specific skills to utilise the acquired access in order to reach

the offered mobile commerce services. This includes the information-seeking phase, which need to end up in belief in new technology's capacities. Trust is, then, needed in the phase of starting to utilise new mobile commerce services vis-à-vis service providers or potential trusted third party. This means that a consumer needs to go through several decision points before even trying new mobile commerce services. See Figure 30.

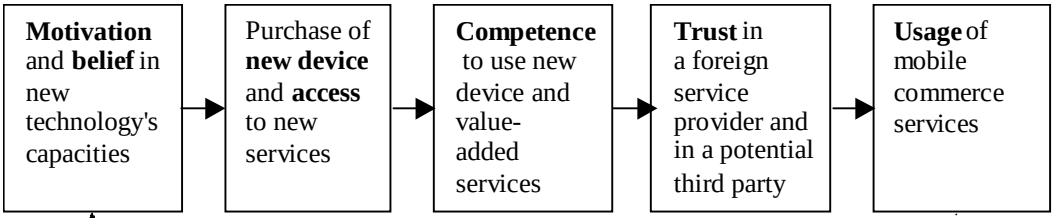

Figure 30. Required decision points in order to use mobile commerce services

According to the findings of the Boston Consulting Group and their research conducted *in the United States* in 2000, the main barriers to purchasing online have been (The Boston Consulting Group, 2000, 19):

- ✓ Credit card related issues (concerns about the security level over the Internet)
- ✓ Seek for social shopping (desire to go out, need of personal touch)
- ✓ Personal information concerns
- ✓ Technical problems (don't know how to use, takes too long to download)
- ✓ Logistical concerns (perception of potential hassle and costs)

Ho and Ng (1994) have been studying adoption of electronic payment methods *in Hong Kong*, where are one of the most advanced users of banking technology in Asia. They state that their research on customer motivations, fears and behaviours associated with new electronic payment systems is *applicable in other industrialised countries*. This is why results of their studies are presented in current research even though the focus of their research has not been on western cultures. The notion of cash-less shopping seems to hold several advantages for banks, vendors and shoppers alike: reductions of transaction paperwork, less fraud and fewer delinquent accounts, guarantee payment, less cash for daily transactions, no need for verification of customer signatures, reduction of transaction time. Many vendors expect a return on their investment and believe that consumers will easily adopt offered mobile services. Unfortunately, despite the potential benefits offered and the extensive promotion efforts made, only a few systems, where consumers are offered a choice of purchase on cash, credit card or online payment with

no payment charge, appear to have achieved a sufficient level of usage to justify the set-up costs in Western European countries. Five different dimensions perceived by consumers when they are using alternative payment methods may be identified. These are 1) physical risk, 2) performance risk, 3) financial risk, 4) psychological risk and 5) time-loss risk. (Ho & Ng, 1994, 27-29)

6.3 Practical objections to mobile commerce services

As mentioned in chapters 3.4 - 3.6, Sheth and Ram (1987) have presented five areas of customer concern that are sufficiently strong to rise up barriers to the adoption of innovations. Three of them are rather practical objections: 1) usage barrier (disruption of existing work flows, practises, and habits), 2) value barrier (low performance-price ratio), and 3) risk barrier (waste of money, physical damage, or performance uncertainty)

6.3.1 Usage barrier to mobile commerce services

Telephone and mobile telephone are easy-to-use communications devices and partly therefore also very popular in certain countries. Other positive qualities are accessibility, personality, possibility to communicate feelings, etc. About 85 % of Finnish people prefer telephone to other communications channels, but still for most people the *value-added mobile commerce services are too difficult to use*. (Viherä, 2000, 116) Therefore, the easiness of use them and easiness of learning how to use them should be *combined* to mobile devices' features as well as to mobile commerce services requirements. This is because to potential end-users, understanding of technological terms and notions may be too difficult, not to mention the utilisation of new kinds of terminals and services. (Ojala, 1998, 33-36)

Consumers in western cultures have been 'spoiled' by the high quality graphics and ease of navigation afforded by the PC in the Internet. At first glance, mobile commerce may appear to be identical to electronic commerce extended with mobile wireless access. However, mobile commerce differs to electronic commerce in several respects. For example, a typical web-enabled mobile phone, by contrast, has only couple of lines of text, no graphics and uses an alphanumeric keypad. One may argue that until mobile phone makers design a product that maintains display quality and ease of navigation, it is unlikely that current Internet users will be clamouring to use their mobile phones for

more than checking an e-mail. (Thompson, 2000) Filenius (1999) argues that as many as 80 percent of potential consumers leaves a virtual shop due to *frustration* caused by the fact that they did not find the product they were looking for. It has been estimated that a consumer has patience for 8 seconds or 4 clicking to find the information he wants. (Hakola, 1999, 51)

According to a research of the Boston Consulting Group executed *in United States* in 1999-2000, the most common purchasing problems in electronic commerce are navigational as consumers have difficulties in finding what they want and getting where they want to go. During one year of research time, 43 percent of all shoppers experienced a failed purchase. It can be stated to be a lot, because it is evident, that every failed purchase attempt carries *potentially harsh and irreversible consequences* for content providers as well as service providers that go far beyond the loss of a single sale. (The Boston Consulting Group, 2000, 22) See Figure 31.

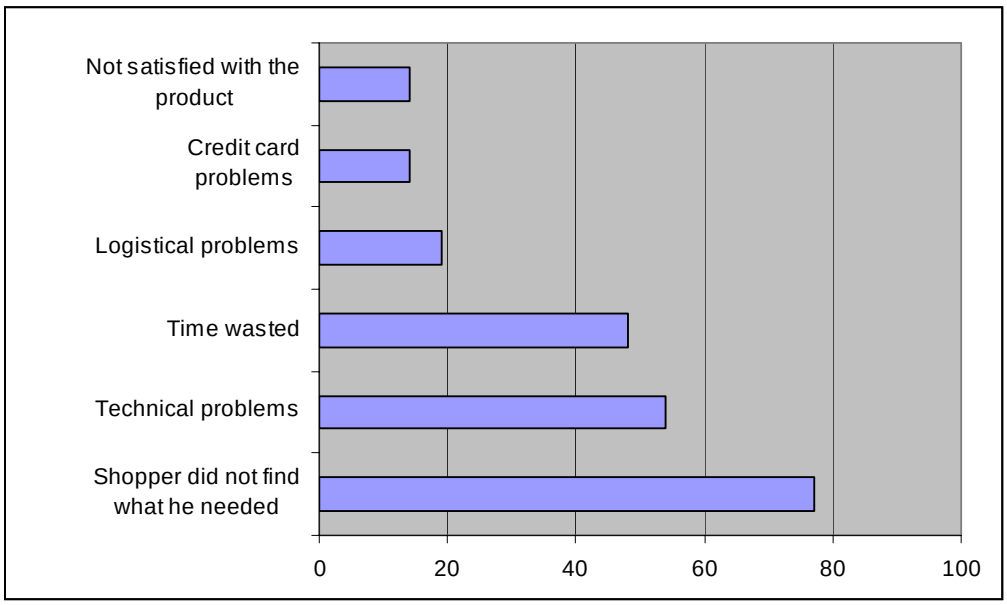

Figure 31. Consumers' reclamation in electronic commerce purchasing (The Boston Consulting Group, 2000, 21)

In reference to the Boston Consulting Group's research, one might conclude that content providers cannot count on online shopping's explosive growth to counter the loss of dissatisfied or disaffected consumers. See Table 3.

Table 3. Impact of failed purchase attempt in electronic commerce (The Boston Consulting Group, 2000, 22)

Consequence of failed purchase attempt	% respondents who had ever suffered a failed purchase attempt stating consequence applies to them
Impact on site where failed purchase attempt occurred	
Consumer will no longer visit the site	28
Consumer will no longer purchase on site	23
Consumer will no longer use the company's online, neither offline services	6
No impact whatsoever	46
Impact on online shopping / purchasing behaviour in general	
Consumer will no longer do shopping online	6
Consumer will no longer purchase online	10
Consumer will no longer do shopping of the kind of products online	4
Consumer will no longer purchase the kind of products online	3

The user of mobile commerce services in many situations must be able to operate the offered services with only one hand. The user may be in environments that are distracting, e.g. crowded or noisy. Therefore interactions must be both simple and small in numbers.

Even as bandwidths improve, it is likely that a substantial portion of mobile commerce will continue to be tailored to the mobile environment to cater for small screens and users' desire to access mobile relevant information rapidly. This will be the case especially if the user's terminal is a mobile phone or personal digital assistant (PDA) rather than a hand-held or portable computer. (Bond & Williams, 2000, 3) The range of handset functionalities and operating systems means an investment overhead in delivering a range of services, which may deter some content providers (Jesty, 2000, 2.12).

6.3.2 Value barrier to mobile commerce services

The success of mobile commerce is not just linked to more services and applications and an improvement in quality through faster connection times but also to the pricing policy of mobile operators. One may have seen that in wireline services, 'defensive' pricing policies by operators have affected roll out, acceptance and application/services creation. (Farrell, 2000) It is a widely accepted fact that neither traditional nor current mobile business models will work efficiently enough in order to offer real value-added mobile commerce services (Interviews, 2001). Unfortunately, so far no internationally accepted business model or revenue logic has been founded. An important question is whether the

end users are ready to pay for mobile services, or do they assimilate them as prolonged Internet services, which have traditionally been offered without any charges. (Takala, 1999, 78) As a matter of fact, according to a study executed by Jupiter Communications in 2000, only 39 percent of active Internet users in the United States would be willing to pay for mobile services. (Montelius, 2000) See Figure 32.

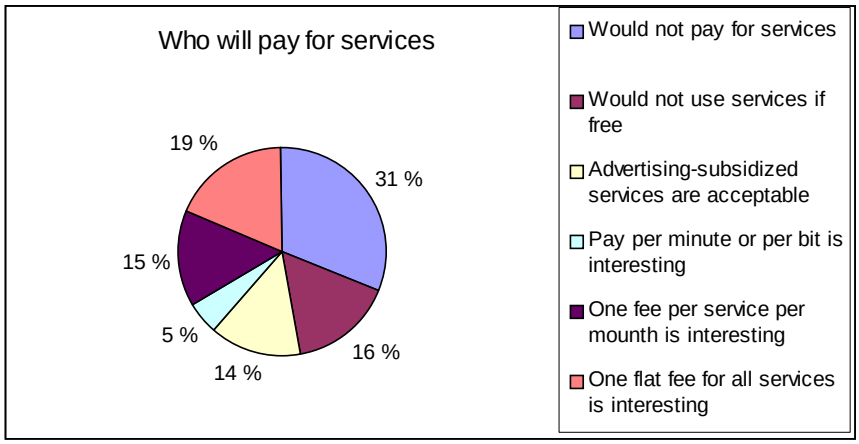

Figure 32. Willingness to pay for electronic services (Montelius, 2000)

On the other hand, interviewed industry experts claimed that consumers are willing to pay for mobile commerce services if they offer clear value compared to the effort of learning to use new applications, utilising them and paying for the usage. (Interviews, 2001)

When estimating the importance of value barrier to mobile commerce services, one must remember that cultural differences do certainly occur. One proof of that is a questioning poll concerning portal of tourism services, for which 127 respondents were regrouped in two answer groups Finns (66%of respondents) and others (Swedish, German, Austrian, Dutch, Belgian and Irish). According to statistical analysis, the high price of mobile Internet services in question were of higher concern to Finnish people than to other Europeans. (Koivumäki, 2001) The differences between western cultures may occur especially between countries where the usage of the Internet is relatively high compared to the diffusion of mobile telephony (such as the United States and France) and countries where the usage of the Internet is relatively low compared to the diffusion of mobile telephony (such as Italy and Spain). Industry experts expect to see more resistance to charging of mobile commerce services in countries where the Internet is relatively well diffused in the society, because those consumers might assimilate mobile commerce

services as prolonged Internet services, which have traditionally been offered without any charges. (Interviews, 2001)

Another point of view in the acceptance of charges is the type of charging for current mobile telephony services; whether they are post-paid or pre-paid. Also, how mobile commerce services might be charged (in the phone bill, in VISA bill, by direct bank account debiting), and who pays the bill (company, consumer himself, a family member) will certainly influence consumers' decision processes. There is clearly two opposite opinions: other says that mobile commerce services should be charged at a flat-fee rate, another stands for payment per consumption. As it has been the case for mobile voice services, certainly different basis for the setting of prices will be created over time. (Interviews, 2001) In addition, differences between western countries in the diffusion of mobile commerce services will certainly raise the fact that in most markets, mobile phone users are charged only for calls they initiate. On the contrary, American mobile phone users are charged for calls regardless of the originator. As the current pay-and-talk / talk-and-pay mobile fee structures are not equipped to facilitate mobile commerce diffusion, the only reasonable solution would be a shift to a flat-rate payment structure, but at least in the United States it is merely a political than technological question. (Thompson, 2000)

In addition to the cost level of mobile commerce services, Forrester Research is quite sceptic about the *utility* and the value added to consumers by mobile commerce services. It suggests that mobile commerce will be a big hit in retail categories like event tickets, flowers and gifts, travel, and auctions. Still the utility of mobile transactions should be raised a lot before consumers would use more developed mobile commerce services. This could be done by a possibility of personalization and by adding location-specific content to mobile commerce offering in order to make offered services simple. (Nordan & Zohar, 2000) As a matter of fact, it has been suggested that for all mobile transactions, the value proposition will be made up of a combination of time sensitive information delivered locally and with actionable content. In addition, mobile financial service transactions seem to need to cater for mobility and guaranteed end-to-end security. (Jesty, 2000, 1.4)

6.3.3 Risk barrier to mobile commerce services

According to the interviews executed on January and February 2001, risk barrier is expected to be the highest consumer barrier to mobile commerce services (Interviews,

2001). Cultural differences do certainly occur. One proof of that is a questioning poll concerning portal of tourism services, for which 127 respondents were regrouped in two answer groups Finns (66%of respondents) and others (Swedish, German, Austrian, Dutch, Belgian and Irish). According to statistical analysis, problems in security of the usage of mobile Internet services in question were of higher concern to other Europeans than to Finnish people. (Koivumäki, 2001) Ojala has been studying mobile commerce together with electronic commerce, and has found out that the most important problems in their success are related to information security issues (Ojala, 1998, 22). See Figure 33.

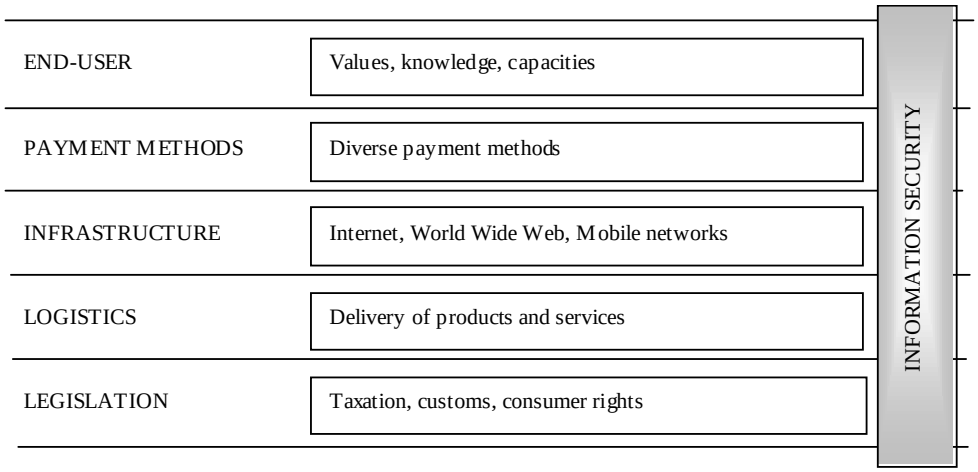

Figure 33. Main problems in electronic commerce (Ojala, 1998, 22)

For example, German Internet users have shown to be extremely critical towards provided security and encryption techniques. In addition, German consumers are unwilling to register themselves in services, and neither do they wish to fill in personal information unnecessarily. Mass media tends to 'bolster' this sceptical attitude towards digital services. (Järvinen, 1998, 50)

There is still differences in the attitudes towards security aspects in electronic commerce compared to mobile commerce services. Even though Internet users have more or less got used to technical problems, consumers still consider their mobile phones personal and therefore any technological failures are not so well accepted. (Daum, 2000) ARC Group states that the major inhibitor to the diffusion mobile commerce services in the short term seems to be user concerns over mobile security. They argue that as a matter of fact, recent problems with fixed line access security have only *reinforced* these concerns, and one may argue that the negative perception may well be transferred to and potentially

magnified in the mobile arena. It will certainly require time and marketing investment on the part of suppliers to reassure consumers about security in the field of mobile commerce. (Jesty, 2000, 2.12) Saarinen (1999) states that the most important thing in getting electronic or mobile commerce rolling is trust. Service providers should answer to consumers' expectations, and anything the service provider promises, should at least be provided. (Hakola, 1999, 51) One may argue that one of the greatest obstacles to widespread mobile commerce exists *in the minds of consumers*. Most still wary about security and privacy online, and the growing popularity of online shopping masks deep-set concerns about the risks involved in online credit card transactions. (Thompson, 2000)

Given the nature of mobile financial services, security stands out as being the most critical. The nature of financial services means that it is one of the principal drivers for establishing effective industry standards and international legislation for mobile commerce. This means that the security requirements for mobile financial services will be even stricter then for mobile commerce in general, and the risks to establish reputations from non-compliance or security failure will probably result in the more conservative banking organisations taking a more cautious approach to mobile financial services. (Jesty, 2000, 3.4) As a matter of fact, many banks in western cultures have realised that by providing banking services online, they can reduce costs at the same time as better services can be offered to consumers. However, *banks are very concerned about security* and do not find the procedure used in electronic commerce secure enough since no client authentication is performed. In order to remedy the situation, the banks have adopted different authentication schemes. According to an interviewee, huge differences may be been in the financial sector in general. For example, financial services in traditional countries like France and Germany are developing more slowly than for example in little countries like Finland (Interviews, 2001). According to Ho (1994), the reasons why *many consumers have a high-perceived risk* of electronic cash are (Ho & Ng, 1994, 28):

- ✓ Consumers' inherent resistance to change
- ✓ Loss of benefit of credit card float
- ✓ Unavailability of services when needed
- ✓ Fears of invasion of personal privacy
- ✓ Potential plastic card fraud and errors
- ✓ Lack of provision of leverage against a merchant or vendor in case of dispute
- ✓ Lack of adequate consumer awareness, education and participation

Particularly in France and in Germany, the credit card security is a major concern. People are afraid that losing their mobile phone would be the same thing as losing their credit card. In addition, an empirical study has shown that in the past the object people left behind the most often in public transportation of London was an umbrella. Nowadays the object is a mobile phone. Also the theft of phone is seen to cause problems. (Daum, 2000)

Technological development has led to the gradual installation of various electronic funds transfer systems. Many western countries are still experimenting with nation-wide electronic fund transfer at the point of sale system. The adoption rate of easy electronic payment services by consumers as a substitute for cash and credit card payment is *relatively slow*. One reason for low usage is that consumers perceive a high level of risk in new electronic payment systems than in other traditional payment methods (cash and credit cards). (Ho & Ng, 1994, 26)

According to the estimations of Merrill Lynch in 2000, secure architectures for mobile commerce arena will not be available until mid 2002 (Farrell, 2000). Whether the risks of using a credit card on electronic commerce are real or mostly imagined, online consumers would never entirely overcome their fears about security (The Boston Consulting Group, 2000, 20). In general, mobile services are seen less secure than landlines, but what finally counts is the *consumer perception* of the provided security, not the technological facts of secure transactions (Daum, 2000). It should be remembered that in most of the finance processes, the banks and specialist financial service providers have the advantage in gaining the trust and confidence of end users, because of their *image of trusted expertise* in traditional monetary transactions. Their long-time investments in the skills, branding and physical branch networks are an important foundation in order to gain and maintain the trust of consumers. (Jesty, 2000, 1.12)

Psychological acceptability means mobile commerce services are accepted by consumers automatically *without any concerns* about the security. Psychological security means basically *quality standards*, *scientific reports* and *branding* of mobile commerce services by well-known quality partners. One may conclude that several ways of building consumer confidence are very much needed in the diffusion of mobile commerce systems and services. (Ojala, 1998, 27)

6.4 Psychological blocks to mobile commerce services

As mentioned in chapters 3.4 - 3.6, Sheth and Ram (1987) have presented five areas of customer concern that are sufficiently strong to rise up barriers to the adoption of innovations. Two of them are rather psychological blocks: 1) tradition barrier (social norms and cultural attitudes dictating usage) and 2) image barrier (taboos, stereotyping, and negative associations).

6.4.1 Tradition barrier to mobile commerce services

According to Gartner's studies in 2000, the lack of social and emotional aspects are probably the major barriers to the success of mobile commerce. (Daum, 2000) Shopping in an ordinary shop is a little experience to many consumers, which may even mean the highlight of the day. Vendors in traditional commerce have realised how important it is to position goods well to create a certain atmosphere by carefully selected music and odours. Even though economists create theories of rational consumers, in reality doing purchases is not only getting goods. One may easily argue that the estimations of mobile commerce explosion are merely based on engineers' and consultants' cosmopolite, fast track way of life. Ordinary consumers are still way behind their way of thinking. In most European countries, population density is so high that trusted near-by shops are still preferred to huge supermarkets. (Järvinen, 2000, 33-34) On the other hand, young people, students, business users and other heavy users of digital technology might be very interested in mobile shopping because of their somewhat different rhythm of life. As a matter of fact, they could even welcome an introduction of a new value added service to support their tradition to use mobile devices and Internet. (Interviews, 2001)

Credit cards in their present form emerged in the United States in 1960's. However it was not until more recently that credit card usage has expanded significantly outside the United States. Still until 1970's, the level of diffusion in most of Europe was quite limited. (Jesty, 2000, 3.9) For example, the reason why in Germany only businessmen possess credit cards is that credit card companies charge high commissions. In addition, in German culture, credit card does not suit to grocery shopping or consumer goods in general as one has the possibility to use them in only few grocery shops. (Järvinen, 1998, 50) Despite the development of electronic payment systems, modern industrial nations still function to a large extent on cash payments (Jesty, 2000, 3-9). As is usually the case

with payment innovations' diffusion, the success of the smart card will depend on market circumstances and co-operation among banks. Previous research shows that the proper timing of the introduction depends on consumer readiness to use the new system, which is related to prior experience and individuals' innovativeness. (Antonides *et al.*, 1999, 1124)

6.4.2 Image barrier to mobile commerce services

As previous research has shown, the intention to adopt an innovation depends among other things on the general *attitude to the product* and the latitude in adopting it. In addition, *product category knowledge* is a mediating factor for the intention to adopt the new product. In addition to that one must not forget the influence of cultural norms in different social systems. For example, Finland has always been a Christianlike society when it comes to gambling. Exchange business, on the other hand, has more favourable image to Finns. Therefore, you may expect more powerful image barrier to mobile gambling and pools than to mobile stock rate information. (Interviews, 2001)

Development of mobile technology was presented in chapter five. In other words, western cultures are experiencing the very beginning of the shift from 2G applications to 3G applications. The first step in the product category has been the introduction of wap technology. Unfortunately, the main problems of current mobile commerce services open for Wap-users are said to be numerous. It includes the high cost and relative slowness of downloading data. In addition, the small screen size of mobile phones makes information hard to read, and the tiny keyboards make it awkward and time consuming to send and receive messages. There is also a lack of web-sites and content reconfigured for mobile use. In addition, most consumers are still concerned about the lack of security on wireless networks and are therefore reluctant to conduct transactions. *(Interviews, 2001)*

The Boston Consulting Group has been studying electronic retailing and its threads in getting success in the future. One main finding was that satisfying online consumer would become even more challenging as *expectations rise*. In other words, the *service failures* that are commonplace nowadays could be the 'kiss of death' for brand value as consumers have concerns about *questionable security*, *cumbersome navigation*, and *unreliable fulfilment*. (The Boston Consulting Group, 2000, 5) One may state that “WAP technology has come under a greater amount of scrutiny due to its failure to date from a services, applications and technology interoperability perspective” (Farrell, 2000).

For many consumers, the first mobile data products and services *have not delivered the promised value-added*. Instead, those phones and services strain the patience of even the most intrepid users as content and services are often unwieldy and do not translate well to small mobile phone displays. While there may be some novelty in checking news, weather and sports on the phone, the services available and the end-user experience are far from compelling. (Darrow & Harding, 2000, 39) According to the study executed in Finland on October 2000, 734 respondents out of 1278 (about 57%) told they had been using some sms or Wap based mobile services ever. Usage of mobile services is listed below in order of usage frequency. (Taloustutkimus I, 2000) See Table 4.

Table 4. Usage of mobile services in Finland (Taloustutkimus I, 2000)

Mobile service	**% of respondents have used the type of service**
Ringing tones and icons	79%
Banking services	23%
Entertainment and leisure related services	20%
Sports services	16%
Betting and pooling	15%
News, economy, weather	13%
Other services	12%
Tools	10%
Movies, TV and radio programs	8%
Travelling services	5%
Culture services	3%

Unfortunately, the consumer experience has not been flattering so far as there is a huge chasm between the reality and technological possibilities. In Western Europe, nearly a third of consumers who have tested wireless e-commerce have given up trying after some *deceptions*. According to the Boston Consulting Group, *frustration* among potential mobile commerce users is notably wide. They compare the current situation in mobile commerce diffusion to that of the Internet's five years ago. (Sahilahti, 2000, 8) You may state that despite aggressive advertising campaigns from telecom carriers and exhaustive press coverage about the future possibilities in the 3G world, consumers are not exactly flocking to buy 3G mobile phones (Thompson, 2000). According to a Finnish market analysis organisation, Taloustutkimus Oy (2000), the willingness of Finnish consumers to change their current mobile phone devices to new is not very promising when analysing the success of mobile commerce services diffusion. Only 18% of all 1278 respondents intended to change their current mobile phone during the following 6 months. From the amount of 225 respondents in the research executed on October 2000, only 14% told they are likely to buy a Wap-phone, and only 3% told that they would most probably buy a

GPRS device, as 77% of the respondents were planning to buy a new GSM-phone. The reason to buy a new mobile phone to 48% of respondents was simply to get a newer mobile phone. 35% of respondents said that the qualities of the current mobile phone were not sufficient or that it was not easy to use. (Taloustutkimus I, 2000)

7 DIFFUSION OF MOBILE COMMERCE SERVICES IN WESTERN CULTURES

It is a widely supported fact that mobile phones have an almost ideal set of the perceived five innovation attributes (relative advantage, compatibility, complexity, trialability, observability), and this is undoubtedly one reason for the innovation's very rapid rate of adoption (Rogers, 1995, 244-245). It should be noted that according to previous research the resources needed in the diffusion of tangible mobile phones should not be confused with the diffusion of intangible mobile commerce services. For example, Zeithaml, Parasuraman and Berry (1985) have stated that services have several characteristics that products do not have, such as intangibility, inseparability of production and consumption, heterogeneity, and perishability, which pose vexing problems for services' marketers, which mean that the strategies developed from experience in goods marketing are often insufficient in services marketing.

In addition to that, another problem concerning the diffusion of mobile commerce services, which mobile operators have faced lately is that consumers don't begin to use new functions of their mobile phones only because new technology exists. For example, operators have seen less than 15% of their customers adopt information services based on SMS despite aggressive marketing and low price points. (Nordan & Zohar, 2000)

7.1 Time required in the diffusion of mobile commerce services

The rush to find the winning combination of services, devices and applications for the mobile Internet will certainly be filled with ups and downs. As with most things concerning the Internet, the 'hype' will get ahead of reality and periods of disappointment are inevitable. (Herman, 2000, 25) Therefore, according to previous diffusion research, Durlacher researchers may be argued to have more realistic viewpoint on the diffusion of mobile commerce services than many other market research companies as they suggest that in western cultures, the level of diffusion of mobile commerce services will not reach the expectations of 2000 until 2004. See Figure 34. (Mueller-Veerse, 1999, 13)

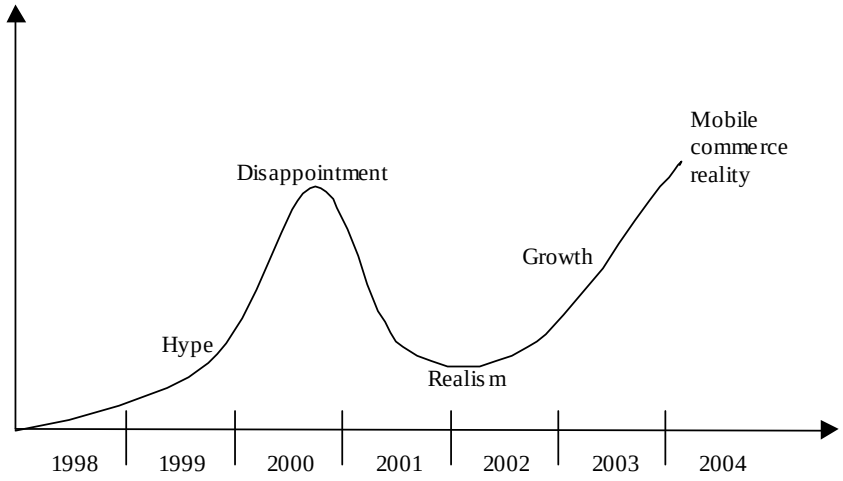

Figure 34. Mobile commerce diffusion curve 1998-2004 (Mueller-Veerse, 1999, 13)

Interviewed experts stated that now, only 'innovators' and perhaps 'early adopters' are testing the few offered mobile commerce services in western cultures in general. Naturally, there exists huge differences between services and regions. The opinion whether we are already in the chasm or not differed depending on the interviewee. Still, they were about the same opinion as they argued that first, it takes 5-10 years to educate consumers in the ideology of mobile commerce services. They estimated that after five years from now, as many as 20-40 % of western population would have tried mobile commerce services. In 2020, one might already see 99% of potential users having adopted some mobile commerce services. (Interviews, 2001)

7.2 Western Europe, Japan, the United States

In countries where the diffusion levels are high, and there also is a high level of competition, new mobile commerce services are introduced early in order to gain advantage. Despite of that, in order to be able to assess the potential for any mobile services, it is necessary to ensure that the development in all the leading nations is covered. The global mobile markets are poised for significant growth over the next five to six years on three significant fronts (Romtec, 1999, 7-17):

- ✓ In countries, where the diffusion of telecommunications innovations is high (Finland, Sweden, Norway, Italy, the Netherlands), the key will be Wireless Applications Protocol (WAP) based applications providing Internet content and mobile commerce services.

- ✓ In countries, where the diffusion of telecommunications innovations is medium (UK, Germany, France, Spain, the United States), the key will still be innovative voice services in order to bring in new consumers together with Internet content and mobile commerce applications for leading edge users.
- ✓ In the developing countries, additional voice capacity needs to be developed in order to support the general growth in the subscriber bases.

Clearly, in mobile commerce success, there will be differences both regionally and from country to country. In general, the mobile Internet phenomenon is unusual because it is not centred in the U.S., but in Asia and Europe where mobile telephony is further advanced and PC usage much lower. The real breakthrough of mobile Internet is predicted to come with 3G, and it has been scheduled to roll out in Japan and in Europe during the year 2001, and it has been estimated to hit the United States in 2003. (Herman, 2000, 24) The whole mobile commerce sector is developing at different rates and in different ways in Europe, the United States and Asia, as mentioned before. Currently Europe is leading the United States by about two years and most of Asia by a similar margin. From a global perspective, a number of countries are leading the way, these include for example the Nordic countries (especially Finland), other Western European Countries (France, Germany and UK), and South East Asia (mainly Japan, Hong Kong and Singapore). (Jesty, 2000, 2.18-3.10) One problem in the United States is the lack of a mobile telecommunications standard, lack of a standard of pricing structures, and lack of true competition, which could drive down mobile phone and access prices. (Thompson, 2000)

From the mobile financial transactions' point of view, the industrialised, 'first world' countries such as Western Europe, the Unites States, Singapore and Japan may offer electronic purse as the next step in technological evolution. On the contrary, in much of Africa, Asia, east Europe and the countries of the former Soviet Union, the existing telecommunications systems cannot support the new online systems. The American market is lagging behind Europe and the developed Asian countries because of its great size and the diversity of its financial institutions and vendors. However, the consumer education, conditioning and reinforcement is seen pay a vital role. It covers both the training required with respect to the usage of smart cards and the drastic shift in the traditional views that some consumers hold regarding payment with plastic. In addition to technical and networking issues, companies should pay attention to acceptance issues,

which are vital for the success of such an expensive innovation. It seems that already existing telephone cards and their extensions might help in the initial educating process, but even smarter cards are expected to be introduced in the future. (Puri, 1997, 135-136)

On the contrary to the often-touted belief, the development of mobile banking appears to be advantaged in those European countries where existing fixed-line telecommunications infrastructure is less well developed and / or where the level of diffusion of the Internet is lower (e.g. Italy and Spain). On the other hand, developments in mobile systems will take place against the background of existing national and international payment systems, some of which are long established and some much more recent. These systems include corresponding banking, paper-based funds transfer (like cheques or telegraphic transfer), international messaging systems, electronic data interchange, credit card payment systems, cash and automatic teller machines. (Jesty, 2000, 2.18-3.10)

All in all, ARC Group suggest that Asia will continue to be 'mobile-led' in its use of mobile commerce services, the United States will be 'Internet-led', and Europe will be more evenly balanced between the two access modes (Jesty, 2000, 1.13).

7.3 Mobile commerce environment and required co-operation

As is the case in markets where uncertainty is high, according to Credé (1989), barriers to the wider diffusion and adoption of advanced information and communication technology-based systems can be attributed to *market conditions*, the *regulatory and legal environment* and the growing complexity of the *role of standards*.

The creation of standards is a commercially driven activity. Often, standards have to be available to commercially specified time-scales, which are far tighter than can be achieved by the official international consensus standard bodies. This has, then, resulted in the fast growth of special interest standards groups formed by suppliers and/or customers with compatible commercial interests. As a result, there are company-derived standards, consortium derived standards, standards produced by international consensus bodies and standards initiated by individual national standards institutions. It must be noted, that whatever the standard, it is unlikely to be perfect. (Credé, 1997, 60-61)

In order to drive the mobile commerce industry and to formulate standards, several

interest groups have been formed to complement the work of International Telecommunications Union (ITU), European Telecommunications Standards Institute (ETSI), and the Global System for Mobile Memorandum of Understanding (GSM MoU). Groups, which are setting de facto standards by assembling the key players and agreeing workable development conditions much faster than the traditional standards bodies are: WAP Forum, the Mobile Data Initiative, Bluetooth Special Interest Group, GPRS Applications Alliance (GAA) and the UMTS Forum. (Mueller-Veerse, 1999, 15)

Until now, only few consumers have taken advantage of the possibility of signing digitally not to mention by a mobile phone. The main reason for this is the lack of infrastructure across all industries for signing devices. There is also a lack of international and national standards for driver software. Currently, the signing devices are linked to PCs and thus are not actually mobile. As a matter of fact, there are currently 25 international companies are involved in a Mobile Electronic Signature Consortium working to close the loop between the electronic and mobile commerce. The Consortium estimates that within a few years, people in all nations will be signing contracts and purchasing their groceries with their mobile devices. (McCarthy, 2000, 74) The financial smart card required for flexible mobile commerce actions has memory and processing capability as well as capability to operate in an open system. For an open system, world-wide standards are needed, as at present, most smart cards operate in closed systems where the card and the system are tailored for each other and only each other. (Puri, 1997, 137)

In addition to the problems of creating good industry standards, there are a variety of *regulatory issues* that electronic purses raise, most of which are only just beginning to emerge such as ensure the integrity of the firm holding the money, and the confidentiality of personal information. (Puri, 1997, 138) To benefit from the opportunities created by the information society, there is a growing need to integrate *legal risk management* with the development of new projects. For example, in the case of intellectual property protection, solutions for overcoming problems related to the protection of commercial interests of producers and end users often emerge by default rather than as a result of planning. (Credé, 1997, 59)

In order to fulfil the mobile commerce predictions, adequate *cross-channel applications* are required. In addition, it is necessary to establish legal security for the performed transactions. Only by using a *legally effective* digital signature will it be possible to perform business via electronic channels in a secure and understandable form. Then, in order to make electronic signatures legally binding, there are a number of cross-boarder legislative obstacles to overcome. The European Union directive on electronic signatures, which took effect on 19 January 2000, is only the beginning. (McCarthy, 2000, 74)

Recently, the United States Federal Reserve issued a clarification and simplification of regulation E, which is a safeguard providing consumer protection to holders of credit cards. It requires for example that a receipt must be provided for every transaction, which poses problems for parking meters, vending machines, laundry machines, telephones and other such devises. All in all, when compared to traditional payment methods, electronic payment methods require several changes in consumer behaviour and in drafting appropriate laws and regulations specific to electronic purse projects. (Puri, 1997, 138)

When estimating the environment consumers face when considering the adoption of mobile commerce services, one finds out that there are *diverse players* in the new field of mobile commerce, who eager to 'own' consumers. Companies position themselves differently on this value network, and players will be competing with each other. In particular, activities around customer care and marketing and sales can lead to conflicts. Diversity in the field may also mean that the *new brands* of the mobile world come from unexpected directions, with a destabilising effect on the established players. Another important feature of the new mobile commerce market will be that it will no longer live in isolation, because there will be links to other devices such as televisions and PCs, and service providers will be able to reach their customers via other complementary channels. ARC Group (2000) predicts that *alliances and partnerships* will be an important feature of the market in the next five years, and the three most important players in 2003 would be *mobile operators, content providers and equipment vendors* (Jesty, 2000, 1.12). Also the interviewed industry experts were calling for co-operation between content providers, services providers, network suppliers, telecommunications operators and device manufacturers (Interviews, 2001). See also Figure 35.

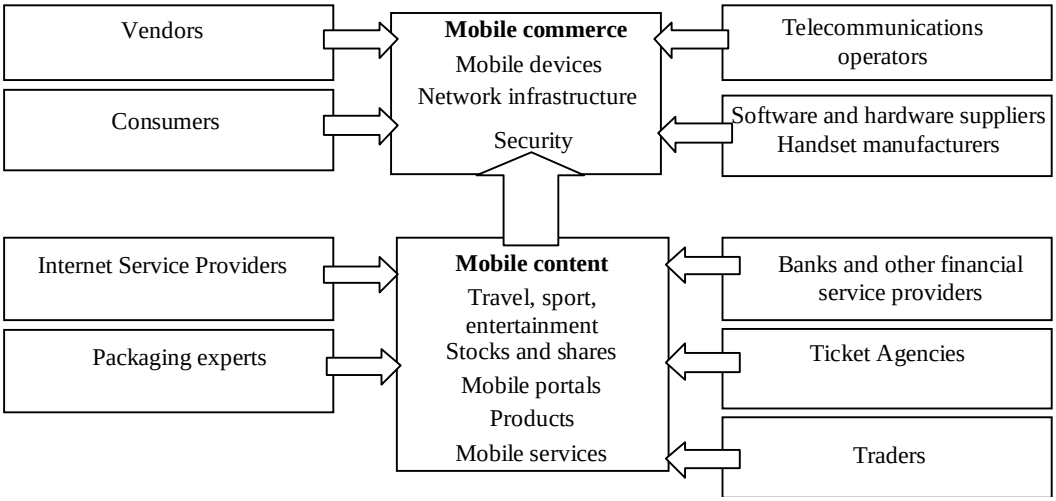

Figure 35. Players in the field of mobile commerce

As Sheth, Sisodia and Sharma (2000) have presented, in newly born information society, as companies can develop infrastructures of virtually unlimited capacity and extremely low unit cost, adding the offering of complementary services that would be of interest to the same customer group could leverage innovative markets. Also, in the industry expert interviews executed in January and February 2001, it was mentioned that in order to attain consumers' interest and motivation to use mobile commerce services, industry players are required to offer as much choice, i.e. 'mobile content' to consumers as possible.

According to Merrill Lynch's researchers, there will be certain technologies that act as enabling platforms for mobile data, but these alone will not stimulate demand from the mobile subscriber (Farrell, 2000). In current technological innovation, one may clearly see the intrinsic disappearance of traditional boundaries of different branches. Generally, we may speak about *technological convergence*. In the background, there is the digitalisation of information. Text, pictures, voice, and images take part in the same digital information space, which people may use in different purposes and with different types of devices. In future scenarios, the end users may receive the same information in digital television, personal computer, or in mobile personal device. One may still state that even if different mobile technologies would convergence, it should be noted that the different types of consumer behaviour will necessarily never convergence (Heiäng & Ourila, 1998, 51-71).

As previous research suggests, complex innovations require learning and therefore their adoption curves are likely to be S-shaped. In addition, any uncertainty in markets or in technology has a delaying effect in the diffusion of the innovation. Because western cultures are getting more and more heterogeneous, the adoption curve is likely to be exponential because low level of social imitation does not cause so-called snowball effect. See Figure 36.

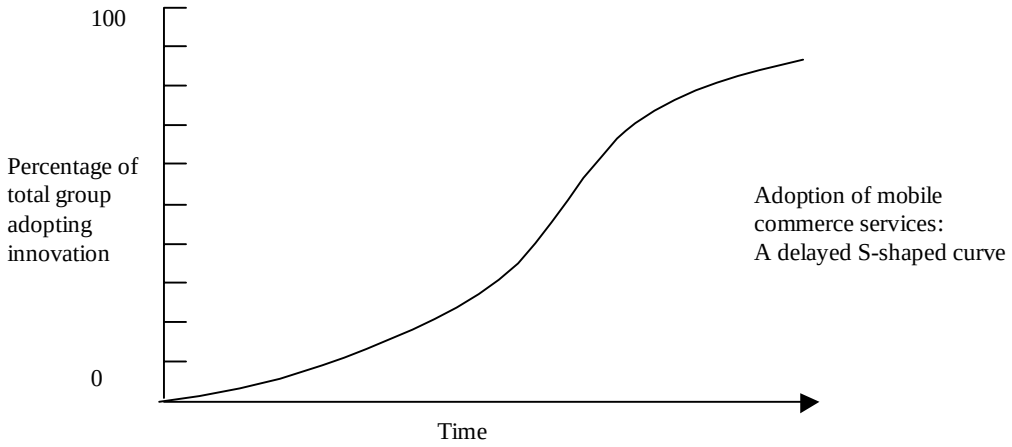

Figure 36. Adoption curve of the diffusion of mobile commerce services

Industry experts predicted that currently in the diffusion of mobile commerce services, western cultures are in different phases depending on the variety of services offered. In general, only the ‘innovators’ and ‘early adopters’ have been testing and using mobile commerce services. This means that players in the mobile commerce sector are in the chasm, which requires special marketing actions, as Moore (1999) has presented.

8 FINDINGS AND DISCUSSION

Current research has pointed to an existing research gap, as the research focus has been on consumer resistance to innovative mobile commerce services. The theoretical frame of reference was selectively constituted of innovation theories, new product and service development theories, services marketing theories, social learning and communications theories. Exploratory means were used to point out the factors behind potential consumer resistance to mobile commerce services particularly in western cultures.

As Inkinen (1999) has argued, the current debate of information society seems to make a lot of noise without a corresponding level of substance. Recent technological discussion with ambitious visions and missions of digital culture can be seen as the utopias of the turn of the millennium. Therefore consumer resistance to mobile commerce services in western cultures is both a relevant and an interesting object of investigation.

Naturally, the findings of the current research should be viewed and interpreted in the context of certain limitations. First, diverse primary and secondary sources were used in order to get the overall picture of the mobile commerce situation. In industry experts' and researchers' interviews, interviewer used only a pen and a paper to collect valuable information, and this may have affected the external validity and the reliability of the findings. A second limitation of current research was that it did not measure actual adoption or rejection behaviour of consumers but rather it investigated consumers' intentions to adopt or reject mobile commerce services. Third, the notion 'resistance' used in the current research needs more extensive refinement and validation as the resistance varies in degree, increasing from passive resistance to inertia or active resistance.

Current research was conducted in several phases, of which the most intensive writing session in the shift of two millenniums. The research area is particularly wide, which required a lot of work in reading and excising the material available. (Un)fortunately, the scarce resources assessed the limits for the research. In fact, the main problem in the empirical work was clearly the lack of valid research from other than technology development's point of view. The most of the research available is concentrating mainly on the given possibilities of the new mobile technology, not on the needs or motivations of consumers, neither on the barriers of adoption of new mobile commerce services. Still,

answers to all four research questions were found. They are presented in chapter nine. Also, current research presents several managerial implications in chapter 9.5, as it is in many ways explained why market and customer orientation is important in traditionally technology driven telecommunications sector. In the concluding chapter, chapter nine, it is shown that it takes a lot of time in order to reach the critical mass for an efficient diffusion mobile commerce services. Therefore one may state the current research has fulfilled its two main objectives. Whether the objective of discussion generative effect is reached by current research, remains to be seen. Related to that, some suggestions for further research are presented in chapter 9.6.

8.1 Diffusion models and the time required in the diffusion of mobile commerce services in western cultures

Roger's (1995) adopter classification (‘innovators’, ‘early adopters’, ‘early majority’, ‘late majority’, ‘laggards’) suggests that an innovating company should research the demographic, psychographic, and media characteristics of consumers in order to get high diffusion to its products. The problem is that identifying them is not always easy, as individuals tend to be ‘innovators’ in certain areas and ‘laggards’ in others. (Kotler, 1994, 349)

In addition to that it should be noted that people do not actually adopt an innovation, but rather the possibility to new way of doing things. In their perception, innovations are rarely independent objects or ideas, but rather a group of notions and vague conceptions of service categories offering different meanings to a particular individual. This point of view is supported by an estimation in the field of mobile telecommunications of consumers who may invest in the access of high technology and in the possibility to use mobile value added services, but as much as 25 per cent of them would never use those technological applications in order to benefit from the offered services. (Interviews, 2001) As a matter of fact, a questioning poll executed in Finland in October 2000 showed that out of 217 'innovators', 93% told they had used a wap phone, but 88% told they would have actually used wap services. When analysing the results, the researchers noted that some respondents may have thought using wap services whereas they were actually using sms based services, as some mobile value-added services are available as sms based services as well as in wap format. (Soronen & Tuomisto, 2001, 23-38)

As Hawkins, Best and Coney (1995) have summed up, in order to reach rapid diffusion, many determinants should be favourable to the adoption of an innovation: 1) easy trial and easy decision for individuals to adopt, 2) extensive marketing effort in change-prone target market, 3) strong felt need, 4) high compatibility and observability, 5) large relative advantage, low complexity and low risk. Unfortunately, according to previous research and the executed interviews for current research, in the case of mobile commerce services, it seems that not many mentioned determinants can be totally reached in the near future. The underlying supposition is that the adoption process can be expected to begin only after consumer resistance has been overcome.

First, current research shows that an innovation, which is not trialable, as services rarely are because of one of their basic characteristic 'first buy, then try', represents uncertainty in consumer's decision process. In addition, before starting to use a mobile commerce service, some modifications of the mobile device may be required together with profiling efforts. As Järvinen (1998) has found out, for example German consumers are unwilling to register themselves in services, and neither do they wish to fill in personal information in order to get value added services. Therefore one cannot say that mobile commerce services would be *easy to try* for ordinary consumers. Additionally, previous research shows that the *decision to adopt* an intangible innovative service in general is difficult. In order to try and use mobile commerce services, the consumer must perhaps first adopt a mobile device required for the utilisation of a particular service category. He needs also the motivation and specific skills to start using them. In addition, trust between consumer and vendor should be created, which may be difficult if vendor is remained faceless or otherwise unknown.

Secondly, *extensive marketing effort* has been seen in favour of the diffusion of mobile commerce services. Also, consumers in western cultures have shown to be *extremely open-minded* to the possibilities of new technology and innovations. This may accelerate the diffusion of mobile commerce services. Unfortunately, as Inkinen (1999) has argued, consumers may get confused by the technological terminology created and promoted primarily by the mass media. Lai (1991) has added that if consumers get too much knowledge, their intention to adopt mobile commerce services may be diluted. Previous research has shown that mass media is an effective information channel in order to reach 'innovators' and 'early adopters', but in order to reach the 'early majority' and critical mass, marketers need to think wider actions. Unfortunately, as Moore (1999) argued, on the

contrary to the 'early adopters', the 'early majority' desire rather an evolution, not a revolution, and therefore 'early adopters' do not make good references for the 'early majority'. Therefore, crossing the chasm[6] should be the primary focus of any long term marketing plan of an innovation.

Thirdly, previous research has shown that as much as innovations can lead to needs, basic consumer needs can lead to innovations. As mobile commerce services are introduced in presence of high market uncertainty and technology uncertainty, examining consumers' *needs* has shown to be extremely difficult. Unfortunately, as the focus of the players in the field has been mainly on the development of new mobile technologies, not many studies have been executed concerning consumer resistance to mobile commerce services in order to improve the fit with determined consumer needs. Importantly to current research, previous research has shown that consumers are likely to resist an innovation if they perceive that it will not meet their needs. This may seemingly slow down the diffusion of mobile commerce services.

Fourthly, previous research has shown, that the *pragmatist* consumers just before the mainstream market are not willing to adopt partial services, but they want the whole product to be readily available from the outset (Moore, 1999). This means that as mobile commerce marketplaces develop, customer-specific enhancements to the currently introduced services are probably needed. On the other hand it could also mean that mobile commerce services should be consistent with the existing values, past experiences, and needs. Executed expert interviews have shown that unfortunately adoption of some mobile commerce services may require prior *adoption of a new value system*, which is predicted to be a slow process. An example of this is the transition required from Christianlike attitude towards more accepting attitude concerning mobile betting and the pools. Fortunately, though, several previous innovations have been adopted in western cultures, such as mobile phones, the Internet and diverse digital payment systems. Therefore the diffusion of mobile commerce services would not necessarily be a slow process. Still, current research indicates that mobile commerce services are introduced in a market situation, where multiple fixed and mobile devices available are not yet *compatible* with each other. This means that the *usage barrier* is regrettably high.

[6] Introduction of an innovation generates enthusiasm within narrow early markets. The period when others estimate if anything can be made of the innovation is called a chasm (Moore, 1999)

Unfortunately, this rises also the *perceived risk barrier*. Previous research has shown that even the 'innovators' and 'early adopters' seem to be concerned about the *high information risk* in the information society (Koivumäki, 2001). In addition to that, as the focus of current research is on *services*, their *observability is low*, because of their basic characteristics such as intangibility, inseparability of production and consumption, heterogeneity, and perishability (Zeithaml, Parasuraman & Berry, 1985). This might mean that social learning by observation is not easy, which could mean that the diffusion of mobile commerce services would take a long time.

Finally, previous research claims that *relative advantage* may be measured in economic terms, by achieved social prestige, by perceived convenience to use, and by perceived customer satisfaction (Rogers, 1995). Therefore, as long as mobile commerce services are not suited to give large relative advantage to their adopters, no fast diffusion can be expected. As a matter of fact, there seems to be many *value barriers* to overcome before mainstream consumers will adopt the offered services. Previous research argues that the most important function of an innovation is creating value for the customer by improving the performance-price index of existing alternatives (Sheth & Ram, 1987). Therefore mobile commerce services should offer additional functions or features for e.g. electronic commerce services at the same price, or the same features and functions electronic commerce services offer at a lower price. On the other hand, interviewed experts argued that only if mobile commerce services appeal to strongly felt needs, the ‘early majority’ could eventually be interested in paying additional charges of them. Additionally, a well-handled consumer service in the digital world seems to require a remarkable substance to consumers as one cannot create any traditional relationship between vendors and customers because of the *absence of social interaction* of currently designed mobile commerce services. Previous research shows that innovations, which require the adopter to develop new skills and understandings, are generally adopted slowly (Rogers, 1995). Unfortunately, the level of *complexity* of mobile devices and services seems still to be high for other consumer groups than 'innovators' and 'early adopters'.

As mobile commerce services may be argued to cause, when adopted, some changes in daily routines, one may conclude that a long market development process is likely to be required, perhaps even extending over generations. In addition, as truly value-added services include day and night functioning without any backlogs, players in the field of mobile commerce need to provide a wide variety of choice of easy-to-use devices and

free-access services, up-to-date content and fast service. Additionally they need to convince potential users of low risks related to offered mobile commerce services. These actions may require some time to be successfully implemented.

8.2 Importance of defining consumer needs in order to design successful mobile commerce services

Sahla (1998) has concluded that in current presentations of the future in mobile telecommunications scenarios one may pick up four themes: 1) explosion of technology, 2) explosion of information, 3) explosion of data transfer capacity, 4) explosion of the end-user quantity. Still, he argues that it is not the technology but the man that eventually changes the rules and the norms of the society. Previous research has shown that in order to ease the adoption of new technologies, the *technocrats* do probably have no other choice than pass even more *accurate information* about the vast opportunities the new and advanced technology offers to people all over the world. *Networking* and globalisation may get market powers on the move, and that is eventually seen to lead to an effective information society. Kuusi (1998) has added that it is the end-users who decide how fast they are able to adopt new things. Technology should only be seen as a tool, which offers possibilities to that change. (Suvanto, 1998, 57)

The main object of current research was not defining any service specific scenarios nor concluding any statements about the success or failure of currently offered mobile commerce services. Still, when asked about consumers' needs, which could eventually be satisfied with mobile commerce services, interviewed researchers and industry experts predicted some characteristics of potentially successful services. In addition, they thought up several propositions of mobile commerce service 'killer applications' together with arguments why certain services in their opinion would not reach success in western information societies. These statements were compared with market research companies' suggestions. A summary of potential value added mobile commerce services is presented in Figure 37 on the next page.

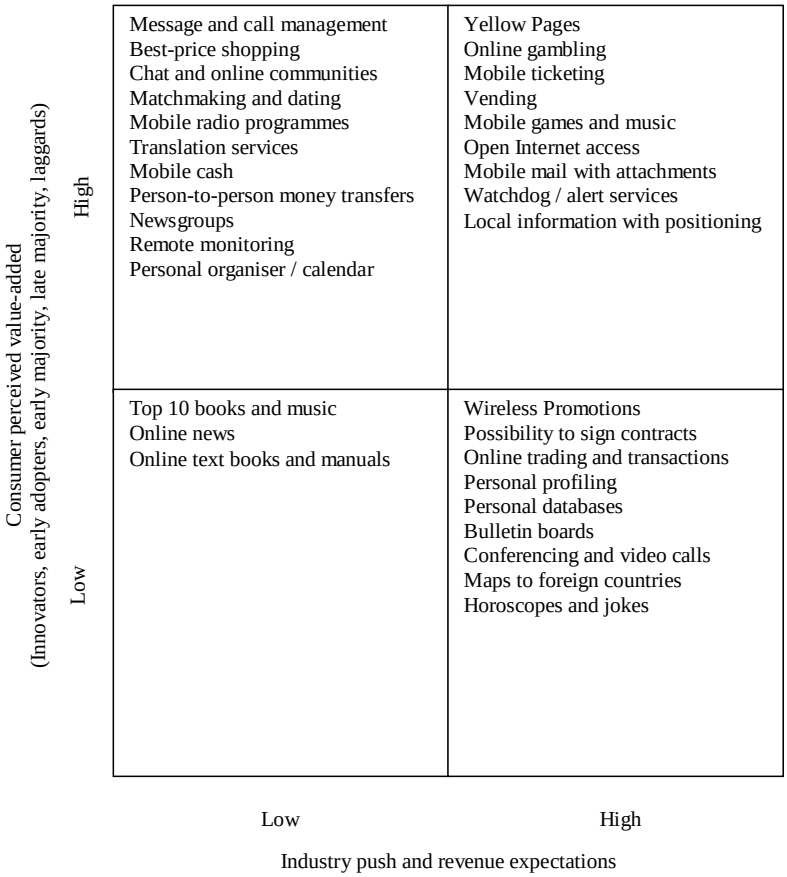

Figure 37. Summary of potential value added mobile commerce services

9 CONCLUSIONS

Current research has presented factors, which could show why mobile commerce services would reach the critical mass after a relatively long period of time. Focus of the research was on western cultures where several earlier introduced innovations such as mobile phone, the Internet and digital banking services support the diffusion of the service category in question. The topic has shown to be both a relevant and an interesting object of investigation as it has taken part in the current utopistic debate of digital information society, its development and significance to modern society. The research problem was separated in four research questions, which are dealt with in following chapters:

What kind of consumer resistance exists to innovative services?
How are innovations diffused in a society?
Which needs may mobile commerce services eventually satisfy in western cultures?
Which consumer barriers may prolong the reach of critical mass in the diffusion of mobile commerce services in western cultures?

Despite of the somewhat fragmented empirical literature, answers to every research question were found.

9.1 Consumer resistance to innovative services in western cultures

According to previous research, in western cultures one may see similarly 1) high techno-optimism, which may accelerate the diffusion of services in question and 2) increasing social heterogeneity, which may slow down the social learning process. Thus, in order to be successful, marketers need to understand the customer resistance to innovation, and then try to overcome those barriers.

From the basis of previous research, current research indicates that consumers would not be ready to adopt innovative mobile commerce services provided by developed technologies until there is a fit between consumers' basic needs and until structural barriers (usage, value, risk, tradition, and image barrier) are overcome. Consumer resistance in western cultures' consumer markets is shown to exist in every mentioned structural area. Current research indicates that barriers and the reasons of resistance to mobile commerce services should probably in the first hand be overcome in western

cultures, which may then be followed by Asia (excluding Japan, Hong Kong and Singapore, which are to some extent even ahead of western cultures' development towards digital information society), Africa and the Eastern Europe.

9.2 Diffusion of innovative services in western cultures

One objective of current research was to show that it takes more time than mobile phones' even shortening life cycles or the development of 3G infrastructure in order to reach critical mass for mobile commerce services. In most western countries, mobile commerce services tend to evolve through a number of stages, starting with basic information services and moving through to quality mobile commerce transactions. This process has shown to take longer or shorter time in different parts of the western world, depending on regional cultural trends, consumers' needs, previous experiences in the product category and in the general possibilities of the diffusion of mobile commerce services.

As Solomon, Bamossy and Askeaard (1999) have estimated, in modern western societies, even 80 per cent of all buying decisions are influenced by someone's direct recommendations. Importantly to the diffusion of mobile commerce services, technical shyness is expected to be overcome with the help of counselling 'opinion leaders' and 'early adopters'. Therefore the role of 'opinion leaders' and 'reference groups' is seen significant in the diffusion of mobile commerce services. In addition, Viherä (1999, 2000) has stated that everybody's communication capabilities are important in the diffusion process of mobile telecommunications' innovations as communication culture turns from vertical to horizontal, from closed to open, and from analogical to digital. Unfortunately, even in Finland, which is seen to be one of the leading countries in the diffusion of mobile telecommunications' innovations, the level of consumers' communication skills has shown to be relatively low. Briefly, mobile commerce services need many satisfied consumers in order to evolve towards common ways of doing business. Those satisfied consumers would then be 'opinion leaders', who could pass on the positive word-of-mouth not until services are available without interruptions and anxiety of malfunctions and risks.

Current research suggests that despite of the technological 'hype', the 'window of opportunity' for the success of mobile commerce services is not closing for a long time. This is because it is not necessarily clear to diverse players in the value network how the

future of information society should and will eventually look like. Similarly, it seems neither to be clear to mainstream consumers who may be classified as 'early adopters', 'early majority', 'late majority' or 'laggards' in the diffusion process of mobile communications value added services. The main finding of current research is that it will still take a long time until mobile commerce services reach the critical mass in consumers markets of western cultures as there seems to be a chasm between consumers' real needs and technological possibilities.

9.3 Needs that mobile commerce services may eventually satisfy

Another objective of current research was to show that it is not only the technology, which changes people's behaviour, but that the latent or existing needs of consumers may induce the diffusion of technological innovations. Thus, current research was formulated to explain why market and customer orientation is important in traditionally technology driven telecommunications sector.

According to previous research, it is not easy nor it is fast to educate consumers simultaneously in the use of new technology and in the use of new services, which they do not know yet. In addition, if the counterpart is a stranger, the barrier to adopt new purchase methods tends to be higher. Current research shows that modern western consumers are eager to have the technology and the access to services anywhere anytime. Before that, though, they need to be motivated to using mobile commerce services, which should offer clear value-added compared to traditional methods of doing business. Marketers should therefore convince consumers of the security of transactions. Interviewed experts stated that it must be kept in mind that developing digital information society as well as new mobile commerce services is rather a process, not a single event.

According to previous research and executed interviews, ambiguity about the type and extent of consumers' needs that could finally be satisfied by the mobile telecommunications technology is high. According to diverse researches conducted in the field of electronic commerce, in financial sector and in the field of wap services, you may conclude that at the moment one cannot know whether the offered mobile technology can eventually deliver on its promise to meet the silent or articulated customer needs. Still, estimations can always be made. A summary of findings of current research is presented in Figure 37 on page 8. The key argument of the interviewed experts and researchers was

that the most successful mobile commerce services are likely to be those which respond to consumers basic needs and those which help people in their everyday lives in the modern digital information society.

9.4 Consumer barriers that may prolong the reach of critical mass

Sheth and Ram have been studying reasons to consumer resistance, and their findings between 1979 and 1989 were very much used in current research. Current research presents consumer resistance to innovative mobile commerce services as a natural and inevitable human response.

Usage barrier to mobile commerce services exists mainly because for most people the value-added mobile commerce services are too difficult to use compared to average consumers' communication skills (Viherä, 2000). Therefore, the easiness of using mobile commerce services by mobile devices and the easiness of learning how to use them should be stressed in development processes. One reason to that according to previous research is that any failed purchase attempt may carry potentially harsh and irreversible consequences that go far beyond the loss of a single sale for the players in the field (The Boston Consulting Group, 2000).

Value barrier arises from several factors. Previous research shows that only a few active Internet users would be willing to pay for mobile services (Montelius, 2000). On the other hand, interviewed industry experts claimed that consumers would be willing to pay for mobile commerce services if they offer clear value compared to the effort of learning to use new applications, utilising them and paying for the usage. The key finding is that in order to offer value added mobile commerce services, they need to respond to consumers' basic needs and help people in their everyday lives when they are on the move. Easy-to-use time and place specific services are likely to reach success.

Risk barrier is probably the higher barrier to overcome. Ojala (1998) has found out that the most important problems in the predecessor of mobile commerce, electronic commerce, are all related to information security issues. It is also suggested that even though Internet users have more or less got used to technical problems, consumers consider their mobile phones personal and therefore technological failures are not so well accepted. The greatest obstacles to widespread mobile commerce are seen to exists in the

minds of consumers. Whether the perceived risks are real or mostly imagined, some researchers argue that online consumers would never entirely overcome their fears about security. The key to overcome this barrier may be in utilising banks' and specialist financial service providers' image of trusted expertise.

Tradition barriers are seen to raise for example from the lack of social and emotional aspects in mobile commerce (Daum, 2000). On the other hand, 'innovators' of mobile commerce services could even welcome an introduction of a new mobile shopping tradition to enlarge their heavy use mobile devices and Internet (Interviews, 2001). From the mobile banking's point of view, it should be noted that despite of the development of electronic payment systems, modern industrial nations still function to a large extent on cash payments (Jesty, 2000). It may be stated that time eventually erodes traditional barriers. Besides the virtue of patience, marketers of innovative products need to cultivate the basic values of respect, understanding and education. (Sheth & Ram, 1987)

Image barrier has arisen only recently because of the service failures that are commonplace in electronic commerce as well as in wap services. Ordinary consumers have shown to be worried about questionable security, cumbersome navigation and unreliable fulfilment. Another problem may be that consumers' expectations are rising besides industry promises. As a matter of fact, currently, there seems to be a huge chasm between the reality and technological possibilities. In Western Europe, nearly a third of consumers who have tested mobile commerce services have given up trying after some deceptions. (Sahilahti, 2000)

9.5 Managerial implications

Current research makes some contributions to the innovation management literature. It demonstrates the importance of studying the underlying causes of consumer resistance to innovative mobile commerce services and suggests that marketers in the field should devise strategies under their control to offset the resistance. As Sheth and Ram (1987) among other researchers have found out in their previous research, consumers in western cultures are culturally pro-innovation, as they believe that technology, if properly harnessed, is good for mankind. Therefore, the consumer resistance to innovations is mainly seen to raise from structural elements, which barriers in usage, value, risk, tradition, and image.

Successful mobile phone manufacturers have been paying attention to such factors as reading the market right, keeping brand loyalty, positioning together with other players, ease of use and understanding. Current research suggests that all of these factors are at least equally important when designing mobile commerce services. As a matter of fact, the proper way of doing so could be close co-operation between the players in the field. In addition to that, co-operation with consumers should increased in order to create mobile commerce services, which satisfy consumers' needs when they are on the move.

As Sheth and Ram (1987) have suggested, marketers' answer to successful innovation lies in understanding the causes of the resistance and making a frontal attack to them. Therefore it could be more interesting and profitable to study consumers' basic needs, values and attitudes rather than asking them directly opinions concerning innovative mobile commerce services. It might be advisable to utilise observational methods in addition to questionnaires to create a fit between technologies and consumers' needs and habits, because various sociological researchers have shown that an individual first argues to have certain intentions, but related to his basic needs to be fulfilled may finally act even contrarily to his previously communicated intentions.

As Moriaty and Kosnik (1989) have proven, market uncertainty means ambiguity about the type and extent of customer needs that could finally be satisfied by the technology. In addition to that, technology uncertainty in the field of mobile commerce means that one cannot know whether the mobile technology can deliver on its promise to meet the articulated consumer needs. This is why after understanding the basic needs of consumers, which mobile commerce services might eventually satisfy, the mobile telecommunications players should measure consumer resistance to each service concept separately and modificate those service concepts further on in order to improve fit with determined consumer needs.

Because of the characteristics of services that are somewhat different from product characteristics, service marketing specialists suggest that companies need to concentrate on operations in addition to market needs. You may argue that also players in the field of mobile commerce services need to put a special emphasis on helping consumers to conceptualise and evaluate offered services.

As Viherä (1999, 2000) has suggested, in order for the mobile commerce services to be

adopted and widely diffused, it seems to be necessary to establish a foundation of trust among the participants. It must be noted that this has already been developed over time through the formation of appropriate policies, procedures and practices to safeguard transactions and company assets in the traditional commerce. Managers should probably refocus their efforts from world-wide multicultural viewpoint to the current and already existing relationships between vendors and consumers, where there is not as much lack of security and trust.

Previous research has shown that as consumers go through several decision points, marketers should help consumers in their decision process. This is particularly important because mobile commerce is all about services. When a consumer is in the phase of awareness, marketers should explain unique attributes of mobile commerce services. If the consumer has already interest in a particular service concept, marketers should give relevant information about it and start educating him. When consumer considers whether to try any mobile commerce service, marketers should be able to increase salience of benefits of the offered services. As the customer tries offered services, marketers should simultaneously generate positive attitudes and make cross-category comparisons with traditional ways of doing business.

Because centralised mass production of services is particularly difficult, mobile commerce services are rather and better seen when they are customised. Therefore, as Berthon, Hulbert and Pitt (1999) have argued, in the context of the rapidly evolving mobile telecommunications technology, a shape strategy[7] could be most suitable in the first hand. Finally, when consumers' needs and wants proliferate and a wide variety of substitutable mobile commerce applications and services are present, an interaction approach[8] would be more appropriate.

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[7] The word 'shape' suggests that technology defines human needs and hence determines the nature of customer demand by providing innovative services that include changes in basic human behaviour. Entrepreneurial imagination and action combined with often-serendipitous series of events may lead to a service defining the market. Also, services may influence market expectations and trends without defining the market or capturing it. (Berthon *et al.*, 1999, 45-47)

[8] In interact mode, both organisation and customers offer, modify and evolve development ideas regarding the design of a service, its delivery, and methods of payment. In addition, the customer not only is a co-creator of his service and enjoyment, but he also produces a very valuable and saleable information service to the organisation. (Berthon *et al.*, 1999, 47-49)

Previous research shows that field testing mobile commerce service concepts in order to observe how it fits into consumers' operational routines discovers the only solutions to usage barrier problems. Unfortunately, 'innovators' are required to learn by trial and error, because it is impossible to anticipate all the problems the customers are likely to experience as they use an innovation for the first time. Therefore the feedback Wap-users are currently giving to mobile communications players must not be neglected. Some ways to knock down the risk barrier is to give free trials, testimonials, and do system packaging. In addition to that, especially banks' and other financial institutions' strong image may help in consumers' decision process. Appendix II presents a classification of marketing strategies to overcome consumer resistance to mobile commerce services.

The chasm between 'early adopters' and 'early majority', which Moore (1999) has presented, seems to require the most efforts from the players in the field of mobile commerce services. Previous research shows that the focus of marketers should therefore be especially on the satisfaction of 'early adopters', who tend to be the opinion leaders in a society. Still, as mentioned earlier, the technological improvement suggestions of 'innovators' should also be taken into account. Some interviewed experts claimed that in order to eventually be profitable, marketers should not entirely forget mass markets.

The fact that people have a deep-seated need to preserve freedom of choice may influence individual's decision process concerning the trial and utilisation of mobile commerce services. Therefore players in the field should create free access open service platforms in co-operation with each other in order to offer many services already in the beginning of the introduction of mobile commerce services to give consumers the freedom of choice they are likely to desire.

9.6 Suggestions for further research

Current research is a constructive research for further studies. Given the complexity of the phenomenon being researched, the research scale should be expanded to include multiple-item measures. First of all, another research subjects could be a study of business-to-business sector and organisational barriers to adoption of mobile commerce services.

In general, as the mobile commerce sector in its infancy, more integrative research should

be executed in the interface of commercial, technological and sociological theories. Additionally, semiotic examination could help designing ‘whole’ innovative services. For example, it would be interesting and profitable for the players in the field of mobile commerce services to study consumers' basic needs, values and attitudes by observing methods. Also, co-operative brainstorming together with other players in the field should be organised. Another aspects to the research would certainly bring interviewing and observing consumers who potentially belong to such adopter groups as ‘laggards’, ‘late majority’ and ‘early majority’. Introducing pilots, exercising experimental research methods would certainly give the needed additional information to decision makers.

There is also much uncertainty about the factors that motivate consumers to purchase or share information in the information society. This issue is vitally important because it concerns user trust and confidence in alternative sources of public and private information.

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Introduction to part I: Definition of mobile commerce services

This interview is executed in order to complete the findings of a Master's Thesis 'Consumer resistance to mobile commerce services'.

1) How would you define the notion mobile commerce services?

a) Mobile device dependent services
b) Mobile operator dependent services
c) Open services

2) How do you place mobile commerce services in relation with current commercial services (what is supplement and/or complement to what)?

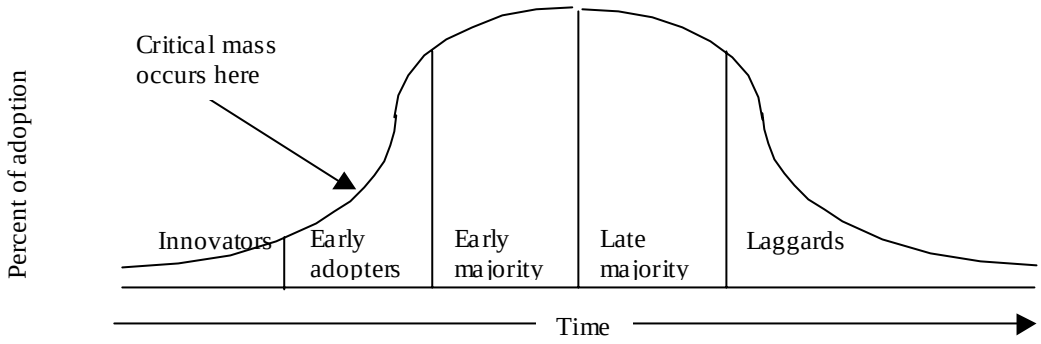
3) Which mobile commerce services you predict to be the killer applications of the future? What are the characteristics of those killer applications?

4) In which consumer segments you think those mobile commerce services would bring the most value-added?

Introduction to part II:

Mobile commerce services in relation to diffusion theories

People differ markedly in their readiness to try new products and services depending for example on cultural background, infrastructure of the society or GNP/capita. Rogers has defined 5 types of adopters: 'innovators', 'early adopters', 'early majority', 'late majority', and 'laggards'. (Rogers, 1995, 262-263)



1) In your opinion, in which stage are western cultures in the diffusion of mobile commerce services at the moment? Why do you think so?

2) How many people in the western cultures do you think will eventually adopt mobile commerce services?

3) In which time do you see this happening?

4) Do you see any differences in the adoption of mobile commerce services in different western societies? If so, how do the differences influence the diffusion of mobile commerce in those societies?

5) Do you see differences in the diffusion of the three latest telecommunications innovations:

a) Mobile devices
b) Electronic commerce
c) Mobile commerce?

Introduction of part III: Consumer resistance to mobile commerce services

Many consumers reject newness of products and services, and marketers must not be misled by the acceptance patterns of a visible minority (Robertson, 1971, 15).

1) What kinds of consumer barriers do you see in the diffusion of mobile commerce services? How much do you think they influence individual's decision process?

a) Usage barriers (Sheth & Ram, 1987, 66-67, 70):
- *Innovation is not necessarily compatible with existing workflow, practises, and/or habits.*
- *The problem of the customer's technical incompetence*

b) Value barriers (Sheth & Ram, 1987, 71-72):
- *The performance-price ratio of the innovation as compared to existing alternatives*

c) Risk barriers (Sheth & Ram, 1987, 78-82):
- *Uncertainty and potential side effects that cannot be anticipated completely*
- *Customer may worry that the technology may not be fully tested and tried*

d) Tradition barriers (Sheth & Ram, 1987, 84-87):
- *Making changes in the traditions established by the societal culture*

e) Image barriers (Sheth & Ram, 1987, 90-93):
- *Innovation acquires a certain identity: product class, industry, and country. If these associations are unfavourable as a result of stereotyped thinking, they create barriers to adoption.*

2) What critical factors should be solved in your opinion before reaching the critical mass in the mobile commerce diffusion?

3) What managerial implications do you see necessary before reaching the critical mass in the mobile commerce diffusion in western cultures? How could the players in the field of mobile commerce services accelerate the diffusion of mobile commerce services bearing in mind the characteristics of services:

- *Intangibility*
- *Inseparability of production and consumption*
- *Heterogeneity*
- *Perishability?*

A CLASSIFICATION OF MARKETING STRATEGIES TO OVERCOME CONSUMER RESISTANCE TO MOBILE COMMERCE SERVICES					
Functional Barriers	**Product Strategy**	**Communication Strategy**	**Pricing Strategy**	**Market Strategy**	**Coping Strategy**
Usage Barrier	➢ Systems packaging ➢ Integration with preceding activities ➢ Convergency			➢ Mandate usage	➢ Co-operation ➢ Clusters ➢ Partners ➢ Standards
Value Barrier	➢ Positioning ➢ Development ➢ Improvement of quality ➢ Access to up-to date information ➢ Pace, speed ➢ Convergency	➢ Anticipating benefits ➢ Free / non-expensive testimonials	➢ Lowering costs		
Physical Risk ➢ Cancer research	➢ Branding	➢ Endorsements ➢ Testimonials		➢ Trials	
Economic Risk Lowering prices	➢ Branding	➢ Endorsements ➢ Testimonials		➢ Trials	
Functional Risk Questionable performance record ➢ Wap	➢ Branding	➢ Endorsements ➢ Testimonials		➢ Trials	
Social Risk Image in the society	➢ Branding	➢ Endorsements ➢ Testimonials		➢ Trials	
Tradition Barrier ➢ Breaking status quo ➢ *Eating* ➢ *Shopping*		➢ Change agents ➢ Educating			➢ Understand and respect traditions
Image Barrier ➢ Product's or service's bad image ➢ *Horoscopes* ➢ *Chat* ➢ *Wap* ➢ *Sms*	➢ Branding	➢ Unique image building ➢ Making fun of negative image			