Association for Information Systems
AIS Electronic Library (AISeL)

BLED 2004 Proceedings | BLED Proceedings

December 2004

It.s All About My Phone! Use Of Mobile Services In Two Finnish Consumer Samples

Kaarina Hyvoenen
National Consumer Research Centre

Petteri Repo
National Consumer Research Centre

Pirkko Walden
IAMSR/Abo Akademi University

Follow this and additional works at: http://aisel.aisnet.org/bled2004

Recommended Citation
Hyvoenen, Kaarina; Repo, Petteri; and Walden, Pirkko, "It.s All About My Phone! Use Of Mobile Services In Two Finnish Consumer Samples" (2004). *BLED 2004 Proceedings*. 25.
http://aisel.aisnet.org/bled2004/25

This material is brought to you by the BLED Proceedings at AIS Electronic Library (AISeL). It has been accepted for inclusion in BLED 2004 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.

17th Bled eCommerce Conference

eGlobal

Bled, Slovenia, June 21 - 23, 2004

It's All About My Phone! Use Of Mobile Services In Two Finnish Consumer Samples

Christer Carlsson

IAMSR/Abo Akademi University, Finland
christer.calsson@abo.fi

Kaarina Hyvönen, Petteri Repo

National Consumer Research Centre, Finland
kaarina.hyvonen@ncrc.fi, kaarina.hyvonen@ncrc.fi

Pirkko Walden

IAMSR/Abo Akademi University, Finland
pirkko.walden@abo.fi

Abstract

The technology platform for the supply of mobile services has diversified in recent years. Technologies such as WAP, GPRS, MMS and smart phones offer new possibilities to build and distribute mobile services. The platforms also offer services which potentially are both more advanced and easier to use. There are two problems with this perspective: consumers apparently are not willing to part with their old phones (and thus will not get access to the service potential) and value-added in terms of technology is not necessarily value-added in terms of services. Thus we will look at the relationship between mobile phones and services to examine their adoption and acceptance. Most importantly we focus on the mobile phones users have and how they intend to upgrade them, and then on what mobile services they use and how they intend to upgrade them. Our proposal is that the technology roadmap is not synchronised with the progress in value-added services, which potentially may cause significant disruptions in the markets for mobile applications.

1 Introduction

The common wisdom that guides the mobile industry has for years been to promote services. Services are seen to have significant commercial potential especially for mobile operators. Technological developments have supported the fulfillment of this vision. Packet based communication has in Europe been realized with GPRS (General Packet Radio Service) networks. The upcoming third generation phones and networks will make the potential for mobile services even greater (Kalakota, Robinson 2002; Ahonen 2002).

The competition among network operators is driving declining average revenue per user from voice and SMS (Short Message Service), which has been the main driver for a mobile service development. The mobile phones are still used mostly for calls and messaging, and we know that services do not have a significant role when consumers buy mobile phones (Repo, Hyvönen 2003). Mobile phones are bought as appliances instead of complex information and service systems (Norman 1998; Lindmark 2002; Shapiro, Varian 1999). Service providers, unhappily, have found consumers conservative in adopting many of the technologies which their offered services are based on (Anckar et al. 2003; Carlsson, Walden 2003).

We have followed the introduction of mobile technology and mobile services in Finland for a number of years (Repo, Hyvönen 2003; Repo et al. 2004; Anckar et al. 2003; Carlsson, Walden 2003; Eriksson et al. 2001) and some trends are emerging. From a technology developer/service provider perspective the proposal for a value-added services path is simple enough: consumers now using SMS will move on to services enabled by WAP (Wireless Application Protocol) on GPRS, then to MMS (Multimedia Messaging Service) and on to smart phones, which potentially enable more services, then even more services through video players –and finally to context aware services. There are two problems with this perspective, which we will address in this paper: consumers apparently are not willing to part with their old phones (Carlsson, Walden 2003) (and thus will not get access to the service potential) and value-added in terms of technology is not necessarily value-added in terms of services (Akrich 1995).

For the service oriented mobile industry, monitoring only penetration rates of mobile phones and/or mobile services has its drawbacks. It too easily leads to the idea that once a service is set up, people will swarm to it if it is any good (cf. Shapiro, Varian 1999 on the lock-in effect). The lessons learned from the early introduction history of WAP (Keen, Mackintosh 2001) showed that a technology-enabled service cannot become a commercial success until there are enough people who can (and have the patience to) master the technology. When the early WAP service was introduced in Finland it was not available for most of the mobile phones in use, and – as our own experience shows – when accessed on a phone with WAP capability it was complex to access and expensive and slow in use. The quality of the service, not the enabling technology, became the defining factors for the users.

In this paper, we look at the relationship between mobile phones and services to examine their adoption and acceptance. Most importantly we focus on the mobile phones users have and how they intend to upgrade them, and then on what services they use with their mobile phones and how they intend to upgrade the services. Our proposal is that the technology roadmap is not synchronised with the progress in value-added services, which potentially may cause significant disruptions in the markets for mobile applications. Finland is recognised as a forerunner in the use of mobile technology (Keen, Mackintosh 2001) which is why we have used Finnish consumer data as a basis for our study.

The paper is organised as follows: we will first give a brief overview of widespread service platforms and (in section 3) establish a framework in theory in order to explain how technology may affect the adoption of mobile phones. In section 4 we will use

material from consumer surveys in Finland to find out what mobile phones are in use, what phones will replace them and how suitable both the existing phones and the new phones will be for the use of advanced services. In section 5 we will match the mobile phone technology with the consumers' willingness to use services, which then offers a basis for conclusions, in section 6, on how value-added in terms of technology can be translated to value-added in terms of services.

2 Service Platforms

With service platforms we mean the technology and media which is used to supply mobile services to users. Basic GSM (Global System for Mobile Communications) technology offers a rudimentary, yet very widespread service platform for voice and SMS. The adoption of mobile services has grown alongside the normal uses of mobile phones as communicating via SMS is basically possible for all users regardless of their mobile phone.

In recent years, the technology platform for mobile services has diversified: WAP, GPRS, MMS and smart phones offer new possibilities to design and implement both more advanced and easier to use services but at the same time a new service adoption barrier is emerging – the users need the appropriate phones to use the new services.

Mobile services are usually categorized according to content or function and more recently according to the context for using them (Kalakota, Robinson 2002; Keen, Mackintosh 2001; Repo et al. 2004; Ahonen 2002). This makes sense in our quest to understand how mobile services create and sustain user value and how they may be value-added. The technology base is thought to have a secondary role in this quest but a closer study will show that this is not necessarily true. Services within the same category are very different depending on technology base for offering them. In fact, key factors such as ease of use, perceived usefulness, attractiveness and perceived value-added are very much dependent on the technology.

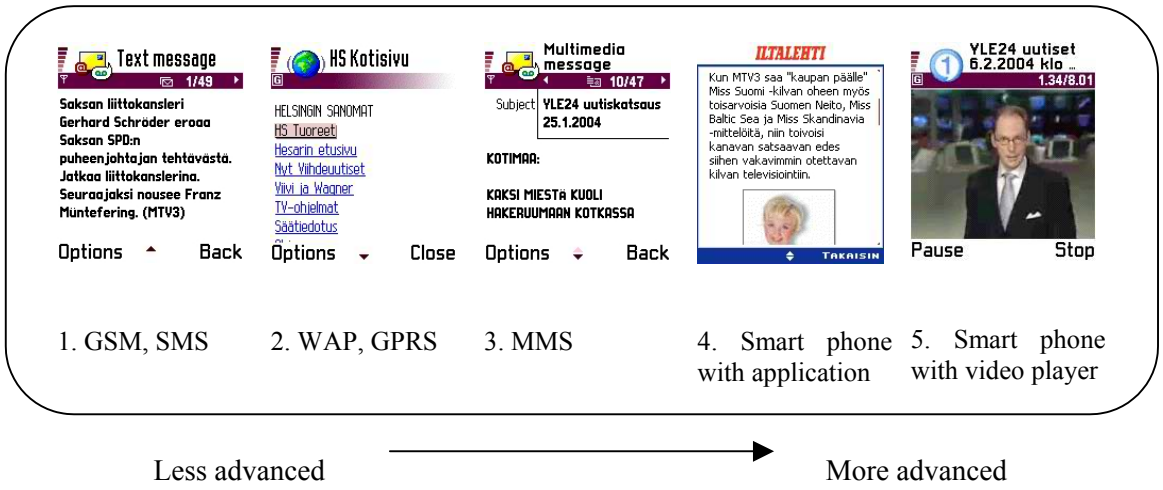

Figure 1: *News On Different Mobile Technologies*

The screenshots in fig.1 of five types of news services (made with a highly advanced smart phone) show in fact that the technology may – at least in terms of functionality – form the mobile services. Most users would have to settle for a non-colour and non-graphic version of the news, they would not have the opportunity to view technologically advanced newscasts, and an interesting question is to what extent they may suffer from a loss in value-added of their mobile news service.

The first type of news service works on a GSM phone. News is in this service sent as SMS messages to the user, who typically has to register (e.g. by sending an SMS message), with the service provider. The service typically requires the involvement of other media producers (such as newspapers) to provide the content of the news service.

The second type of news service works on a WAP phone. The WAP has turned out to be a much better platform with the prevailing GPRS network than with the original GSM network. Users of this service need not register unless the service provider so wishes. WAP and GPRS offer a basic browsing experience. Users with basic GSM phones cannot use this type of service.

MMS is an evolution of SMS. In addition to text, it supports multimedia content such as images, audio and video clips. Using this MMS service typically requires a similar ordering procedure as when using an SMS service. Users also need to have phones that support receiving MMS messages.

The fourth and fifth types of news services typically require the use of smart phones. The fourth type is an application provided by a newspaper. Users first need to install the application and download the news each time they use the service. In the fifth type, users need to install appropriate video player software to view streaming video.

In summary, it appears evident that the mobile phone is developing into a multipurpose device. As the penetration levels of the mobile phones have increased so have the new features of the mobile devices as both the mobile phone industry and the network operators want to extract more cash flow from the existing customer base. The understanding of how to build value-added services is becoming a key issue as the technology allows a wide span of services from simple communication to information searching, purchasing, banking, playing music, listening to the radio, making pictures and video clips – and many more innovations which are just now emerging.

3 Theoretical Framework

To date, many studies, primarily from the IS discipline, on adoption decisions of information technology (IT) have built on the widely recognized and used technology acceptance model (TAM, see fig. 2) by Davis (1989) (see e.g. Teo, Pok 2003; Lee et al. 2001; Lee et al. 2002; O'Cass, Fenech 2003). Although a large body of research supports the TAM as an, in general, pertinent model to explain the acceptance of IT tools and information systems it is questionable whether the model as such is applicable to consumers' decisions on getting and using mobile phones. On a general level, the two factors, perceived usefulness and perceived ease of use, make sense as a starting point in understanding the adoptions process of both mobile phones and the services they enable.

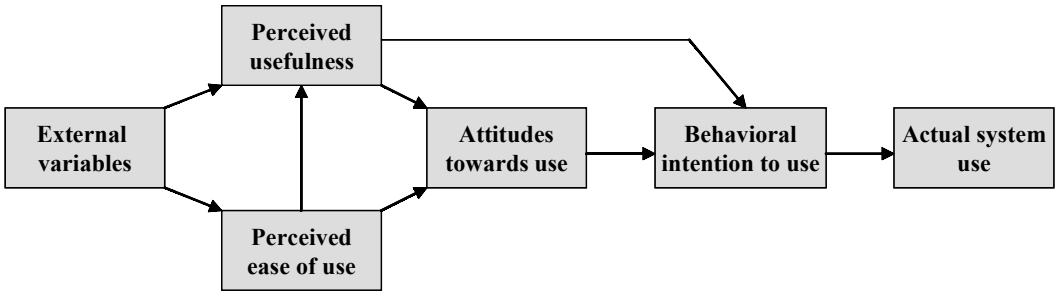

Figure 2: *The TAM Model (adapted from Davis 1989).*

The recent extension of the model to the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al. 2003) offers a few more explanatory factors. The UTAUT states that there are three direct determinants of intention to use (performance expectancy, effort expectancy and social influence) and two direct determinants of usage behaviour (intention and facilitating conditions). Significant moderating influences on usage behaviour are attributed to experience, voluntariness, gender and age (Venkatesh et al. 2003).

However, adoption decisions relating to mobile services are likely to be very different from technology adoption decisions. First of all, what the consumer chooses to adopt in mobile services is not only the technology per se, but rather a new way to handle some activities in his or her daily life. Secondly, the value-added in mobile technology is derived from the Braudel Rule ("freedom becomes value when it changes the limits of the possible in the structure of everyday life") (Keen, Mackintosh 2001; Braudel 1992) but the value-added in services is built from an actual and operational benefit in terms of time saved, simplified routines, elimination of waiting time, instant communication, etc. Thirdly, mobile services have both transactional and non-transactional dimensions, which mean that consumers' intentions to use them should be seen as multidimensional behavioural intentions (Pavlou 2002). Then we need to distinguish between different levels of mobile service adoption as we analyse consumer decisions in contrast to most technology adoption decisions. Fourthly, as pointed out by Eikebrokk and Sørebø (1998), TAM is usually applied as if every situation would be a single-target situation, building on the implicit assumption that only one specific technology is available for the potential users. In the world of mobile phones and mobile services it may be difficult to obtain valid predictions and explanations of technology acceptance with TAM when consumers are exposed to a multiple-choice situation of several alternative technologies which may (or may not) enable alternative mobile services. Fifthly, TAM is, as argued and demonstrated by Malhotra and Galletta (1999), incomplete in the sense that it does not account for social influence in the adoption and utilization of new information systems, a limitation which is apparent when mobile service adoption decisions are studied – it appears that a key reason for adopting mobile services is the possibility to interact with peers, friends and partners.

On the other hand, the ease of use dimension of the TAM model is becoming an issue as more advanced mobile phones are becoming increasingly complex and more frustrating for consumers to use. A WACOM study in 2003 found that the new functions on smart phones are too complicated for 85% of the users, and that 95% of the users became frustrated when they tried to use datacentric applications such as pictures, calendar and email. It is not clear how representative the sample was, but two other indicative observations should be noted: 83% of the users preferred to access applications on a PC rather than on a mobile phone and 61% of users would prefer to access applications by touching rather than through menus or voice activation. The teleoperator Orange in the UK has promoted 1800 sales people to the position of "phone trainers" in order to

introduce consumers to new services such as picture messaging, mobile email and infotainment. The reason why the ease of use is an issue is simple: if a potential user cannot access a mobile service, or is repeatedly frustrated in accessing it, because he/she does not master the functionality of the mobile phone, the service will not be used. Also the perceived usefulness dimension could become an issue if the mobile phone functionality could be built to adapt to the mobile services it should be supporting, in which case the value-added features of the technology would match the value-added features of the mobile service.

These observations point to a need to modify and enhance the TAM model if we want to use the theory as a platform to gain an understanding of the acceptance of mobile technology and services.

4 Data And Case Finland

Our empirical data was collected through two surveys carried out in Finland. The first survey was based on a random sample and carried out in June-July 2003. The second survey was carried out in January-February 2004 in the consumer panel operated by the National Consumer Research Centre in Finland. In order to facilitate comparisons and to possibly trace changes (which actually took place) among the consumers over the 6 months separating the surveys the same questionnaire was used in both surveys. A summary comparison of the surveys is presented in table 1.

Table 1: *Comparison Of Surveys.*

Random sample	**Consumer panel**
1000 questionnaires	1154 questionnaires
502 responses	944 responses
50.2 % response rate	81.8 % response rate
June-July 2003	January-February 2004

The first consumer survey on mobile services (with random sampling) was a traditional empirical study. A sample of 1000 consumers was randomly selected by the Population Register Centre of Finland by using the following criteria:

i. Age: 16-64 years

ii. Mother tongue: Finnish or Swedish

iii. Residence: in mainland Finland

Paper copies of the questionnaire were mailed to the sample of which 502 (50.2%) responded. The response rate is on a very acceptable level for a mail survey. The gender distribution of the returned questionnaire is 57.7% females and 42.3% males, which means that the female are slightly overrepresented compared with the population.

The survey on mobile phones and services was carried out with the consumer panel of the National Consumer Research Centre in Finland, which consists of 1154 members who have voluntarily joined it. Panellists do not get any financial compensation for their work but they receive a consumer magazine in return for their efforts.

When compared to the whole population of Finland, women and middle-aged persons are over represented in the panel. This makes the setting interesting, because these are consumer groups who are typically not considered forerunners in the adoption of technology (cf. Rogers 1995), but when developing devices and services for mass markets, their views certainly need to be considered. The panellists are in general more aware than the average consumer of issues related to consumption.

All panellists were activated and 944 responded, which makes the response rate 81.8%. Such a high response rate was expected due to the voluntary involvement of the panellists. They are, indeed, active consumers. Mobile innovations are complex for ordinary users in terms of technology and functionality. Forming well-grounded opinions on them requires efforts from the respondents. Therefore, the use of a large panel, which consists of involved individuals, is a good way to collect data.

The Christmas season sales in 2003 activated the upgrading of mobile phones in Finland, which was reflected in the panel survey. Especially phones with cameras, colour displays and polyphonic ring tones were popular (Karvonen 2004).

New low-price mobile operators entered the Finnish market in 2003. Subsequently, the market leader began differentiating its supply by aggressively marketing mobile services. Prices for services such as multimedia messaging and data transfer were significantly reduced during marketing campaigns. For example, the price for MMS was reduced from 59 cents to 5 cents and daily messages to a maximum of 1 euro. In 2003, overall mobile communication expenditure decreased by 6.9% due to enhanced competition (Kangas 2004).

In an international comparison, Finland is an advanced information society especially when it comes to mobile communication. 90% of Finns aged 15-74 years have mobile phones (Nurmela et al. 2003). This means that virtually everyone has a mobile phone: not having one is to make a statement. There are 4.5 million mobile subscriptions in Finland with a population of 5.2 million. Approximately 1.3 million new phones are sold each year for an average price of approximately 265 euro (The Association of Finnish Wholesalers 2003). The average user spends 40 euro monthly on mobile communication for 5 minutes of speech and 1 SMS per day (Rainisto 2003a). The taxation value for private calls on a business phone is 20 euro. Nokia has a market share of around 80% of the mobile phone sales in Finland. Accordingly, service providers adjust their offerings to Nokia phones, which have helped to reinforce interoperability Rainisto 2003b).

Mobile phones have become an everyday commodity in Finland, instead of being a technological investment. As in several other countries of Western Europe, the Finnish mobile phone market has now become a so-called replacement market (Gartner, Inc. 2003).

5 Mobile Phone Technologies And Willingness To Use Services

5.1 Technological Base

Out of the 502 consumers in the random sample, 447 (89%) had a mobile device i.e. a mobile phone, a PDA, a handheld computer or a communicator. Of those users, the majority (388, 86.8%) had only one mobile device in use. The corresponding figures for the panel were 899 (95.2%) and 79.8%.

In our surveys, respondents informed us of the phone models they have. On the basis of this, we tracked down which technologies they could use. The distribution of technologies is presented in figure 3. Each phone is categorized according to its highest level of technology. For example, an MMS phone includes GPRS, WAP and GSM.

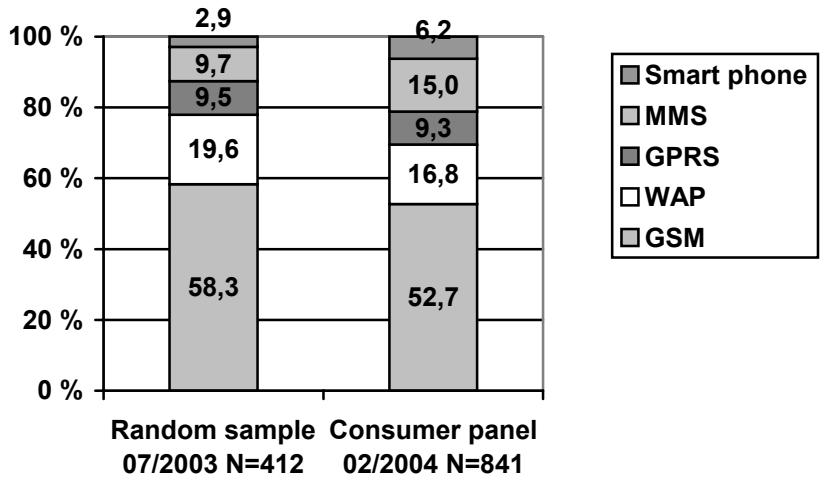

Figure 3: *Phones According To Technology.*

It turns out that GSM phones account for over a half of all mobile phones, which has a significant impact on the type of mobile services that can be used today. Other than SMS based services do not reach even half of all potential users.

For mobile services, the evolution of the mobile phones in use is important. If we were to build a scenario on the basis of the phones in use and planned upgrades, GSM upgrades to GPRS and smart phones would account for half of all upgrades, which will make the service platforms more advanced and homogenous.

The respondents were asked to report on their intentions to change their existing mobile phone to a new one. In the random sample 133 were changing their phone within a year which means that an estimated fourth of the existing mobile phones will be renewed. The panel data shows a more rapid development as 327 changes represent over a third of the mobile phones.

The general trend is that respondents wish to upgrade their phones to either a GPRS or a smart phone. Features like colour display, radio and Java seemed to be the main drivers. A smart phone was the second most wanted device among the present GSM and WAP phone owners, especially the Bluetooth, camera and video features were mentioned. Apart from smart phones, upgraders will de facto move to MMS phones due to supply.

In the Finnish market, the Nokia 3510i and the Siemens C60 are basic mass market phones and sell for 129 euro and 139 respectively, without subscription in February 2004. They are equipped with WAP, GPRS and MMS. Therefore, we assess that these technologies will be available in basically all new purchased phones. Half of all MMS phone upgrades are assumed to be smart phones, which represent the highest category. We also assess that 5% of GPRS, WAP and GSM upgraders will go for smart phones. Based on this we assess that the Finnish mobile phone base will develop as presented in figure 4.

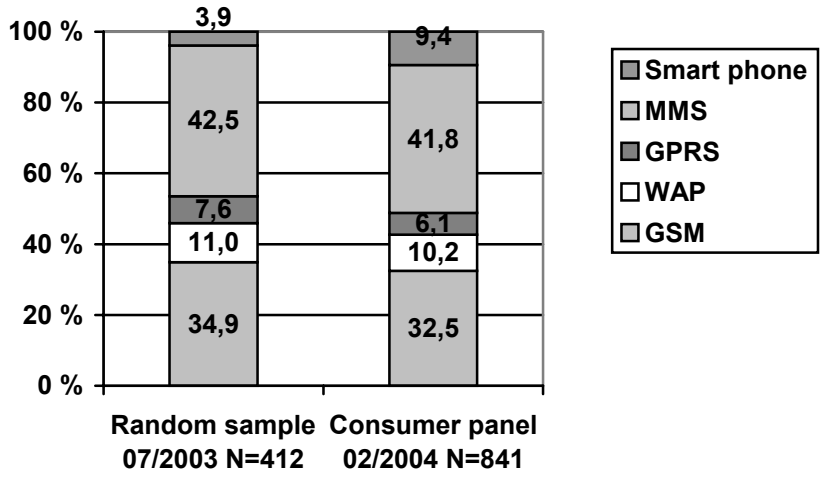

Figure 4: *Phones According To Technology One Year Later*

On the basis of our assessment, MMS will rapidly grow as a service platform. MMS phones typically include GPRS, WAP, SMS, colour dispalys and Java. However, basic GSM will still remain an important service platform. A third of all users can use only GSM but all users can use it.

5.2 Willingness To Use Services

The availability of appropriate technology is one prerequisite for the use of mobile services. We asked the respondents to report on their regular and future use of mobile services. In our analysis, we make a distinction between GSM users and users of more developed mobile phones (tables 2 and 3).

Table 2: *Regular Use Of Mobile Services*

Mobile services		Basic GSM %	More advanced %	Chi-Square Test p-value
SMS	RS	91.5	94.7	.212
	PA	94.6	99.0	.000
Ring tones	RS	20.5	26.8	.150
	PA	7.5	19.5	.000
Icons and logos	RS	16.9	23.1	.128
	PA	6.2	16.0	.000
Routine m-banking	RS	16.1	21.9	.149
	PA	10.0	14.2	.065
Personalised information messages	RS	7.8	17.3	.005
	PA	5.2	13.5	.000
MMS	RS	9.2	20.8	.001
	PA	4.4	14.5	.000
Mobile email	RS	9.8	18.1	.019
	PA	5.0	15.2	.000
Internet browsing	RS	6.9	12.5	.060
	PA	3.2	10.9	.000
Entertainment, games	RS	2.8	4.8	.229
	PA	0.0	2.5	.001
Payment	RS	2.8	7.1	.044
	PA	5.2	9.1	.029
Reservation of movie tickets etc.	RS	3.7	6.0	.296
	PA	3.9	6.4	.102
Shopping	RS	1.9	5.4	.056
	PA	1.6	3.6	.070
Making reservations, purchasing flight/train tickets	RS	4.6	7.2	.281
	PA	2.3	4.1	.143
Location based services (your position, restaurants etc.)	RS	3.7	3.6	.961
	PA	0.7	3.8	.002

RS=random sample, PA=panel.

Only SMS is used widely and regularly. Other services with more widespread regular users include ring tones, icons and logos, and routine m-banking. MMS, mobile email and personalized information messages have regular users amongst those with more advanced mobile phones. In general, the use of services is more common with the use of more advanced mobile phones.

The numbers on some services such as mobile e-mail, MMS, Internet browsing, ring tones and icons seem higher than expected, particularly for GSM users. Partly this can be explained by the fact that users have a second phone, which supports these services. However, we believe that some users also mix up phone features with services and non-phone services. Furthermore, service categories are difficult to describe exactly (cf. Ministry of Transport and Communications 2004). It seems that the panel respondents as a group respond more precisely to questions.

Within both samples we tested the differences between the use of services and the type of phone the users had. The use was categorised as (i) regular use and (ii) no use or trial use and the phones as (i) basic GSM and (ii) more advanced phones. The p-values are presented in table 2. In the random sample there is only three services where the two variables are significantly associated with each other, personalised information messages, MMS and mobile e-mail ($p<0.01$); this result is supported by the panel data. The panel data moreover, with presumably more knowledgeable users, show several services where the two variables are associated with each other. The analysis supports the idea that more advanced mobile phones trigger opportunities to use more advanced services.

Next we look at how this opportunity is transferred to willingness to use services in the future. User willingness to use mobile services is greater than the present use. Most of the services are found interesting. Surprisingly, entertainment and especially games seem not to interest users at all. Purchases and personalized information services also receive rather little interest.

Table 3: *Willingness To Use Mobile Services In The Future.*

Mobile services		Basic GSM %	More advanced %	Chi-Square Test p-value
SMS	RS	91.0	92.8	.560
	PA	97.9	99.5	.050
Ring tones	RS	44.3	52.3	.134
	PA	57.6	71.9	.000
Icons and logos	RS	42.5	46.8	.401
	PA	52.3	63.9	.001
Routine m-banking	RS	48.4	51.9	.502
	PA	41.8	46.1	.215
Personalised information messages	RS	28.0	27.5	.909
	PA	18.0	34.7	.000
MMS	RS	45.9	50.3	.392
	PA	42.8	62.5	.000
Mobile email	RS	52.1	60.0	.126
	PA	65.0	71.1	.061
Internet browsing	RS	27.4	45.7	.000
	PA	32.1	42.8	.001
Entertainment, games	RS	7.9	12.9	.115
	PA	6.7	14.8	.000
Payment	RS	41.0	46.3	.229
	PA	54.8	68.6	.000
Reservation of movie tickets etc.	RS	44.9	51.8	.179
	PA	53.5	66.8	.000
Shopping	RS	17.7	19.8	.607
	PA	23.7	36.1	.000
Making reservations, purchasing flight/train tickets	RS	41.9	44.5	.605
	PA	40.8	52.2	.001
Location based services (your position, restaurants etc.)	RS	41.7	55.8	.006
	PA	43.3	49.4	.079

RS=random sample, PA=panel.

The random sample survey indicates that users with more advanced mobile phones are only somewhat more interested in using most of the mobile services in the future than basic GSM users. The adoption rate will be slow as the willingness to use services in the future is moderate even among users with more advanced mobile phones in comparison to basic GSM users. The panel survey, on the other hand, indicates that there would be greater differences in the future use of mobile services between users of basic GSM users and those with more advanced mobile phones.

Within both samples we tested the differences between the future use of services and the type of phone the users had. The p-values are presented in table 3. In the random sample there is only two services where the two variables are significantly associated with each other, internet browsing and location based services ($p<0.01$). The panel data show several services where the two variables are associated with each other.

The differences between responses on future use in the two surveys are possibly explained by the rapid development of the service supply. Service marketing has grown considerably between the surveys. It also seems that panellists as active consumers believe they will use services more in the future than consumers in average.

6 Conclusions

The technology base and the functionality features of mobile phones pose a barrier to the adoption of advanced mobile services. It takes time before significant numbers of users have the appropriate phones to use the services. This is something that seriously should be taken into account when forecasting the future use of mobile services.

Our data indicates that a majority of Finnish mobile phone users still do not have the appropriate phones to use advanced mobile services. Basic GSM users cannot use them and most other users can only enjoy rudimentary features of advanced services. The rate of upgrading mobile phones is slow, it has typically been 2-3 years, which is one explanation for the slow acceptance rate of new, more advanced mobile services.

Users eventually replace their old phones as they either lack desired features or wear down. Regardless of desired features, the new phones support advanced services. They are typically equipped with WAP, GPRS and MMS. Our data indicates that the renewal rate is now picking up speed and that many users will renew their phone within one year. The life cycle of the mobile phone is getting shorter. The renewal rate and the user groups who renew their phones first deserve much attention.

We did not look in detail at the diffusion of colour displays, which we believe is important for the adoption of services. In contrast to many other technologies, we argue that more advanced mobile technologies facilitate ease of use. This is mainly due to the limitations of early generations of displays and networks. Newer mobile phones and networks can offer services that are graphically appealing, rely on multimedia and operate in real time.

There are only moderate differences in the regular use of services between owners of basic GSM phones and other mobile phones. This would indicate that no rapid service adoption is to be expected due to mobile phone upgrades. However, users report that they are willing to use services in the future. When this will happen and to what extent cannot be precisely forecasted. This shows that developments in the enabling technology and the progress of value-added services are not synchronised.

Services based on GSM and SMS will remain important although more advanced services are launched. They have found their place among everyday routines and can be used by

virtually all mobile phone users in Finland, now and in the future. On the other hand, it is unlikely that the market for SMS services will grow. Eventually, more advanced services will take over. On the basis of our results, we would assess that this will not take place in the immediate future. First, many users will need to purchase new phones and then experiment with and learn to use the new services. Eventually, users will find uses for the phones and mobile services as part of their everyday activities, but it will take time (Bijker, Law 1992; Repo et al. 2004).

The survey based on the random sample can be generalized to all Finnish users. The panel survey emphasized the trends in the random sample. In this respect, our surveys also show that using a large panel consisting of motivated respondents can be an efficient way of gathering data of good quality when it comes to technologically complex and abstract issues. This is particularly true when one looks for topical data on markets which are developing rapidly.

References

Ahonen, T.T., (2002): "m-Profits. Making Money from 3G Services," John Wiley & Sons, Chichester.

Akrich, M., (1995): User Representations: Practices, Methods and Sociology, "Managing Technology in Society. The Approach of Constructive Technology Assessment", A. Rip, T. J. Misa, J. Schot (Editors), Pinter Publishers, London.

Anckar, B., Carlsson, C., Walden, P., (2003): Factors Affecting Consumer Adoption Decisions and Intents in Mobile Commerce: Empirical Insights, "16th Bled Conference Proceedings", Bled, pp. 886 - 902.

Bijker, W.E., Law, J., Editors, (1992): "Shaping Technology/Building Society - Studies in Sociotechnical Change," The MIT Press, Cambridge, Mass.

Braudel, F., (1992): "The Structures of Everyday Life: The Limits of the Possible (Civilization and Capitalism: 15th-18th Century)," University of California Press, Berkeley.

Carlsson, C., Walden, P., (2003): Mobile Commerce – Empirical results on Value-Added Products and Services, "Proceedings of the Second International Conference on Mobile Business", G.M. Giaglis et al. (Editors), Vienna, pp. 427 - 437.

Davis, F.D., (1989): Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology, MIS Quarterly, Vol. 13, No. 3, pp. 319 -340.

Eikebrokk, T.R., Sørebø, Ø., (1998): Technology Acceptance in Situations with Alternative Technologies, "Norsk konferanse for organisasjoners bruk av informasjonsteknologi", Oslo, pp. 89 - 97.

Eriksson, P., Hyvönen, K., Raijas, A., Tinnilä, M., (2001): "Mobiilipalvelujen käyttö 2001: asiantuntijoille työtä ja miehille leikkiä?" (Mobile service use 2001: Work for professionals and play for men?), National Consumer Research Centre, Helsinki, in Finnish.

Gartner, Inc., (2003): Gartner Says Worldwide Mobile Terminal Market Increased 12 Percent in Second Quarter of 2003, Press Release September 2, 2003, Retrieved September 8, 2003, from http://www4.gartner.com/5_about/press_releases/pr2sept2003b.jsp

Kalakota, R., Robinson, M., (2002): "M-Business. The Race to Mobility," McGraw-Hill, New York.

Kangas, P., (2004): "Suomen telemaksujen hintataso 2003" (Price levels for telecommunication charges in Finland in 2003), Ministry of Transports and Communication, Helsinki, in Finnish.

Karvonen, T., (2004): Matkapuhelinmyynti teki uuden ennätyksen (Mobile Phone Sales Broke a New Record), Tietoviikko, Retrieved February 2, 2004, from http://tietoviikko.fi/doc.ot?f_id=535649

Keen P., Mackintosh R., (2001): "The Freedom Economy: Gaining the M-commerce Edge in the Era of the Wireless Internet," Osborne/McGraw-Hill, Berkeley.

Lee. D., Park, J., Ahn, J., (2001): On the Explanation of Factors Affecting E-Commerce Adoption, "Proceedings of the 22nd International Conference on Information Systems", New Orleans, pp. 109 - 120.

Lee, W.J., Kim, T.U., Chung, J-Y., (2002): User Acceptance of the Mobile Internet, "Proceedings of the First International Conference on Mobile Business", Athens.

Lindmark, S., (2002): "Evolution of Techno-Economic Systems. An Investigation of the History of Mobile Communications," Chalmers University of Technology, Gothenburg.

Malhotra, Y., Galletta, D.F., (1999): Extending the Technology Acceptance Model to Account for Social Influence: Theoretical Bases and Empirical Validation, "Proceedings of the 32nd Hawaii International Conference on System Sciences", Maui, Hawaii, IEEE Computer Society Press, Los Alamitos.

Ministry of Transport and Communications, (2004): "Mobiilipalvelumarkkinat Suomessa 2003" (Mobile service market in Finland 2003), Ministry of Transport and Communications, Helsinki, in Finnish.

Norman, D. A., (1998): "The Invisible Computer. Why Good Products Can Fail, the Personal Computer Is So Complex and Information Appliances Are the Solution," The MIT Press, Cambridge, Mass.

Nurmela, J., Parjo L., Ylitalo, M., (2003): A Great Migration to the Information Society. Patterns of ICT Diffusion in Finland in 1996-2002, Reviews 2003/1, Statistics Finland, Helsinki.

O'Cass, A., Fenech, T.O., (2003): Web Retailing Adoption: Exploring the Nature of Internet Users Web Retailing Behaviour, Journal of Retailing and Consumer Services, Vol. 10, No. 2, pp. 81 - 94.

Pavlou, P.A., (2002): What Drives Electronic Commerce? A Theory of Planned Behavior Perspective, "Proceedings of the Academy of Management Conference", Denver, Colorado.

Rainisto, S., (2003a): Täältä nousee uusi Elisa (The New Elisa Rises from Here), Talouselämä, 30/2003, pp. 24 - 28, in Finnish.

Rainisto, S., (2003b): Nokia vie, muut vikisevät (Nokia Leads, Others Squeak), Talouselämä, 34/2003, pp. 18 - 21, in Finnish.

Repo, P., Hyvönen K., Pantzar, M., Timonen, P., (2004): Users Inventing Ways to Enjoy New Mobile Services – The Case of Watching Mobile Videos, "Proceedings of the 37th Hawaii International Conference on System Sciences", Waikoloa, Hawaii.

Repo, P., Hyvönen, K., (2003): Services, Features or Replacement of Damaged Goods? The Diffusion of Mobile Service Platforms, "Proceedings from the 2003 International Business Information Management Conference", Cairo.

Rogers, E. M., (1995): "Diffusion of Innovations," Fourth Edition, The Free Press, New York.

Shapiro, C., Varian, H. R., (1999): "Information Rules. A Strategic Guide to the Network Economy," Harvard Business School Press, Boston, Mass.

Teo, T.S.H., Pok, S. H., (2003): Adoption of WAP-Enabled Mobile Phones among Internet Users, Omega, No. 31, pp. 483 - 498.

The Association of Finnish Wholesalers, (2003): The Sales to Trade of Mobile Phones 1990-2002, Retrieved October 23, 2003, from http://www.etkry.com/mobile02.xls

Venkatesh, V., Morris, M.G., Davis, G.B., Davis, F.D., (2003): User Acceptance of Information Technology: Toward a Unified View. MIS Quarterly, Vol. 27, No. 3, pp. 425 - 478.