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Mobile Network Operator Strategy: An Obstacle for Mobile Value Services?

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Abstract

Foresight scenarios indicated already in the late 1990's that mobile commerce would become significant. The reasoning is simple: the rapid development of mobile technology will drive a growing mobile services industry which will be an integral and growing part of mobile commerce revenues. However, the adoption of new mobile services has been much slower than expected. Basic services such as SMS, ring tones, icons and logos are still the most popular services. Several reasons have been suggested for the slow adoption rate, ranging from cultural issues to business models. In this paper we argue that the business strategies used by the mobile network operators (MNO) may be a reason why mobile services are not growing. We use results from a longitudinal study 2003-2007 to make our case, and then we show some mobile value services as an illustration of the role played by the MNOs.

Keywords

Mobile value service, mobile network operators, mobile strategy, mobile markets, mobile business model.

INTRODUCTION

In early 2000 Durlacher Research Ltd estimated that the European mobile commerce market would reach €23.6 billion by 2003. It did not happen. There are several similar estimates which have been published in the last 2-3 years and it appears that the analysts are not quite clear about what the coming mobile services will be neither what business models will be viable for an effective launch and market penetration – not to mention what the markets and the customers should be.

In 2007-8 it has become apparent that the introduction of mobile technology applications has not been progressing in any way close to the forecasts and scenarios. A number of technological advances took place alongside the introduction of GPRS in Europe. For example colour screens, cameras and multimedia messaging services (MMS) became available. Such features were first introduced in high-end smart phones, which operate with the Symbian OS that supports third party services. Java became more mature, which lead to the birth of a market for downloadable applications, in particular mobile games. Streaming video to mobile phones was tested and became functional (Repo et al. 2004) and it was generally believed that the new and better technology would promote and even drive both the emergence and the adoption of new mobile services.

In the last 2-3 years services, which rely on graphical browsing or multimedia messaging and once were classified as advanced, have approached basic availability for regular users. Information services, ticketing and different forms of entertainment are maturing services which can be used over a number of mobile technologies, including SMS (short message service, e.g. text messaging). Studies of the mobile Internet tend to neglect this because they do not consider SMS to be an Internet technology (e.g. Funk 2005; Ishii 2004). The user is more concerned with the service than the technology (the user may not even know what the technology is) and the basic form of the service may well be sufficient for the everyday needs of the user. The introduction of higher speed networks, multimedia data services and the parallel use of multiple services may not be seen as value-adding by the user; she may not even notice the difference as she is using only basic services where the new features that are enabled by a new and more advanced technology do not add anything and hence the new features are not important to her.

This has had consequences for the optimistic scenarios built for the mobile commerce market: the rapid development of mobile technology (there are now more than 3 billion mobile phones in use) should be driving a growing mobile services industry which should be an integral and growing part of mobile commerce revenues. Now, however, it has become evident that basic services such as SMS, ring tones, icons and logos are still the most popular services, not the more-revenue generating, more advanced mobile services which are enabled by the new mobile technology. Several reasons have been suggested for the slow adoption rate, ranging from

cultural issues to business models. In this paper we argue that the business strategies used by the mobile network operators (MNOs) to introduce mobile services to the consumers may be a reason why the demand for and the use of them are not growing. We use results from a longitudinal study 2003-2007 to make our case, and then we show some mobile value services as an illustration of the role played by the MNOs.

The study carried out as the basis for this paper combines two different methodologies: (i) a longitudinal study on the use and intended use of 30 mobile services in Finland 2003-2007, with the same questionnaire each year and a random sample of 1000 consumers in Finland; (ii) a design science based study of the building and implementation of mobile services in order to find out what features and what support will form value services for the users. This serves as a description and partial explanation of why the mobile services introduced by the MNOs have been slow to get acceptance. The remainder of this paper is structured as follows: in the following sections we have collected a number of facts on the Finnish mobile service market; we report on the results of the longitudinal study; we describe the development and implementation of some mobile value services and discuss a possible business strategy; and in the concluding section we discuss some of the findings and offer a number of conclusions.

MOBILE PHONES AND MOBILE SERVICES MARKET

The brief overview of mobile phones and mobile services markets is based on material from Finland as Finland has been one of the forerunners in the development and adoption of mobile phones. The number of mobile phone subscribers in Finland is approximately 6.1 million, which represents a penetration rate of more than 100%. The three main MNOs in Finland are TeliaSonera with a market share of 40.1% in 2007 (42.4% in 2006), Elisa 38.3% in 2007 (38.7% in 2006) and DNA 21.6% in 2007 (18.9% in 2006); the overall trend is that TeliaSonera is loosing market share, Elisa is more or less stable and DNA is winning customers from TeliaSonera with an aggressive pricing strategy. The churn among mobile phone subscribers was significant in 2004-2006, but after that markets have stabilised and appear to be maturing (Viestintävirasto 2008).

According to a recent empirical study the most popular service in Finland is SMS; as many as 90% of the respondents use the service (Viestintävirasto 2008). The gap to MMS is significant as only 34% of the subscribers use the service. Then follows Internet browsing or search services with 16% of the subscribers. The less than overwhelming use of the more developed mobile services is shown by the fact that 64% of the respondents did not find any use for the developed mobile services; 18% reported that they cannot use the services (too complicated) and 16% said that the services were too expensive or of no interest. Within the near future the respondents expected the usage to remain on the same level. Surprisingly, only 3 % of the respondents were willing to try out new mobile services given the existing pricing and some 59% were not under any circumstances willing to try new mobile services.

There are similar observations in the Finnish mobile services market from previous years. Since 1999, the MNOs have marketed a wide variety of services for mobile devices, ranging from ringtones and icons, instant messaging to presence services. The Finnish consumers have been offered WAP-based mobile banking, lotteries, m-commerce and travel services (in 1999) and games (enabled by Nokia's N-Gage in 2003 and latter smart-phones). Finally, there were offers of location-based services (on an experimental basis in 2002, and GPS-based in 2006), multimedia messaging service (introduced in 2003), mobile TV (2005) and online music services. The MNOs were – at least in the early years – hunting for the famous "killer applications", the breakthroughs to turn mobile services into a national Billion-euro industry. The strategy was in most cases to explore some technology innovations ("look what we found"), create a service (e.g. mobile banking, lotteries, mobile TV, online music service), push it to the consumer market, educate the consumers to start using the service and then withdraw it from the market after 3-6 months as revenue was not growing according to expectations.

The introduction of Mobile TV is an illustrative case. In 2005, an experiment with mobile TV took place in Helsinki and this was widely reported as a breakthrough for new technology and new mobile services (access your favourite TV programs where-ever you are). The test group was mostly dissatisfied with (i) the quality of the broadcasting, (ii) the quality of the mobile phone used, and (iii) the mobile TV programming, which was not adapted to the new technology. Most important, however, was that they were not ready to watch TV outside their regular, everyday TV-watching habits (Carlsson and Walden 2007).

Although there have been many relevant initiatives, developments in mobile services in Finland have recently slowed down compared to many other countries, for example Japan, Korea and Italy, and the optimistic and experimental mood of five years ago has been replaced by a more cautious atmosphere (e.g. Carlsson et al. (2005)). Fewer risks are being taken in the development and marketing of new services. Due to regulatory reform (number portability led to lower entry barriers for new entrants, higher churn-rates and eroding prices) and an increase in overcapacity after the introduction of UMTS, Finland is considered to be a difficult market, as indicated by a rapid decrease of the ARPU (Viestintävirasto 2008). Finnish mobile prices are very low: the total

value of the Finnish mobile services market in 2004 was €246 million (a growth of 11% compared to 2003); the corresponding numbers were €258 million in 2005 (+ 5%) and €267 million in 2006 (+ 3%). This shows a slowing growth in mobile services, i.e. the mobile phone users are not adopting new services as quickly as before (e.g. Verkasalo 2008). There is also another driver for this development – the MNOs have cut back on R&D expenditure over the last few years and are working the Finnish mobile services market with a *cash cow* strategy (Elisa Communications has spent less than 0.5% of revenue on R&D in 2005-2007; see Elisa Annual Report 2007).

Summarising the insights from these tales we will have to ask a simple question: *are the MNO business strategies forming an obstacle to building mobile value services?*

We need an understanding of what forms *mobile value services*: mobile services become mobile value services when they become part of everyday routines (the *Braudel* Rule, Keen and Mackintosh 2001). The user of a mobile service will change his/her everyday routines and will be reluctant to give up the service as long as it is available. This builds on the observation that customer value can be defined in several ways and that not every mobile service will fulfil customer needs. The central issue in designing a service is value. A service provider is assumed to deliver and delivers a certain value proposition (Bouwman et al. 2008). There are four interrelated concepts of value: intended and delivered value on the part of the service provider, and expected and perceived value on the part of the service user. In their work Bouwman et al. (2008) noted that users redefine the value and the way they use technology and/or services in a way that fits their preferences and their behaviour. In many cases the intended value is not the value that will be delivered so the perceived customer value, that made the customer decide to try the service in the first place, has often little to do with the expected value (Bouwman et al 2008, Chen and Dubinsky, 2003). Perceived value is what matters to the customers. Our research question could now get a more sinister form: *have the MNOs been neglecting their customers' needs and wants*? We do not (yet) have enough facts to tackle this question and will focus on the previous, more theoretical version.

The starting point for any service business model is the customer value of a service (here) that an individual company or network of companies has to offer and which will satisfy customer needs. The customer value is the most relevant aspect of the service, if one wants to offer a service that really matters to the users. From the producer point of view technology is a driver for new innovative services and business models; from a customer point of view technology is only an enabler. A business model is "…a blueprint for a service to be delivered, describing the service definition and the intended value for the target group, the source of revenue, and providing an architecture for the service delivery, including a description of the resources required, and the organizational and financial arrangements between the involved business actors, including a description of their roles and the division of costs and revenues over the business actors" (Haaker et al. 2006). Getting to the core of this definition we can say that a business model describes the business logic of service, i.e. the way value is created for customers and the way providers can turn created value to revenue. Service, technology, organization and finance (STOF-model) are the domains that interact with each other and describe the context of the business models (Bouwman et al. 2008).

Here we have chosen to focus on MNO strategies as we do not (yet) have enough facts to work through the MNO business models. In the next section we will establish a basis in facts from a longitudinal study we have carried out on the use and intended use of 30 mobile services in Finland.

MARKET STUDIES OF MOBILE SERVICES

The empirical data was collected in spring 2003, 2004, 2005, 2006 and 2007, via a self-administered questionnaire which was mailed out to a sample of 1000 Finnish consumers. The sample was selected from the electronic sampling frame provided by the Finnish Population Register Centre and based on a stratified sampling procedure. To select the sample we used a simple random sampling method with the frame that offered a complete representation of the target population, which was defined as the Finnish population between the ages of 16 and 64, whose mother tongue was either Finnish or Swedish and who reside in mainland Finland. The effective response rate was about 50 % for each one of the five years. The longitudinal material has been extensively analysed with statistical methods (Bouwman et al. 2007; 2008; Walden et al. 2007) which is why we here will use a simplified model (see Figure 1). We collected the observations we had of the actual use of 30 mobile services in 2003-2007 in our random sample of 1.000 consumers and used a simple (-1, 0, +1) coding scheme to represent the relative use of the services, and the relative changes over time of the services (-1 ["I have tried" + "I have never used"]; 0 ["A few times a month"]; +1 ["I use daily" + "I use weekly"]. Using the Braudel Rule as a basis it is easy to understand why and how mobile services become mobile value services, i.e. how they become part of everyday routine and hence will make sense as a basis for viable business. When the notion of mobile value service is applied to mobile service markets it may help us to explain why some heavily promoted mobile services have failed, and why the SMS has been a success even if it was not advertised at all in the beginning – it was not even understood to be a mobile service.

The longitudinal study shows that the use of mobile services was the same in 2003-2007 and was limited to mainly three: SMS, ring tones and icons, and search services. This is despite the efforts made by the MNOs to launch additional 20-30 mobile services. The longitudinal study also shows that the market is changing slowly and that the introduction of more advanced phones did not drive the acceptance of new mobile services. The main explanation we have is that the consumers have not figured out how the mobile services will benefit them in their everyday routines, i.e. replacing daily routines in such a way that there would be no return to the old routines. This is so far mainly a proposition which should give a good basis for a number of empirical studies of how new mobile services would fit into the everyday routines of ordinary people.
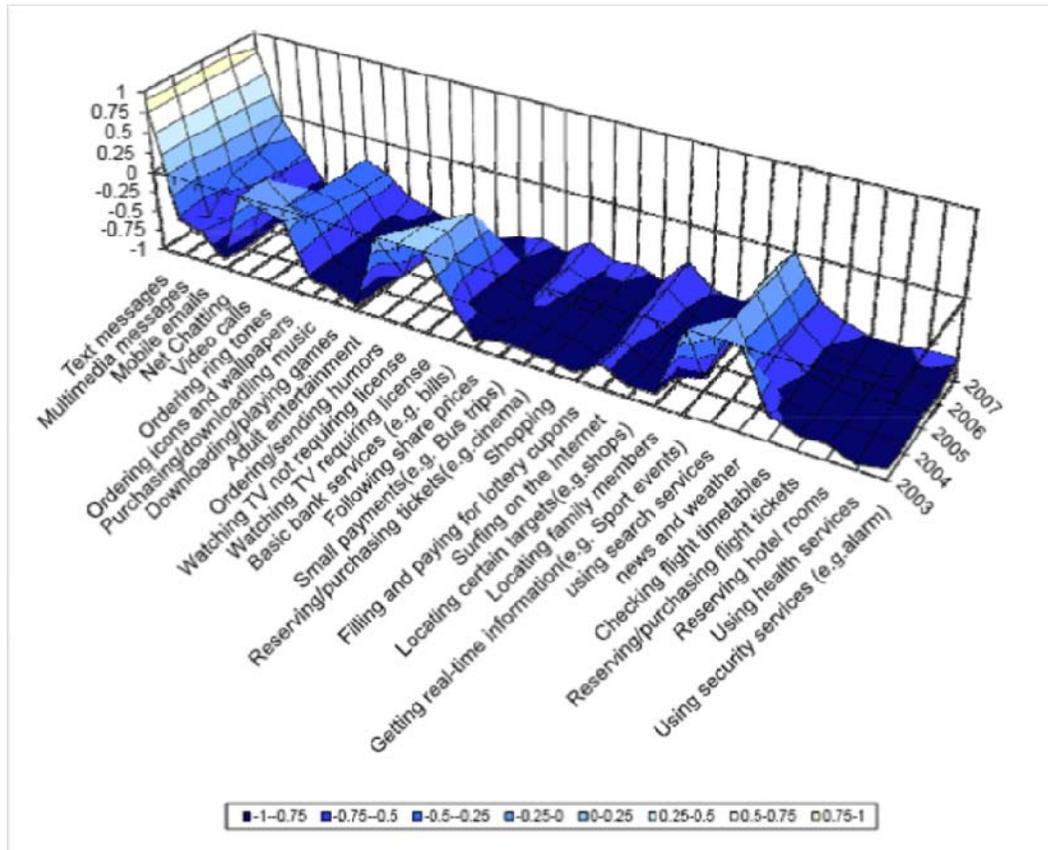

Figure 1: Mobile markets in Finland 2003-2007

The longitudinal study also shows a clear and growing trend for mobile services when we asked about the future use of the services (see Figure 2). We used a similar coding scheme as for the actual use of services and collected the observations we had of the expected future use of 30 mobile services in 2003-2007 in our random sample of 1000 consumers; the (-1, 0, +1) coding scheme now represents the relative future use of the services, and the relative changes over time of the intended use of services (-1 ["I would definitely not use" + "I would probably not use"]; 0 ["I do not know"]; +1 ["I would probably use" + "I would definitely use"].We interpreted this as a proposal that consumers believe that they will use mobile services more in the future than they do today, i.e. that even if there is no need for a specific mobile service now, there may well be a need in the future. It is also easier to find a possible future use for specific mobile services as the context is not as clear as the present; this means that the impact on the everyday routines probably is much less and that the consumer is more willing to agree that the use may be beneficial. We carried out a correlation analysis which showed that the changes in future intentions are slow which means that the actual use will be slow to materialise.
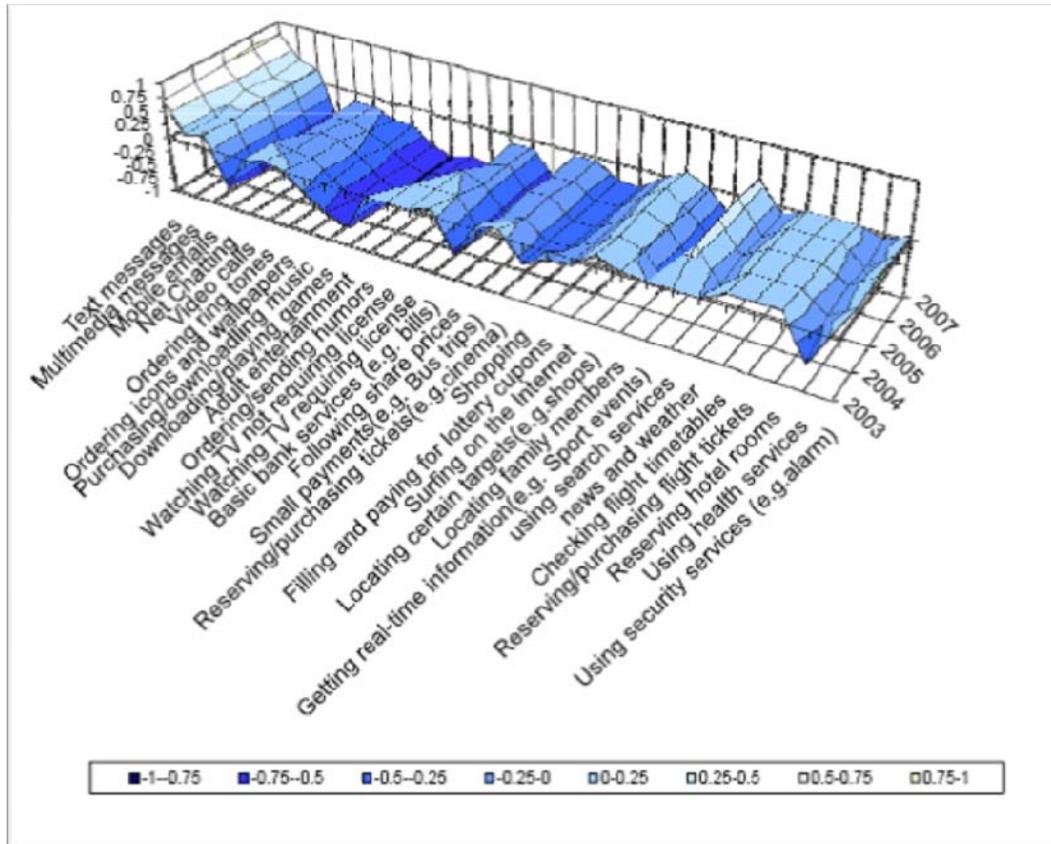
Figure 2: Future mobile markets in Finland 2003-2007

Overall it is fair to state that ordinary people are more concerned with the mobile services than the technology and that the basic form of the services may well be sufficient for the everyday needs of a user. The introduction of higher speed networks, multimedia data services and the parallel use of multiple services seem not to be value-adding for the user. Thus the penetration of mobile services will be better understood as a service diffusion process than as a technology acceptance process (e.g. the TAM, UTAUT models; Carlsson et al. 2006; Davis 1989).

As was found in a number of empirical studies (Carlsson et al. 2005; 2006), there is a supply-demand mismatch for mobile services in Finland. Even in Japan and Korea, which are considered to be forerunners in the adoption of mobile services, rather basic services (messaging and ring tones) have been most successful (Funk 2005; Kim et al. 2004; Srivastava 2004). Basic services have during recent years been popular also in Europe (Mylonopoulos and Doukidis 2003) but more advanced services have not yet found their way into the everyday lives of consumers.

Thus the challenge faced by the MNOs starts to form: there is a need to gain a better understanding of mobile services and to build new business strategies to start delivering these services to the consumers in such a way that technology-based mobile services can be transformed into mobile value services ("… mobile services become mobile value services when they offer the possibility to expand the limits of the possible in the structure of everyday routines" (Keen and Mackintosh 2001)). It may also be the case that the building of mobile value services should not be the task for MNOs – i.e. their business strategies are not up to the task.

MOBILE VALUE SERVICES AND BUSINESS STRATEGY

We will next present a number of mobile services developed for tourists in the Aland Islands as a way to illustrate what could be mobile value services. The services were developed with iterative prototyping in cooperation with future users of the services and the SMEs that were to commercialize the services. The services were built and tested according to the standard principles used in design science, which prescribe continuous improvement until both users and developers reach a stage where all future improvements are marginal (see Figures 3-5).

Figure 3: A mobile booking service

Figure 4: A mobile guiding service

Figure 5: A mobile service for getting a fishing permit

These three services (see Figures 3-5) have been built to be mobile value services, i.e. they satisfy the Braudel Rule. The *booking service* offers the possibility to reserve a cabin for staying overnight – or several nights – when the tourist is in the archipelago and decides that he/she likes it; then it is possible to go on and book a table at the restaurant, the sauna, boats, bicycles, etc. on site. These activities are now carried out in ways which are much more time consuming, cumbersome and irritating as necessary information is not available – the activities

described are in many cases impossible to carry out. The *mobile guiding service* shows a tourist attraction which does not exist – the ruins remaining of the Bomarsund fortress do not give any impression of what the castle looked like. Local guides are not available without prior booking – and sometimes they are not available at all – and a visitor will not have any chance to get to know what the fortress was and what happened when it was destroyed. The *mobile fishing permit* makes it possible for a visitor in the archipelago to go fishing legally; the alternative activity is to find a place which is selling fishing permits – this is not always known by the local people – then to go there (which will take a few hours), then to find out if the place is open for business (which is not always the case, even during normal business hours) and then finally to buy a permit. This operation is complex and takes so much time that visitors quite frequently go fishing without a valid permit, i.e. the mobile fishing permit will change the routines of a visiting fisherman (and it will generate revenue for the owners of the fishing waters from which they now do not get any income). In summary, these mobile services make so much sense that users will not be happy to try to be visitors or tourists without them.
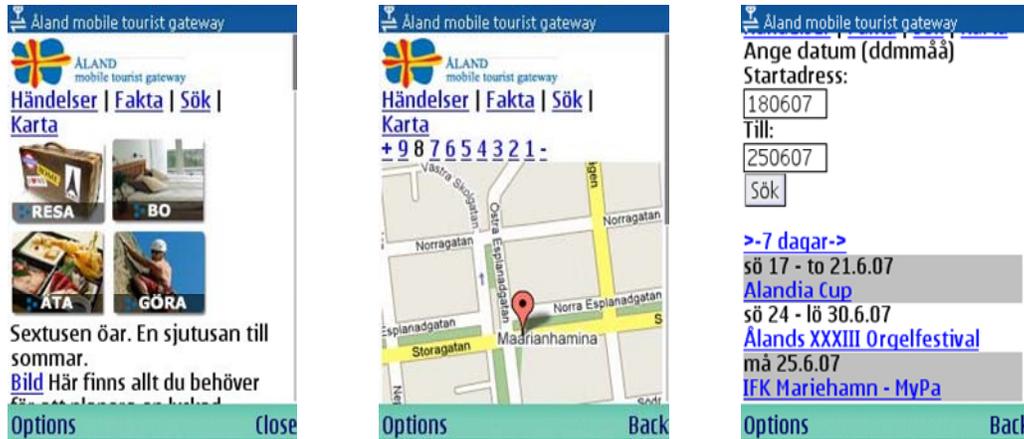

Figure 6: A mobile tourist gateway

Figure 7: A mobile community service for tourists

The mobile services may be stand-alone or they may be combined to form bundles, i.e. they will produce added value through interaction with other mobile services. The mobile booking service could be part of a *mobile tourist gateway*, i.e. first there is a possibility to find out about the islands while travelling there (travel, hotels, restaurants, events) and then to book for the places and services the tourist wants to enjoy; to this combination it would be possible to add the *mobile guiding service* (and other services). The *mobile community service* would typically combine with the mobile gateway, the mobile guiding service or the mobile fishing permit, etc. The bundles are typical mobile value services as they represent what a tourist would be looking for as "the next logical step" and which cannot be activated without considerable effort and experimenting unless they are integrated. A bundle is value-adding as the mobile community offers a good platform to show the catch after

paying the mobile fishing permit or to discuss the experience of booking a cabin or a restaurant and to share this with fellow tourists.

The typical business strategy for mobile services has been the MNO "develop-push to market – find out if it flies" strategy. Another typical feature is that the MNO charges significant (or very significant) parts of the revenue on any mobile service on the network, which is a typical *cash cow* strategy but will not help promote the introduction of new mobile value services. As we have seen from the mobile services we introduced in Figs. 1-2 this may be one of the reasons why the mobile services market has not developed as expected.
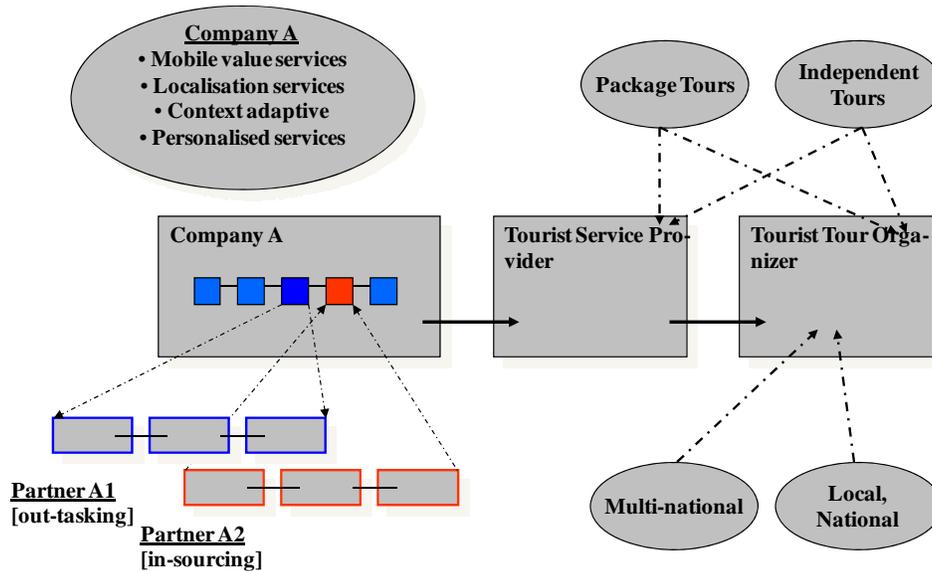

Figure 8: The mobile value network model

In Figure 8 we show a sketch of the design of a business model (called the mobile value network) in which Company A is the producer of mobile value services. Typically, the substance of the services is developed in cooperation with tourist service providers and tourist tour organizers, who have learned from experience where their customers feel the most frustration and where a specific service could save the day (the Braudel Rule). Company A develops and implements various types of advanced mobile value services (with localisation, personalisation, context adaptive features), but is doing this through a network of out-tasking and in-sourcing (Keen and Mackintosh 2001) partners. Partner A1 may have the task to provide a network (DVB, WLAN, WiMax, etc.) for the service and may not be an MNO – or may be an MNO that provides 3G; partner A2 may develop a mobile service (e.g. the mobile fishing permit, to which A2 retains ownership) which is included in the mobile value service of Company A. In this way we are moving away from the model in which an MNO owns the network and produces mobile services that are made possible by the MNO technology and sell them to the end-users at prices they decide. As we found out with the longitudinal data this process may be carried out without any close connection to the wishes and needs of the end-users.

DISCUSSION AND CONCLUSIONS

The future of mobile telephony is expected to rely on mobile services and the use of mobile services will be an integral part of the revenues to be generated by third generation mobile telephony. The adoption of new mobile services contradicts this proposition as it has been much slower than expected. Several reasons have been suggested for the slow adoption rate, ranging from cultural to the business models of the actors and the MNO strategies. We have studied the adoption with consumer surveys carried out in Finland 2003-2007; we found out that different groups of mobile services are developed and adopted at a different pace despite having the same technology base. Accordingly, the adoption of mobile services takes place asynchronously with the development of the technology.

The evolution of mobile telephony from voice and text communication to the use of value added services is an interesting phenomenon. This change is notable in three ways, which have precedents in the history of communication and media technology: (i) it changes the nature of mobile telephony; (ii) it is a challenge to the continuity of mobile telephony, making it a financially risky step to take; and (iii) we cannot yet say how and for what purposes the services will be used in the future.

It would seem that the socio-demographic variables explain little about the adoption. Instead, users' relationship to technology seems important, but the meaning of this relationship is not straightforward. Those who enjoy technology are early adopters, but so are some of those who do not. It would appear that services are adopted by those who are not interested in technology once the services are considered useful. This gives a slightly broader picture than diffusion theory typically does (e.g. De Marez and Verleye 2004) where categorized consumer groups bear differences in characteristics. The result makes sense keeping in mind that almost all Finns have mobile phones.

Barriers and benefits predict little of the use of mobile services (Carlsson et al. 2005). This is a very interesting result because barriers and benefits typically receive much attention when new markets are evolving. Correspondingly, diffusion theory does not give any particular guidance on how the adoption of mobile services is going to proceed. It represents a macro level approach to a subject that might require the incorporation of micro elements. The adoption of mobile services is initiated by users, and mobile services constitute a much diversified supply.

Our results are consistent with previous research (e.g. Orlikowski and Iacono 2001). Mobile services still have much less users than envisioned and their usefulness is being questioned by consumers. However, our results show that adoption is taking place and that there is an asynchronous relation to both the evolution of technology (Carlsson et al. 2005) and between different types of services.

In this paper we illustrated the adoption of mobile services with material from a longitudinal study we have carried out in Finland in 2003-7. We then raised the issue of MNO business strategies and pointed out that these may be a reason for the slow uptake of mobile services. In order to further explore this suspicion we studied the design of five mobile value services and found out that they can be implemented with a business strategy for which the MNOs do not have a dominating role – this may be the future trend for mobile value services.

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