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The adoption of a mobile parking service: Instrumentality and expressiveness

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This report is one of a series of papers and reports on telecommunication economics published by the Institute for Research in Economics and Business Administration (SNF) as part of its telecommunication economics program. The main focus of the research program is to study the deregulation process of the telecommunication industry, and the economic and organizational consequences of changes in markets, technology and regulation. Being started in 1992, the program is now in its fourth period ending in 2005/2006. The program is financed by Telenor AS.

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PREFACE

This working paper is part of a coordinated initiative of two projects funded by the Research Council of Norway, Telenor, Den Norske Bank, A-Pressen, Ericsson and EasyPark at SNF. The main purpose of the coordinated initiative is to provide evaluation frameworks that may be used by service providers to understand the behavioral requirements of end-users adopting mobile and channel integrating services. As part of the initiative, surveys studying the adoption of general mobile commerce services, text messaging services, mobile payment services, mobile parking services, mobile gaming services and mobile contact services have been conducted. This paper presents the results of the mobile parking study. The paper is mainly written by Professor Per E. Pedersen, but contributions from Associate Professor Herbjørn Nysveen have also been integrated. Nysveen has also participated in the planning, organization and practical conduct of the study.

Grimstad and Bergen, December 2002

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ABSTRACT

This paper applies an extended model based upon the theory of planned behavior to explain the adoption of mobile parking services among a group of users having some experience with the service. Because mobile parking services are instrumental services used to pay for car parking, we assume that instrumental motives of usefulness dominate the influence on users' intentions to use the services. In addition, it is likely that facilitation is also an important determinant of intentions to use instrumental services. Facilitation is included in the model through the concept of perceived behavioral control. A survey of 459 trial parking service users is conducted. The results show that the extended theory of planned behavior shows good fit and explanatory power. Instrumental usefulness is a significant determinant of intention to use the services, but expressiveness is found to be equally important. This is rather surprising given the instrumental nature of the mobile parking services. Usefulness is determined by instrumentality, but also through expressiveness and ease of use indirectly. Subjective norms do not influence intentions and neither does perceived behavioral control. Thus, adopters do not perceive this as a service that is difficult or needs considerable facilitation beyond what is currently offered. Consistent with previous studies of mobile service adoption, the complexity of the model lies in the motivational process of adopters wherein elements of expressiveness and derived motives are found at least as important as purely instrumental extrinsic motives. These findings may be used by service developers, facilitators and operators to design, distribute and communicate new mobile data services that meet the demand side adoption requirements of end users.

1. INTRODUCTION

To obtain widespread adoption of new mobile services, a set of requirements should be met. These requirements are technological, business strategic and behavioral (Pedersen, 2001). First, complex services require an integration of network technologies and network-, content- and supplementary services. Second, adoption on the demand side requires widespread adoption of technology and service platforms among application developers and service providers. Finally, end-users implicitly specify a set of demand-side requirements that the services should meet. To understand these requirements, analyses of the context specific behavior of end-users should be conducted. These behavioral, demand-side adoption requirements are the focus of this paper.

We have previously developed a model including a set of relevant demand side adoption requirements for mobile data services. These requirements have been organized as motivational, attitudinal, social and situational determinants of adoption. The determinants have been used to develop an extended adoption model based upon the well known theory of planned behavior (Ajzen, 1991). The bases for applying the theory of planned behavior and extending the model in the suggested ways have been given in previous SNF-reports (Pedersen, 2001, 2002, Pedersen et al., 2002). In this report, we present the results of applying the model to the study of the adoption of a mobile parking service.

1.1 Problems and approach

An ongoing debate in the mobile services community is how motivational, attitudinal and social processes determine the intention to use instrumental mobile services. Based upon the success of non-instrumental services like logo and ringtone download, some suggest social processes are the most important determinants and suggest developing services or including functionality in services that are based upon current norms, trends and fashions. The assumption is that the adoption of these services is determined by social norms and that existing users' adoption is determined by social norms in general. Thus, new services, whether instrumental or non-instrumental, should be developed and marketed to existing users based upon current social norms. The counterargument used by other developers and service providers is that the services adopted by current users do not appeal to current non-users. That is why these users have not adopted non-instrumental services like logos and ringtone downloads. Instead, they argue, new users will adopt mobile services if useful

instrumental services are offered to them. These users, they argue, are not driven by social norms but by instrumental motivational processes focusing gratifications of usefulness, ease of use, availability and flexibility.

Previous studies in uses and gratifications and domestication research have investigated the adoption and use behavior of current mobile services users. Naturally, the findings in these traditions do not necessarily generalize to current non-users. On the other hand, findings in these research traditions consistently emphasize the importance of non-instrumental motivational factors in mobile service adoption and use (Leung and Wei, 2000, Kaseniemi and Rautiainen, 2002, Skog, 2002, Taylor and Harper, 2001a,b). Recently, we have also conducted studies in adoption research investigating the adoption requirements of current non-users (Pedersen et al., 2002). Our findings so far indicate that even current non-users are influenced by non-instrumental gratifications in their potential adoption and use of mobile services.

To further investigate the influence of motivational, attitudinal, social and situational control determinants of mobile service adoption in new user groups, a study of new users exposed to instrumental services may provide a kind of "crucial test" of the importance of motivational versus social processes in mobile service adoption. To investigate this issue, mobile parking services were chosen as an appropriate instrumental mobile service, and an empirical study of the adoption requirements of new users of mobile parking services was conducted.

1.2 Characterizing mobile parking services

Mobile parking services are used to pay for car parking at selected parking sites. In Norway, this service is provided by EasyPark only having an exclusive agreement with a set of parking site developers and public parking companies. EasyPark also operates parking services in Denmark and have struggled to obtain contracts in Sweden and UK. The service is operated by calling in or texting in to a central server the starting and stopping of parking time. In the car window, a bar-code identifying the customer is placed so that parking site personnel scan the bar code to check if parking has been paid for. Alert services are also provided so that customers may prolong their parking time without having to return to their car. Except from alert services, very few other value added services are currently provided, and no specific strategy has been developed for bundling the service with other mobile services.

The services are based upon customers using standard GSM terminals using regular voice or SMS services. The underlying infrastructure of the service lets customers pay their parking using monthly invoice, credit card accounts, prepaid mobile purses or by direct debit through a mobile purse. Thus, the mobile parking service may be perceived as a separate mobile data service or as a payment service. As a payment service it is consistent with the ideas of "multiple moneys" explored in literature on the sociology of money (Zelizer, 1994). When compared to other mobile data services, mobile parking services of this kind provides no communication or coordination support typical of many successful mobile data services. The service also provides very limited informational content both directly and in the form of value added services. For example, no support is given for all the informational tasks related to car parking such as finding available space, support for driving directions, security assistance, support services in case of theft or service failures and surveillance. It is a purely transactional service offering more convenient, coin-free parking without value added services. As such it is well suited as a purely instrumental transactional service often believed to be adopted purely for instrumental reasons of ease of use, usefulness, relative advantage, availability and flexibility.

2. THEORY AND MODEL

Four different traditions have been identified as relevant to understanding the adoption and domestication of mobile services. Diffusion research has its foundation in marketing and economics, and studies the aggregate diffusion or adoption of a technology or service in an industry, in a community or in society in general. Uses and gratifications research has its foundation in media and communication theory, and studies the gratifications sought by adopters of media of different kinds. Adoption and media choice research has its foundation in information systems research, and studies the adoption and use of information and communication technology in general and in organizations in particular. Domestication research has its foundation in sociology, and studies the adoption, use and domestication of technology in society with a particular focus on the societal consequences of technology domestication.

In this section, the four traditions are briefly introduced[1]. A model integrating many of the relevant findings from the uses and gratifications, adoption and media choice, and domestication traditions is presented and discussed with reference to mobile parking services.

2.1 Diffusion research

The classic diffusion study typically contrasts the technology requirements of different user categories to *describe* the adoption process a posteriori. Several aggregate mechanisms are proposed to explain the observed diffusion process. In marketing, the Bass model (see Mahajan, Muller and Bass, 1990) focuses on how information is communicated in media and interpersonally, and how the two mechanisms of communication result in the S-shaped aggregate adoption rate often observed in studies of innovation diffusion. Rogers (1995) goes beyond aggregate adoption process description, and tries to *explain* the observed adoption by characteristics of the technology being introduced. While most of the models mentioned above are mainly concerned with describing the diffusion process over time, Rogers (1995) focuses on the innovation, the social system and the communication channels. Regarding the innovation or technology being adopted, he mentions relative advantage, compatibility, complexity, trialability and observability as the most important characteristics explaining why

[1] A more thorough review is given in Pedersen (2002).

it is being adopted. These are all supply side characteristics presumed to influence usefulness and user friendliness. Some studies have also adapted these supply side determinants in studies of individual end-user adoption (e.g. Karahanna et al., 1999).

On the demand side, explanatory variables are not identified at the individual adopter level. Instead, diffusion theory focuses on describing aggregates of individual users and on categorizing groups of adopters, such as e.g. early adopters, early majority users and late adopters. Diffusion theory also applies more traditional demographic variables to characterize aggregates of individual adopters. For example, early adopters are typically found among the better educated and younger (Dickerson and Gentry, 1983). Many of the studies following this tradition actually suggest the categorization of end-users into adopter categories and the corresponding analysis of the demographic, socioeconomic and personality characteristics of these groups as explanatory models of adoption. In this way, diffusion theory characterizes the social system by categorizing its users in demographic and socioeconomic groups.

Diffusion studies of mobile services have classified adopters of mobile services in different categories (segments), such as early adopters, early majority, late majority, laggards and non-adopters. For example, Wei (2001) studied the socioeconomic characteristics of mobile phone laggards in Hong Kong, Tjøstheim and Boge (2001) studied the demographic characteristics of early adopters of mobile commerce when compared to non-adopters, whereas Mante-Meijer and Haddon (2001) did the same for general mobile services like voice and messaging.

Diffusion research also explains the aggregate adoption process by the characteristics of the technology or by the characteristics of the channels used to communicate information about the technology. For example, Mahler and Rogers (2000) suggest that the difference in the adoption processes of mobile and fixed telephony may be explained by differences in network effects (externalities) between the two technologies, and Gruber and Verboven (2001) suggest the regulatory regime provided by license regulation and competition explains the widespread diffusion of 2G mobile telephony in Europe using a logistic diffusion model. These aggregate studies of diffusion processes are of little help in the development of individual level models of service adoption, but are typically applied to predict the aggregate adoption rates of new technologies as a function of time (e.g. Kim et al., 1999).

Diffusion research are of relevance to mobile service adoption by its focus on instrumental determinants of adoption at the individual level, its recent focus on the importance of critical mass and social processes of adoption (Rogers, 2002) and by stressing that adopters should be treated in segments rather than as a homogeneous group of users. Besides from these issues, diffusion research studies are of little help in providing individual level models explaining the determinants of mobile services adoption.

2.2 Uses and gratifications research

Uses and gratifications research focuses the individual user or adopter, and the general idea is that adopters seek gratifications in mass media and technology use based upon their individual "needs" or" motivations" (Lin, 1996). As such, it has a functional foundation similar to rational or utilitarian theories of media use in traditional CMC and adoption research. Of particular relevance to this report are the recent uses and gratifications studies of mobile services like voice and messaging. One may expect other gratifications to be sought from mobile voice services than traditionally sought from fixed telephony. Leung and Wei (2000) stress that new generations of mobile telephony introduce the mobile phone as a content medium as well as a communication medium, something that is illustrated by the mobile parking services of this study. They identified seven gratifications of mobile phones; "fashion/status", "affection/sociability", "relaxation", "mobility", "immediate access", "instrumentality" and "reassurance". Thus, traditional telephony gratifications were found, but in addition, gratifications related to fashion, relaxation and entertainment, flexibility and mobility were identified. Leung and Wei (1999a) studied the gratifications from information search by pager use among young users in Hong Kong and found three gratifying factors termed "information-seeking", "novelty" and "fun-seeking". In Leung and Wei (1999b), the general gratifications from pager use were identified as "sociability", "information seeking", "entertainment", "utility", and "fashion/ status". Thus, the gratifications of pager use were very similar to those sought from mobile phones, but the "fashion and status" gratification was found to be a very important gratification of pager use.

Höflich and Rössler (2001) identified the following gratifications of text messaging services using mobile phones; "reassurance" (rückversicherung), "sociability" (kontaktpflege), "immediate access /availability" (verfügbarkeit), "instrumentality" (lebenshilfe) and "entertainment/enjoyment" (nutz-spaz). Thus, the gratifications were very similar to those of

the mobile phone identified above. Of these gratifications, only "instrumentality" significantly predicted the use of text messaging services. Use of text messaging was found to correlate positively with voice service usage, but was uncorrelated with email and text message flirting service usage.

From these studies we may conclude that the gratifications sought from mobile phones overlap and extend the gratifications sought from fixed telephony. Furthermore, the gratifications from text messaging services were found to be very similar to the general gratifications sought from mobile phone use. However, most of these studies are of communication services used or accessed with mobile phones. We have not been able to identify any uses and gratifications studies studying information or transactional services accessed using mobile phones. Still, it is likely that some of the gratifications identified of mobile communication services also are relevant for information and transactional services. Still, the gratifications sought from these less instrumental mobile services and communication services may not generalize to more instrumental information and transactional services, such as mobile payment or parking services.

2.3 Information systems research

Few studies are found on the use of mobile telephony services in general in IS- research (for a few exceptions see Hinds and Kiesler, 1995; Manning, 1996). There are even fewer studies applying adoption research models to mobile services or telecommunication services in general. However, some studies have been identified applying adoption models to explain the intention to use telemedicine applications. For example, Hu et al. (1999) suggested that the technology acceptance model (TAM) may be too parsimonious when being applied to explain the adoption of such specific technologies as telemedicine applications. The model showed good fit and reasonable explanatory power when explaining intention to use, but was only able to explain 37 % of the variance in attitude towards use. Thus, Hu et al. (1999) suggested incorporating additional explanatory factors in the TAM model when applied to health-care contexts, supporting the hypothesis that the general TAM model needs context specific extensions. Of interest to the payment element of parking services investigated in this report is a study by Plouffe et al. (2001a) comparing the TAM model to the perceived characteristics of innovating model (PCI). Even though this study focused the adoption requirements of merchants - not consumers, the study showed that the PCI model explained more of the

variance in intention to adopt the payment system than the TAM model. Plouffe et al. (2001a) concluded that the TAM model may be too parsimonious and could successfully be supplemented and extended using the more operational concepts of the PCI-model, such as compatibility and image (se also Plouffe et al., 2001b). Kwon and Chidambaram (2000) applied the TAM model to explain the general adoption of mobile phones among regular subscribers in a metropolitan area in Hawaii. They also suggested the TAM model could be extended, and included social pressure as an additional variable. Somewhat surprising, the authors did not find support for the social pressure variable, and contrary to many other studies applying TAM, they found that ease of use was perceived to be more influential than usefulness in explaining intention to use. In a study applying TAM to study the general acceptance of the mobile Internet in Korea, Lee et al. (2002) found support for an influence of attitudes on use; usefulness and ease of use on attitudes; social influence, innovativeness and ease of use on usefulness; and self-efficacy and focus on ease of use. However, the model explained only 6.7% of the variance in use, but 44% of attitude towards use. Thus, attitudes represent only a minor element in the explanation of use. This suggests direct influences on the intention to use mobile services from instrumental, motivational, social and situational determinants should be included in the adoption model of these services. Pedersen (2001) applied the TAM model to explain the intention to use mobile commerce services. He found that the TAM model should be extended with variables including subjective norm and behavioral control and suggested applying a modified version of the decomposed theory of planned behavior. The model was tested empirically, and the model explained 49% of the variance in intention to use mobile commerce services. Intention to use was mainly influenced by attitudes towards use, subjective norm and behavioral control. No direct influence was found of usefulness on intentions to use these services. However, the main improvement in explanatory power was obtained by extending the model into a modified version of the theory of planned behavior (TPB) and not in the isolated inclusion of subjective norm as a measure of social influence. In a more comprehensive study, Pedersen et al. (2002) applied an extended version of the theory of planned behavior to study the adoption of mobile text messaging services, mobile contact services, mobile gaming and mobile payment services. These studies consistently concluded that a model adding intrinsic and derived motives to the theory of planned behavior provided the best fit and explanatory power. In particular, the concepts of perceived expressiveness and enjoyment added much to the explanatory power of the model. Based upon these studies applying adoption research to

mobile phone contexts, results are still mixed. However, all studies indicate that the original TAM model needs to be extended when being applied to explain the adoption of devices and services in this context.

2.4 Domestication research

The majority of studies on mobile services have been conducted in the field of domestication research. A more comprehensive review may be found in Haddon (2001), Pedersen and Ling (2003), Pedersen (2002) and Pedersen et al. (2002). In work contexts, much previous domestication research has been conducted on the adoption of mobile services among knowledge workers (e.g. O'Hara et al., 2001), but recent work has also focused "blue collar" workers (e.g. Brodie and Perrie, 2001). Research contrasting work and leisure contexts has either focused directly on the instrumental use of mobile services in leisure and everyday contexts, or focused on how the boundary between work and leisure contexts is blurred by the use of such services. For example, Palen et al. (2001) studied the impact of mobile phones adopted for instrumental, work-related reasons (e.g. availability, flexibility), on the users' everyday life activities. These findings indicate that explanations of the adoption of mobile services should be investigated across work and everyday life contexts. Thus, mobile parking services may be adopted for instrumental use in both work and everyday life.

Several domestication studies focus on gender differences in mobile end-user service adoption. An early study in this tradition was conducted by Rakow and Navarro (1993). Their work described interesting communication patterns, such as e.g. "remote mothering" among women. Later, several studies have elaborated on gender differences in the adoption of both voice and other mobile services (e.g. Ling, 2001a, Ling, 2001c). The mobile telephone was earlier mainly seen as part of the male domain (Puro, 2002), but now the device has been redefined as a social network device and thus within the domain of women. For example, Skog (2002) observed that girls valued social functionality of the mobile phone higher than boys, who on the other hand stressed technical functionality. She explained this finding with general *role theory* suggesting that text messaging is more functional in maintaining female roles, than male roles. This is also observed in the content differences of the text messages of girls and boys. For example, Kaseniemi and Rautiainen (2002) observed that girls more often used all 160 characters of an SMS and filled it with references and social gossip, while boys often wrote messages of 40-50 characters with "plain language". Both Ling and Yttri (2002)

and Larsson (2000) describes a careful examination, interpretation and sharing of messages among and between female users (particularly teens) that may be explained by *attributes of the social networks* of female versus male users (e.g. female social networks being more comprehensive, open and everyday life as opposed to working life oriented). The channel richness, interactivity (asynchronous) and format of text messaging services may be particularly well suited for maintaining such social networks. The expressive use of mobile phones explained by theory of social identity and identification is common to both sexes, but is conducted in different ways by male and female users. Gender differences in using the mobile phone to express social identification has been explained by Larsson (2000) using rather general theory of *group identity formation* and by Skog (2002) using *image* theory and theory of *social classes*. Male users express their identity with technical attributes, such as brand name and model, while female users express their individuality and confirm their group identity by sending, receiving, filtering and sharing text messages.

A variety of explanations have been suggested of the widespread adoption of mobile services among young users. For example, it has been suggested that the adoption behavior can be explained by a "theory of fashion" (e.g. Ling, 2001b), by the use of services as "ritual gift giving" (e.g. Taylor and Harper, 2001a), by treating the mobile phone as "symbolic capital" (e.g. Skog, 2002) or as an instrument in "family differentiation and symbol of individuality" (e.g. Taylor and Harper, 2001b), and by the use of services as a "group marker or social identifier" (e.g. Weilenmann and Larsson, 2000), or as a "self identifier" (e.g. Hume and Peters, 2001). Currently, these explanations should all be treated as tentative because none of them has undergone formal hypothesis development and confirmatory testing. However, they suggest important explanations that, when validated, will have to be integrated as parts of a more formal theory of mobile service adoption.

Most of these explanations have been applied in studies of young users' text messaging adoption. Even though text messaging was not explicitly focused by Ling (2001b), he indicated three conceptions of *fashion and style*, and suggested a development from style as display through style as communication to style as a means to integrate social networks. With these conceptions, the use of text messaging may be understood as both a way of communication and as a means of social integration that plays a role as style marker when the mobile phone itself has lost its significance as an object of style display. This is closely related to Skog's (2002) interpretation of the mobile phone as *symbolic capital*. These

symbolic elements of mobile phone use have also been confirmed in studies of mobile phone use in organizational contexts (Manning, 1996). However, Manning (1996) found that the mobile phone was status-enhancing at some levels in the organization while it was status-reducing at other levels. Consequently, Manning observed what he termed "countersymbolization" and "counterappropriation" used to express an opinion against adopting the mobile phone as well as excessive eager among others to adopt the phone for symbolic reasons.

There is also a relationship between symbolic capital and *social capital* when the object of symbolic value is a communication medium. In that case, there is a relationship between style as a way of communication and style as an indication of group membership (Weilenmann and Larsson, 2000). This gives rise to the idea of text message sending, receiving, filtering and sharing as an expressive communication activity used to display style and social capital. Because text messaging is asynchronous, discrete and stored (at least for a while), this particular use of the mobile is better suited as a style and social identity marker among experienced users than regular calls. These explanations all support the importance of including subjective norms and, consequently, external and interpersonal influence as important adoption determinants of mobile services.

The explanation of mobile service usage as "*ritual gift giving*" applies particularly to the explanation of text messaging services (Taylor and Harper, 2001a, b; Johnsen, 2001). For example, Kaseniemi and Rautiainen (2002) observed three additional uses of text messaging besides regular peer-to-peer messaging; message collection, chain messaging and collective reading. Most other studies of teenage text messaging use have reported similar behaviors (Ling and Yttri, 2002, Larsson, 2000). Even though these explanations are most relevant for communication services, they are important to understanding the adoption of the multi-functionality of mobile phones used for communication, information and transactional tasks.

In addition to these, mainly social explanations of messaging service adoption and use among young users, there have also been some domestication studies following the line of reasoning from functionally oriented, work/leisure context studies. For example, Grinter and Eldridge (2001) studied the adoption of text messaging among teenagers and found that text messaging was preferred to other media because it was considered quicker, cheaper, easier and more convenient to use. Karlsen et al. (2001) found a remarkable orientation towards usability and

costs in their study of the potential adoption of mobile Internet services among Norwegian teenagers. Thus, *instrumental or utilitarian* explanations of the adoption of mobile services still seem relevant to both younger and older users.

The most recent trend in domestication research on mobile service adoption treats contexts as dynamic and end-users as "negotiating and managing their numerous identities and relationships" in a "role-to-role" society (Green et al., 2001, p. 150; Wellman, 2001). Applying this perspective, Palen et al. (2001) found that the "mobility of ones profession", the "number of roles one assumes professionally and personally" and the "degree of integration one has across those roles" influences mobile service adoption (Palen et al., 2001, p. 116). This issue of role management has been given little attention in previous research on ICT-adoption, but should somehow also be integrated into a comprehensive model of mobile service adoption. Explanations based upon role management are also closely related to the self-identity explanations introduced above. For example, maintaining multiple roles may be part of ones self-identity and products and services may be instrumental in managing these roles (instrumental motivation). Furthermore, the use of specific products and services may be considered as “role markers” or “identifiers” consistent with ones image of individuals in these roles (self-identity or self-expressive motivations) (Mittal, 1994).

A few researchers have also been investigating what may be termed "domestication" issues in the use of payment services. For example, Singh (1999, 2000) has studied the perception of money across cultures and demographic groups. She argues that multiple forms of payment will exist because, if seen in the context of the "social meaning of money", different forms of payment have different relative social and cultural advantages rather than technological advantages. She also refers to Zelizer (1994) who suggest that even if payments are standardized into one form of payments, multiple monies exist in social settings. Singh (1999) suggests understanding this complementarity of payment forms is a prerequisite for understanding the adoption and diffusion of electronic forms of money as well. There are also findings along this line of research indicating that electronic forms of payment create new patterns of exclusion. For example, Pahl (1999) shows that electronic forms of payment have changed the "balance of financial power within families" because men make more use of electronic forms of money and are also dominant users of Internet banking. Even though this line of research contributes to a general understanding of the "sociology of money" (Singh, 2000), the number of studies is small and its relevance to the particular issues of mobile

parking services adoption is somewhat limited. Still, they indicate that different forms of payments seem to be complementary both because of their relative advantages and because of the perception of multiple monies in social contexts such as family households (Zelizer, 1994).

Domestication research studies of mobile services adoption and use clearly shows how instrumental explanations of adoption should be extended with symbolic, social and situational control explanations. In addition, they suggest modifying the conception of instrumentality in mobile services use and extending the motivational determinants of adoption with elements of enjoyment and entertainment value as well as elements of how these services are used in role management and self-identification processes.

2.5 General model

The research presented above indicates that traditional adoption models dominated by instrumental motives for adoption need to be extended with attitudinal, social and situational control elements. They also suggest the motivational process should be reconsidered when going from traditional ICT-adoption to the adoption of mobile services. The research also suggests adoption models differ across mobile services and segments. Based upon this review and previous research (Pedersen, 2001, 2002, Pedersen et al., 2002), we suggest applying a re-specified and extended model based upon the theory of planned behavior (TPB) to explain the adoption of mobile parking services across segments. In figure 2.1, the modified TPB-model is illustrated. We use this illustration as a basis for the discussion of how the general TPB-model is extended and modified.

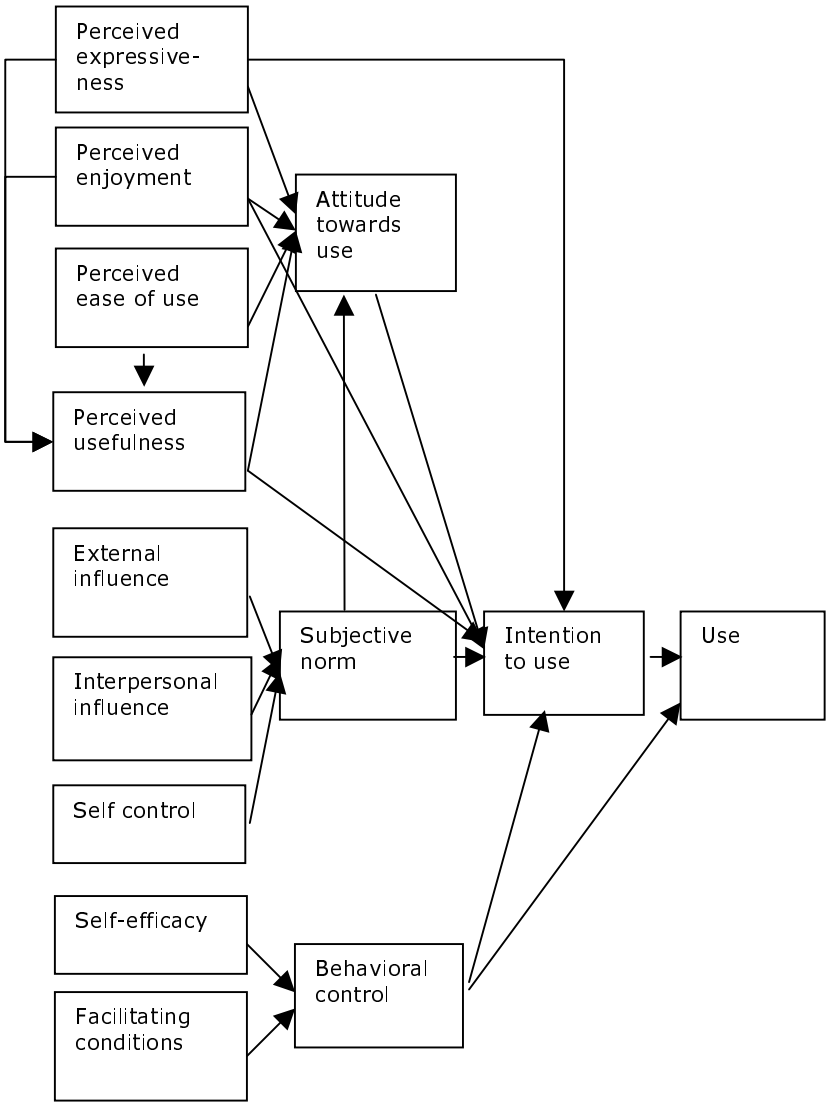

Figure 2.1 Proposed model of mobile service adoption

When applying the TPB-based adoption model of figure 2.1 to study the adoption of mobile services, findings from the research directions reviewed above suggest modifications and extensions, and also provide a basis for proposing adoption model differences across service categories and user segments. Two issues are of relevance with respect to *ease of use* in the model. Because many early adopters of mobile services are expected to be younger, more skilled and more innovative, the higher competence of these users and their more exploratory and advanced use of service functionality suggest ease of use should have less influence in adoption models of new mobile data services. However, studies also report a more playful use of mobile phones among younger and innovative users and consequently they are more focused on exploring the functionality of a service. For example, the practice of personalizing the phone or service is typical among young users (Oksman and Rautiainen, 2001). This also

indicates that younger and innovative users may perceive ease of use differently. For example, if personalization, filtering and adjustment of initial settings are not offered by an application or service, its user friendliness may be perceived as low. Studies have also indicated a relationship between digital capital and symbolic capital suggesting that services designed for young users should not be too easy to use (Taylor and Harper, 2001b) because then, no status would stem from being able to handle the device, application or service. This explanation may also generalize to innovative users. These findings indicate that even though ease of use in general is believed to be of little importance to mobile services (Ling, 2001b), it may be even less important to young and innovative users. The other issue is that of service differences in the importance of ease of use. For example, studies applying the perspective of "flow" and "telepresence" have shown that to provide intrinsic motivation, some services must represent a certain challenge to the user. Challenge positively influences flow through increased telepresence (Novak et al, 2000; Hunter and Kalafatis, 2001). This, in turn, implies that we might expect a negative effect of ease of use (challenge inversed) on perceived enjoyment for highly involved users and for services which are used for reasons of intrinsic motives. One example is mobile gaming services.

Perceived *usefulness* was originally seen as a fairly simple concept including components such as effectiveness and efficiency that are mainly related to extrinsic motivation in work contexts. Later, researchers have included elements of intrinsic motivation in the definition of both ease of use and usefulness (e.g. Thompson, Lim and Lai, 1999). However, intrinsic motivation has mainly been associated with ease of use and extrinsic motivations with usefulness. As seen from uses and gratifications studies, the extrinsic motivations of mobile services are not limited to effectiveness and efficiency. Motivations of accessibility, flexibility, sociability and security have all been mentioned in these studies. These motivations are not limited to mobile services, but are typical of communication (as opposed to information) services. In addition, motivations of enjoyment, fashion, and status and expressiveness have all been mentioned. Some of these motivations are intrinsic, but other may perhaps best be characterized as derived, meaning that they provide an instrumentality or gratification that was not intended by or anticipated during design, and that perhaps also was not considered or anticipated by the user at the time of the adoption (Pedersen, 2002, Pedersen et al., 2002, Anderson et al., 2002). For example, intrinsic motivations of enjoyment lead to skills which provide users with digital capital, which in some social networks

increases both symbolic and social capital. Thus, the traditional usefulness concept should be modified and extended when trying to explain the adoption of mobile services.

First, traditional usefulness, such as efficiency and effectiveness may be less important in services designed for everyday life use. Thus, one is lead to the hypothesis that traditional extrinsic motivations are less important. However, extrinsic motivations derived from uses and gratifications research should be included in the usefulness concept. Thus, effectiveness and efficiency should be related to availability, flexibility and security, but these concepts may be interpreted as determinants of usefulness of a service or as components of usefulness. We find that by redefining and modifying the usefulness concept, these conceptions of usefulness may be included as components of usefulness. Thus, we find no need to replace the usefulness concept with more specific instrumental components to cover the differences in extrinsic motivations of mobile and traditional (ICT) services. However, studies also suggest that the usefulness concept should be extended and supplemented to cover the issues of intrinsic and derived motivations discussed above. For example, *enjoyment and entertainment* go beyond ease of use and usefulness, and are perceived as instrumental of services primarily designed for entertainment (mobile games, mobile video and audio streaming, chat and flirt services) (Leung and Wei, 1999b, 2000). The instrumentality of these services is enjoyment and entertainment in itself, not the efficiency or effectiveness of being able to access mobile entertainment services ubiquitously. This indicates that enjoyment should be included in adoption models developed for users of mobile services as a separate concept contributing both to perceptions of usefulness, ease of use and attitudes towards use.

To get access to symbolic and social capital by using a service, a requirement is that it has some element of *expressiveness*. It should be possible to express style (in all Ling's (2001b) conceptions of style) using the service. In addition, many mobile services are communication services primarily, and thus, the extrinsic motivations for using the service are communication-related. In addition, the requirements of expressiveness suggested by domestication research also include using the communication service to communicate at several levels, to demonstrate participation in several networks maintaining different roles, and to share and collect prior communication sessions. These are all expressive elements of communication that originate in the derived motivations discussed above. In CMC-research, expressiveness is compared to instrumentality as two styles of communication (Boneva, et al. 2001). Expressiveness is used of communication in relationships of emotional intimacy and

sharing, while instrumentality is used of communication in relationships based on common activities. For example, Boneva et al. (2001) believes female communication to be more expressive, whereas male communication is believed to be more instrumental. Based on these assumptions, services that communicate expressiveness in this form are more likely to be appreciated by female users.

In social psychology, recent contributions have suggested replacing the well known concept of self-identity as a determinant of intended behavior with self-expression (Mannetti et al., 2002). The research on the influence of self-identity on intended behavior is however, still relevant. Typically, the relationship between behavior and self-identity is given a social interpretation based upon Mead's and Goffman's theories of the social construction of the self (Mead, 1934, Goffman, 1959), a structuration interpretation based upon Gidden's theories (Giddens, 1991), or a role-oriented personality interpretation. In the first case, self-identity is the result of social identification, in the second case it is the results of the interaction of social identity and repeated actions maintaining a "personal biography", and in the final case it is a more rational frame of reference for behavioral decisions. When applying the term expressiveness we focus the importance of behavior as something that may be interpreted by others in the social construction of identity and by oneself in the repeated self-construction of identity. Thus, expressiveness is a more operational concept applied to the use of technologies or services or the consumption of products and services that are important to both social identity and role-oriented self-identity. Consistent with this conception of expressiveness, consumer psychology characterizes value-expressive products as expressing the consumer's identity both in social networks and to oneself. We discuss some of these conceptions of expressiveness in section 3, but suggest that expressiveness in terms of both the social expression of identity and self-identification are important elements in the adoption and use of mobile services. Expressiveness is an instrumental attribute of a communication service partly influencing usefulness and partly influencing attitudes directly. For information services, expressiveness is an unanticipated service characteristic. Thus, we should expect that expressiveness is more relevant when explaining the adoption of communication services than information services. The term expressiveness also includes elements of self-identification not covered by the social conception of the term presented above. Self-identification was suggested in domestication research as an important element in mobile services use.

Attitudes are generally believed to be the results of personal and social influences. However, in the technology acceptance model (TAM), attitudes towards use are determined by personal influences only. When including subjective norm in the model, it is possible to create a relationship between norms and attitudes that may be particularly relevant to young users' adoption of mobile services. However, it is also important to conceptually discriminate norms and attitudes in adoption models. Thus, we suggest accepting an influence of subjective norm on attitudes, but reject including influences of external and interpersonal influence on attitudes directly. We also suggest extending the determinants of attitudes towards use from purely instrumental determinants to more derived determinants such as enjoyment and expressiveness. However, the attitude formation process is believed to be similar for usefulness, ease of use, enjoyment and expressiveness in that the individual sees a service as instrumental in fulfilling intrinsic, extrinsic and derived gratifications, and consequently develops a positive attitude towards using it. The relationship between attitudes and intentions may be different for different service categories. For example, for services that are widespread and well known, it is easy to obtain information on other users' experience and also to gain experience from actually using the service oneself. This indicates that for established services, instrumental and experiential motives are the most important explanations of user intentions. On the other hand, if services are new and unknown, intentions to use services may be based upon general attitudes and less on experientially derived motives.

Above, we have discussed one of the two aspects of *external influence*; the symbolic capital derived from style in all its conceptions. The other aspect is that of external influence on the development of subjective norms. The first aspect of external influence is how a user of mobile services uses these services to more or less consciously express style and increase symbolic capital. The second aspect is how external influence represents an external pressure on the user to develop a specific norm and consequently, show a specific behavior. The two aspects have also been characterized as the "reciprocal influences" of mobile phones by Alexander (2000). External influence also represents an important determinant of expectations, and may influence perceptions of instrumentality as well. However, as technology gets domesticated, expectations are replaced by the generalization of experiences, and for explaining the adoption and use of text messaging services, expectations are believed to be less important. For less domesticated services, however, expectations are more

important, but in the adoption process, these expectations are also reflected in attitudes. Thus, the difference in the influence of attitudes on intention to use a service may be explained by expectations, but it is difficult to trace this particular influence in an adoption model. The second aspect of external influence, the determination of subjective norm, is believed to be particularly important to young users (Leung and Wei, 1999a, b; Ling, 2001b). Young users may be more affected by external influence because their subjective norms are developing and changing, they may be more exposed to the sources of external influence, such as general mass media, and they are more directly approached by persuasive advertising by terminal vendors and operators (Townsend, 2000). Thus, for services particularly focused at young users, we may find external influence more important than for other services. External influence may also differ by service category. Some services are mainly communicated using word-of-mouth mechanisms while the introduction of other services is accompanied by large advertising budgets of providers and operators.

Interpersonal influence has been suggested as important in explaining the adoption of communication technologies in CMC-studies and the adoption of mobile and messaging services in domestication research. However, there are issues of instrumentality that must be separated from issues of social influence in communication services. We have discussed issues of instrumentality related to the management of and access to social networks, and related to symbolic capital above. Interpersonal influence is the influence of others in developing norms that the use of a particular service is expected. In principle, it is unrelated to instrumentality. Almost all explanations in domestication research introduced above include elements of interpersonal influence. For example, the suggestion that some users are more subject to social influence because they are at a stage of social development and learning (Ling and Yttri, 2002), the suggestion that some users' social networks are more dynamic and thus exposed to influence than other users' (Oksman and Raitiainen, 2001), or the interaction between symbolic and social capital that makes instrumental motivations and social influence interrelated for communication services. Consequently, interpersonal influence is assumed to be more important when explaining the adoption of communication services and the adoption of services that is particularly directed at young users, but of less relevance to the adoption of services particularly directed at older users. In that case, the adoption of mobile parking services is less affected by interpersonal influence than many other new mobile services.

Studies in domestication research have also focused on the importance of individuality and the relationship between individuality and social pressure as both a determinant and consequence of mobile service use (Fortunati, 1998; Skog, 2002). Thus, determinants of individuality and resistance to social pressure should be included as components or moderators of subjective norm. We suggest including the concept of *self-control* as an extension of the self-efficacy concept of TPB and as an additional determinant of subjective norm. While self-efficacy (related to adoption) is an individual's self-confidence in that adoption will lead to the desired behavior (Bandura, 1982), self-control is often believed to include self-efficacy, but also go beyond it (Rosenbaum, 1980). For example, self-control is related to time dependence when an individual chooses not to consume something today because the utility is believed to be higher from consuming the good at a later point in time. In a study of mobile commerce service adoption (Pedersen, 2001), self-control was identified as a very important determinant of subjective norm, improving the explained variance in subjective norm from 38 to 45%. In addition, elements of self-control and individuality are included in many qualitative studies as particularly important when understanding mobile service use among young users. For example, Oksman and Rautiainen (2001) have shown how the mobile is used by parents as an instrument in the emancipation process of adolescent users. Simultaneously, it is used as a symbol of increasing individuality and self-control by young users. Thus, self-control is believed to be an important component or moderator of subjective norm, and its influence is likely to vary with the age of the user. In addition, self-control is most important as a moderator of subjective norm for services where interpersonal influence is believed to be the most important determinant.

Subjective norms are the norms developed through external and interpersonal influence. In general, Webster and Trevino (1995) suggest social influences, and thus, subjective norms to be more influential in explaining the adoption and use of new media. The question, however, is which services should be considered new media in the Norwegian market for mobile services. In an international setting, most mobile services may be considered new media, but in Scandinavia, text messaging is now well integrated in the everyday lives at least of young users. Consequently, even though social motivations for adoption may be important, these motivations may by now be more instrumental than norm based, and should be identified through instrumental determinants of attitude toward use rather than through subjective norm. To give an example, young users may find text messaging instrumental in social coordination

because all other members of their social network use it, but still feel little social pressure towards using text messaging services as a norm. However, some mobile services are still at an early stage of development and may be considered new media. Thus, subjective norm is generally believed to be more important to less widespread services. On the other hand, our arguments for a difference in the influence of external and interpersonal sources of influence between communication and information services suggest subjective norm may be more important to communication services than to information services regardless of the degree of service novelty.

As indicated above, *self-efficacy* in this context is the individual's confidence in that adoption of a service will lead to the desired behavior (Bandura, 1982). The determinants of self-efficacy are typically found in attributes of the individual adopter, such as experience, skills and education. Young and innovative users are generally believed to be among the more experienced and skillful users of these services (Ling, 2001c; Skog, 2002). For example, Oksman and Rautiainen (2001) found that adolescents found mobile phones to be a more controllable technology than PC's. Thus, one may expect that self-efficacy in general will be higher among young and innovative users than among other users in general, and thus, of less importance as a determinant of adoption. Self-efficacy will also be of more relevance to services that require skilled or experienced users. Accordingly, the influence of self-efficacy on behavioral control will be greater for services with some degree of complexity, services that require integration with a service infrastructure outside the providers' network, and services that includes challenge as an integrated part of its gratification. For example, behavioral control will be more influenced by self-efficacy for mobile payment and parking services.

A variety of *conditions may facilitate* or inhibit the use of mobile services. In general, lack of facilitation is believed to reduce the perceived behavioral control of a service or technology. Examples of such conditions are price, service and terminal availability, support, roaming and interconnect, security issues and service compatibility. In general, these conditions are controlled by the facilitators (operators, service providers) and individual users (through their resources). For example, Carroll et al. (2002) mentioned the issue of hidden costs that appear after users' appropriation as a particularly important determinant of what they call disappropriation - that the users stop using a service after an initial adoption. Thus, behavioral control will be more influenced by facilitating conditions for services of greater complexity

and for services requiring infrastructure integration. Also for services requiring new or specific terminal types, expensive services, and services with hidden costs, the influence of facilitating conditions on behavioral control will be greater.

The inclusion of *behavioral control* in TPB has been an important contributor to its explanatory power. In general, we have argued that the determinants of behavioral control are believed to be less important to young and innovative users than other users because of their experience and skill in using mobile services and the providers' facilitation of mobile services such as text messaging services to the young user segment. Financial resources and pricing, however, are indirectly believed to be important determinants of behavioral control due to both limited resources among young users and recent findings that these users are more price sensitive than previously assumed (Karlsen et al., 2001). Behavioral control is a general term composed of elements of individual traits and perceptions of operators' and providers' facilitation. It is also likely that the influence of behavioral control will vary across mobile services. In general, we have argued that the influence of self-efficacy on behavioral control is greatest for complex, new, integrated, expensive and terminal demanding services. The same may thus be argued of the influence of behavioral control on intention to use services. For example, the adoption of technically complex services, services requiring advanced terminals, services with hidden costs, and generally expensive services will be more influenced by behavioral control than simple and cost efficient services. On the other hand, behavioral control will be more relevant to the less skilled and price sensitive user than to the innovative and price insensitive users. Given that new mobile data services are first adopted by innovative users, the adoption of mobile parking services is *currently* less influenced by behavioral control.

3. METHOD

To investigate the research questions implicit in section 2, a survey of new mobile parking services users was designed. The study was made possible through participating with EasyPark - the providers of a mobile parking service in Norway. In this section, the research design, procedures, sample and measures of the study are presented.

3.1 Design, procedure and sample characteristics

The survey was designed as a simple one-group posttest design. A quasiexperimental setting was applied by selecting respondents in the population that had recently signed up for a free test trial of the service or who had recently signed up for a full membership. Of the two categories, the vast majority of respondents were in the first category. The trial service was announced using large posters at major parking areas including individual folders explaining how users should phone or SMS EasyPark to obtain the free one hour parking service. A total of 2700 respondents were identified in the population, and the list of all these users and potential users was used as a sample frame. An explanatory letter showing the commitments of both EasyPark and SNF, an introductory letter including a reminder of the stimulus setting and the survey instrument was mailed to all the 2700 subjects in the sample frame. Approximately 150 letters were returned to EasyPark due to address errors.

The stimulus setting was introduced using an introduction text reminding the customer of her participation in the trial of the service. Next, the following stimulus setting text was given: "*We now like you to focus on the mobile parking service of EasyPark. The service lets you use your mobile phone to start and stop payment of parking. You provide a code showing where you park and pay only for the time used parking. Payment is possible using invoice billing, Statoilkort, Eurocard, MobilHandel™(SmartCash and SmartPay) or by using PayEx electronic wallet." Please answer the questions based upon your own experience and/or what you may know about the mobile parking service of EasyPark.*" Thus, the quasiexperimental procedure may be illustrated as in figure 3.1.

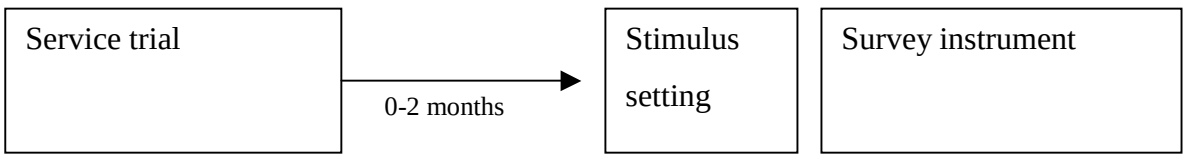

Figure 3.1 Procedure and quasiexperimental design

Subjects were given the opportunity to visit a web-site to answer the questionnaire online, or use a pre-paid postal version attached to the introductory letter and procedure material. The postal version of the survey is illustrated in appendix A. 47 subjects chose to answer the questionnaire online and 418 offline using the postal alternative. Thus, a total of 465 questionnaires were returned. The final response rate obtained was 18.2%. Six of the subjects were eliminated from further analysis due to late response.

Sample demographics of the mobile parking service subjects are shown in table 3.1.

Table 3.1 Sample demographics - parking study

Age	N=452	Income (NOK)	N=454
0-19	2.4	<200’	13.7
20-29	24.1	200’-399’	44.9
30-39	33.8	400’-600’	24.4
40-49	23.0	>600’	17.0
50-59	11.3	Sex	N=456
60 and above	5.3	Male	72.1
Education	N=457	Female	27.9
Primary	2.2		
Secondary	23.6		
University <3	37.0		
University >=4	37.2		

From table 3.1, we see that the sample is well distributed with an age distribution not very different from the general adult population. There is a larger proportion of men than women, a larger proportion of subjects with university education and a larger proportion of subjects with higher level income when compared to the general Norwegian population. However, these differences are not very large and the differences in the distributions are according to what one may expect of new users of a mobile parking service. Thus, we assume that the sample demographics correspond well to the population demographics of new mobile parking service adopters.

The sample consisted of users at different stages in their relationship with EasyPark. Of the 455 subjects reporting their relationship with EasyPark, 8.4% were registered with a corporate account, 57.4% had used the trial service but not registered for a full membership, 18.9% had created a full membership after an initial trial and 15.4% had registered their membership with EasyPark in another way. Thus, the sample consisted of 57.4% trial users and 42.6%

member users. However, the basis for their membership varied considerably, and thus, the motivations for signing up are also expected to vary considerably.

3.2 Measures

The model presented in section 2 includes 14 concepts: Ease of use, usefulness, expressiveness, enjoyment, attitudes towards use, external influence, interpersonal influence, subjective norm, self-control, self-efficacy, facilitating conditions, behavioral control, intention to use and actual use. Most of these concepts are well founded in adoption, uses and gratification, or domestication research literature. Consequently, the construct validity of these concepts is in general considered acceptable. To measure the concepts, a questionnaire was designed containing multiple measures of each of the 14 concepts. In general, the concepts were measured by the subjects indicating their agreement with a set of statements using a seven-point scale ranging from "strongly disagree" to "strongly agree". Some concepts were measured using seven-point scales of bipolar adjectives. For each measure, the items were adapted to the mobile parking service context of the study. A copy of the questionnaire is found in appendix A. In table 3.2, the reliabilities of each of the measures pooled across four previously conducted studies, the same measures applied in the parking study and refined measures based upon an analysis of convergence and discriminant validity are shown.

Table 3.2 Measure reliabilities (* indicates refined concepts)

Measure / Study	Total	Parking original	Parking refined
Ease of use	0.95	0.93	0.93
Usefulness	0.89	0.78	0.84*
Expressiveness	0.85	0.80	0.83*
Enjoyment	0.96	0.91	0.91
Attitude	0.93	0.86	0.86
External influence	0.75	0.84	0.84
Interpersonal influence	0.85	0.83	0.83
Subjective norm	0.85	0.88	0.88
Self-control	0.87	0.90	0.90
Self-efficacy	0.84	0.79	0.91*
Facilitating conditions	0.81	0.79	0.77*
Behavioral control	0.78	0.71	0.71
Intention to use	0.91	0.84	0.84
Use	0.92	0.88	0.88

From table 3.2 we see that the reliability of behavioral control was below the desired 0.75 level. However, the reliability of this measure was also somewhat less in previous studies, and thus, we chose to retain the measure. The refined measures all show improved reliabilities except the facilitating conditions measure. Thus, the general reliability of all items was considered acceptable.

Ease of use was measured using four items developed from adapting the original items of Davis et al. (1989) to our setting. Similar operations are found also in Taylor and Todd (1995) and in Battacherjee (2000). Usefulness was measured using four[2] (three) items covering the original dimensions of time saving, improvement, usefulness and quality suggested by Davis (1989). Attitude towards use was measured using four bipolar adjectives indicating different aspects of the subjects' attitude towards use. The items were very similar to those used by Davis (1989), Taylor and Todd (1995) and Battacherjee (2000). The enjoyment concept was defined as incorporating a group of gratifications identified in studies of the Internet as "enjoyment" (Pappacharissi and Rubin, 2000), of ICQ as "entertainment" (Leung, 2001), of mobile phones as "relaxation" (Leung and Wei, 2000), of pagers as "fun-seeking" (Leung and Wei, 1999b), and of text messaging as "nutz-spaz" (Höfflich and Rössler, 2001). To cover these elements of enjoyment, a four item scale was developed collecting items from uses and gratification scales. The first of the item covered the "entertainment" conception, the second the "relaxation" conception, the third item covered the "excitement" conception also found in studies of video-game and TV-gratifications (Sherry et al., 2001). The final item was a general item covering the "fun-seeking" gratification. The wording of each item was taken from uses and gratifications studies reviewed above.

The choice of a particular concept - "expressiveness" - as a perceived attribute of a service or technology is unique in our model. The term has been used in social psychology of individuals' general ability to express their emotions or identity. For example, in family relationship studies it is used as a measure of how well emotions are expressed by parents and children and how this influences family relationships (Cassidy et al., 1992). In research on identity formation and personality, it is used as a measure of the relationship between what a person believes about herself (what her potentialities are, see Schwartz et al., 2000, p. 507),

[2] The number of items in the refined measure is shown in parentheses.

and how she expresses herself, using the concept of "personality expressiveness" (Waterman, 1993). In this line of research, a person expresses herself through activities, and expressiveness is measured by subjects indicating how important these activities are in expressing their identity. In social psychological research on the prediction of behavior it is closely related to self-identity which has been found to be a significant predictor of intention to perform specific behaviors (Sparks and Guthrie, 1998). In this literature, self-identity is typically measured using statements challenging the relationship between behavior and the subjects' perceptions of their own personality. In consumer research, the expressiveness concept has been extended from individuals to products indicating how well a product expresses values beyond instrumental utility (Mittal, 1994). Thus, value-expressive products are seen as expressing the consumer's identity. While the expressiveness concept in consumer research covers gratifications of prestige, fashion, pride and mood stimulation, it primarily focuses issues of how products are used to "express my personality" and are "compatible with how I like to think of myself" (Mittal, 1994, p. 258). Thus, items measuring these conceptions of expressiveness have been included. In addition, expressive gratifications have been identified in uses and gratifications research. For example, Arnett (1995) included "identity formation" as a particular gratification of young users, Leung (2001) included "express affection", "fashion" and "inclusion" as gratifications of ICQ-use, and Leung and Wei (1999b, 2000) included "fashion and status" as a gratification of both pager and mobile phone use. From these studies, a status-related expressiveness item was suggested Studies of text messaging use have shown how one of the most important ways of expressing ones service use is to discuss the service with others and to share it with others (Larsson, 2000; Grinter and Eldridge, 2001; Kaseniemi and Rautiainen, 2002). Thus, items referring to this particular form of expressiveness were included. Similar items, measuring the gratification of sharing technology use with others - social interaction, have been included in studies of video games as well (Sherry et al., 2001) and TV (Lee and Lee, 1995). This element in expressiveness is also consistent with social perspectives of self-identity and items covering the social element of expressiveness are also included in our measure.

The measure of external influence was based on two sources of influence - media and society or profession. Thus, it includes the measures used by Battacherjee (2000) and Taylor and Todd (1995). The measure of interpersonal influence was based on Battacherjee's (2000) extension of the measures used by Taylor and Todd (1995), and adapted to our setting. Self-

control is believed to be a component of or moderator of subjective norm. Self-control was measured by items reflecting indirect indicators of self-control, such as resisting group pressure, superior influence and group conformity. The items were mainly based upon a subsection of the self-control measure suggested by Rosenbaum (1980). The measure does not capture the whole range of the self-control components as defined by Rosenbaum (1980), but includes some items from these more complex self-control scales. Subjective norm was measured using three items almost identical to the items used by Mathieson (1991) and Battacherjee (2000). A somewhat simpler version of the measure was used by Venkatesh and Davis (2000). In addition, a general norm item was included, inspired by sociological research on mobile service use (Skog, 2002).

The measure of self-efficacy was based on the items used by Battacherjee (2000) and Taylor and Todd (1995), but adapted to our contexts. The measure also corresponded well to the extended *user* resources part of the "resources" scale of Mathieson et al. (2001). The measure of facilitating conditions was based on the same sources as the self-efficacy measure. It included specific items related to the infrastructure of mobile services and the facilitation of service usage by the user's provider or operator. The measure of behavioral control was almost identical to the measure applied by Battacherjee (2000) and Taylor and Todd (1995).

Finally, intention to use and actual use was measured by presenting a list of mobile services organized by user context and complexity to the subjects. The subjects were asked to indicate how much they had used and intended to use these services on a 7-point scale ranging form "very little or not at all" to "very much". Use and intention to use were aggregated over the items presented on the list. To comply more fully with the traditional measures of adoption research, intention to use was also measured with a two item scale adapted from Battacherjee (2000) and Mathieson (1991). Actual use was also measured using a psychometric measure consisting of three items.

All our traditional measures are based upon previously validated measures (Venkatesh and Morris, 2000), and their reliabilities were considered acceptable. To test the discriminant and convergence validity of the independent variables in our model, the items of all nine independent variables were included in a confirmatory factor analysis including 9 factors. The analysis including the original items used in previous studies showed a lack of discriminant validity between interpersonal influence and expressiveness. Thus, we refined the measures

as illustrated in table 3.2. The resulting items were included in the factor analysis shown in table 3.3. The nine factors included explained 83.3% of the variance in the material.

Table 3.3 Principal components analysis independent variable measures (loadings below 0.35 are not shown, varimax rotation applied)

Loadings/ Variables	1	2	3	4	5	6	7	8	9
Ease of use 1	.863								
Ease of use 2	.799								
Ease of use 3	.896								
Ease of use 4	.856								
Usefulness 1				.806					
Usefulness 2				.775					
Usefulness 3				.776					
Expressiveness 1									.769
Expressiveness 2									.748
Enjoyment 1		.850							
Enjoyment 2		.769							
Enjoyment 3		.869							
Enjoyment 4		.879							
External influence 1						.883			
External influence 2						.901			
Interpersonal influence 1			.792						
Interpersonal influence 2			.821						
Interpersonal influence 3			.700						
Self-control 1					.904				
Self-control 2					.811				
Self-efficacy 1							.917		
Self-efficacy 2	.423						.829		
Facilitating conditions 1								.880	
Facilitating conditions 2								.760	

From table 3.3 we find that convergence validity in general is very good. A question may be raised of the discriminant validity of the ease of use and self-efficacy variables. When investigating the particular item further, it was obvious that the wording of one particular item varied considerably with service context. By removing the item, however, reliability would suffer. Thus, we decided to retain the measure with the items as presented above.

4. RESULTS

In this section, we present the results of parking study applying the model introduced in section 2. However, the study also provided detailed descriptive results on the individual concepts in the model and demographic and segment issues in the user sample. Thus, descriptive results are presented in section 4.1 and the model results are presented in section 4.2. In section 4.3, we compare the results of the parking study with results obtained in four previous studies of regular texting, mobile chat, mobile gaming and mobile payment services.

4.1 Descriptive results

In the survey, 14 model independent, endogenous and dependent variables, innovativeness, customer status and four demographic variables were measured. In table 4.2, the means and standard deviations of the 14 model variables and innovativeness are shown. For the concepts measured using two different operational variables, the variables with the best convergence and discriminant variables are shown in the tables and the alternative variable statistics are shown in parentheses. To allow comparison across variables, all variables are standardized to the original seven point scale. Thus, the theoretical maximum mean of a variable is “7” and the theoretical minimum mean is “1”.

Table 4.1 Means and standard deviations

Variables	N	Mean	Std. dev.
Ease of use	454	5.15	1.42
Usefulness	449	5.09(4.36)	1.45(1.27)
Expressiveness	455	2.04(2.61)	1.42(1.37)
Enjoyment	457	2.63	1.50
Attitude	443	5.28	1.25
External influence	451	2.91	1.48
Interpersonal influence	452	2.37	1.31
Subjective norm	450	2.33	1.48
Self-control	457	2.16	1.49
Self-efficacy	455	5.68(5.32)	1.53(1.38)
Facilitating conditions	447	5.16(5.10)	1.43(1.32)
Behavioral control	453	5.81	1.24
Intention to use	454	4.17	1.89
Use	457	2.43	1.53
Innovativeness	458	3.66	1.77

From table 4.1, we see that when comparing the variables in the motivational process, mobile parking services are generally perceived as very useful and easy to use. Furthermore, they are not considered very expressive and enjoyable. This comes as no surprise considering the instrumental character of the services. We also find that there is a positive attitude towards the service. When looking further at the social process, it seems that the subjects perceive little internal and external influence in using mobile parking services. This is also reflected in the relatively low mean of subjective norm. The self-control variable is a reversed variable, so these users self-control is relatively high. The high means on self-efficacy, facilitating conditions and behavioral control indicates that subjects feel they have the necessary skills and resources to adopt mobile parking services. However, one should be careful in inferring from high or low mean values to an influence on intentions to adopt. A rather interesting difference is found between intentions to use these services and actual use. This reflects the stage of the adoption process in which this study was conducted. The mean innovativeness of the subjects is of less relevance without some kind of reference information. As we see from table 4.1, there are few differences in the statistics for the two versions of the four variables having different operations.

Differences between segments in these variables may also be of relevance to understanding the process and requirements of parking services adoption. In table 4.2 F-values and t-values, and their corresponding significance are shown for the customer status and demographic variables for all 15 variables studied.

Table 4.2 Analysis of variance results

Variables	Customer status (F)	Sex (F)	Age (t)	Education (t)	Income (t)
Ease of use	19.6**	1.0	-0.1	-3.4**	-0.9
Usefulness	21.6**	0.3	0.3	-2.4*	-0.7
	(22.6**)	(0.0)	(0.6)	(-2.5*)	(-0.3)
Expressiveness	17.0**	8.9**	0.8	-1.7	1.6
	(39.1**)	(9.0**)	(0.1)	(-2.3*)	(2.3*)
Enjoyment	9.0**	5.5*	-0.6	-2.3*	-0.9
Attitude	16.2**	0.0	-0.3	-3.0**	0.1
External influence	1.1	1.9	1.6	-2.5*	-1.4
Interpersonal influence	21.4**	11.9**	0.4	-2.6*	1.6
Subjective norm	8.9**	8.1**	1.8	-2.6*	0.0
Self-control	5.6**	20.7**	-0.2	-1.6	-0.7
Self-efficacy	9.5**	2.9 (4.1*)	-1.9	0.4	1.5
	(17.38**)		(-1.3)	(-0.2)	(1.8)
Facilitating conditions	8.0**	0.9	1.2	-1.6	-0.2
	(8.03**)	(0.8)	(0.5)	(-1.7)	(-0.0)
Behavioral control	3.3*	0.3	1.1	-0.6	1.7
Intention to use	74.7**	5.4*	0.3	-1.4	3.4**
Use	84.1**	3.1	-1.8	-1.6	2.3*
Innovativeness	14.8**	15.9**	-2.0*	1.2	3.7**

Note: ** and * indicate significance at $p<0.01$ and $p<0.05$ respectively

From table 4.2 we see that there are significant differences in perceptions between different customers. Generally, the difference of most relevance is that between customers only registered for free trial use of the service and customers registered for the full services. For all the significant variables, the means are lower for the trial customers than for the full registered customers. We also see that there are some significant differences between male and female subjects. For the motivational variables there are differences between male and female subjects' perception of expressiveness and enjoyment. For both variables, means are higher among male than female users. There are even greater differences for the social process variables. For these variables, male users report more interpersonal influence and stronger subjective norms as well as less self-control than female users. This is rather surprising, but does not necessarily mean that male users are more socially influences in their actual adoption or intention to adopt, only that they perceive the influence as stronger. Male users also have higher values for intention to use the services and as expected, they perceive themselves as more innovative than female users. For age, education and income, t-tests of the regression coefficient of age have been used because these variables were measured at the ordinal level using four, four and six category variables, respectively.

We found only effects of age on innovativeness. The effect is negative indicating a lower perceived innovativeness of older subjects. For education, negative relationships are found for most of the motivational, attitudinal and social variables. Thus, perceived ease of use, usefulness, enjoyment and attitudes are lower for the higher educated subjects. Similarly, higher educated subjects perceive less interpersonal and external influence to use mobile parking services. For income, no significant relationships are found for the independent and endogenous variables in the model. However, expressiveness seems to be somewhat special. When looking at the original operation of expressiveness, we find that there is a significant positive relationship between expressiveness and income. Furthermore, the intention to use and use is higher among high income subjects than low income subjects. High income subjects also consider themselves as more innovative than low income subjects. Due to these differences, investigating the adoption models of high income and low income subjects seems particularly relevant. The results of this analysis are reported in section 4.2.

The individual items of the complete facilitating conditions scale may be particularly interesting. In table 4.3, the mean values of these items and tests of differences in these means between users with different customer status are shown.

Table 4.3 Facilitating conditions

Item	N	Mean	Std. dev.
I have the necessary financial resources required to use the EasyPark mobile parking service	455	5.91	1.51
I have the necessary technological resources required to use the EasyPark mobile parking service	455	6.43	1.03
The EasyPark mobile parking service is secure and technically well functioning	442	4.97	1.55
My provider/operator facilitates the use of the EasyPark mobile parking service	449	5.15	1.57
The EasyPark mobile parking service are well integrated with the other mobile services I use	448	5.15	1.62

From table 4.3, we see that facilitation is generally perceived as good. In particular, financial and technical resources seem not to be a barrier to use. When compared to the high values of perceived financial and technical resources, security and technical provisioning is perceived as somewhat less well facilitated. Consequently, the service is generally perceived as well facilitated.

4.2 Model results

Using the data from the parking services study, the adoption model of section 2 was estimated. The results of this estimation are shown in the adoption model for the mobile parking services illustrated in figure 4.1.

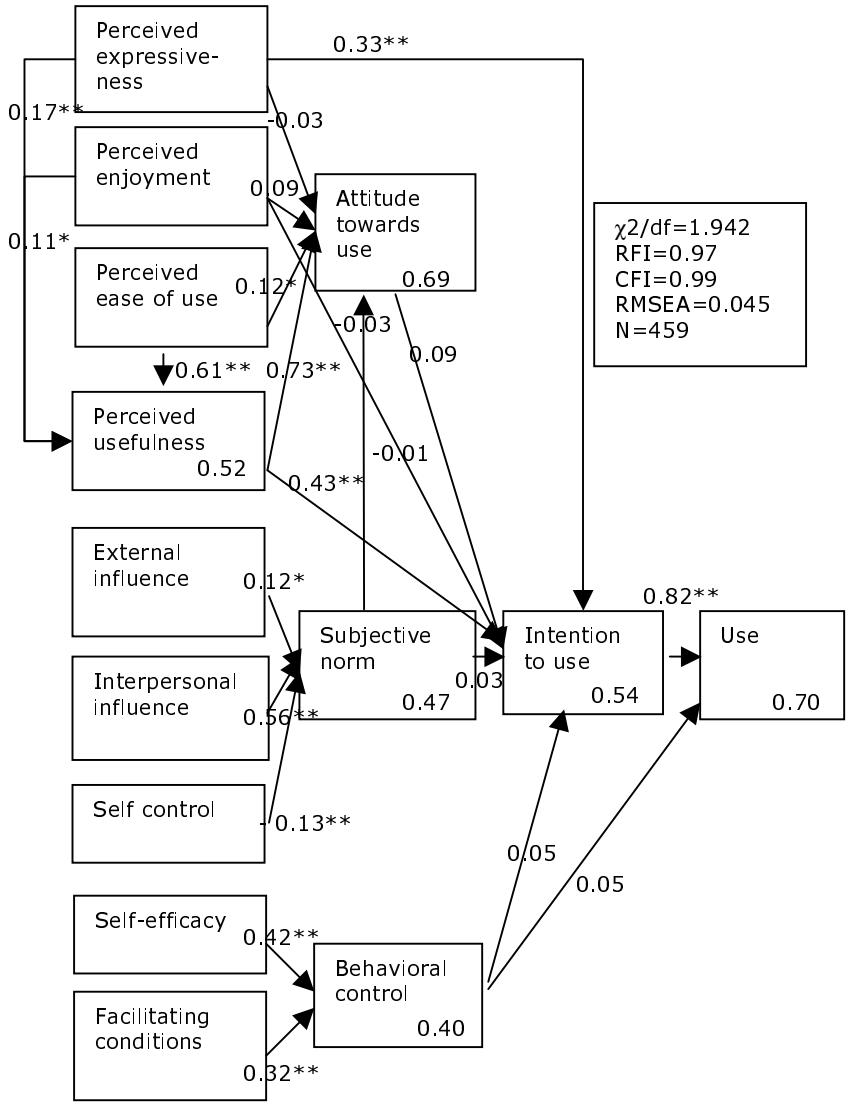

Figure 4.1 Adoption model of mobile parking services [(*) and (**) indicate significance at $p<0.05$ and $p<0.01$]

From figure 4.1, we see that model fit is very good when evaluated by all fit indexes[3]. The model explains 54% of the variance in intention to use text messaging and 70% in self reported perceived actual use. This is generally considered a large proportion of the variance, so the explanatory power of the model is very good.

When investigating model relationships, we first see that intention to use mobile parking is explained by direct instrumentality of usefulness and expressiveness. The effects of attitudes, subjective norm and behavioral control are not significant. This gives a very simple model for explaining intention to use mobile parking. The services are used because they are instrumentally useful and are considered as a way of expressing oneself that is consistent with the users' idea of themselves. Usefulness on the other hand is significantly influenced by ease of use, enjoyment and expressiveness, whereas attitude towards use is significantly influenced only by ease of use and usefulness. Expressiveness does not significantly influence attitudes. Subjective norm is influenced by interpersonal influence, external influence and self-control. However, these social influences do not extend to any effects on intentions to use the services. This finding is generally consistent with the propositions of section 2 indicating that older users are less influenced by subjective norm and that subjective norm is less influential for information and transaction services than for communication services. However, the paradox is that similar findings have been made for young users and communication services as well. Behavioral control is influenced by self-efficacy and facilitating conditions. However, behavioral control does not significantly influence intention to use or actual use. This is generally consistent with the propositions implicit in section 2 indicating that behavioral control is less influential for skilled, innovative and financially strong users. Based upon our measure of innovativeness and income, the trial users participating in this study seem more innovative and have more financial resources than the general population of mobile services users.

[3] We generally employ parsimony adjusted measures of fit only. According to Browne and Cudeck, cited in Arbuckle and Wothke (1999), a RMSEA less then 0.08 is acceptable. According to Bentler, cited in Battacherjee (2000), $\chi 2/df$ should be less than 5, preferably less than 2, and all other indexes should be close to 1 (Taylor and Todd, 1995). In general, we apply the rules of $\chi 2/df \approx 2$ or better, RMSEA<0.08 and all other indexes ≈ 1.

From these observations we conclude that users' intentions are simply explained by usefulness and expressiveness. Even though the attitudinal, social and situational control processes are fairly complex, they do not seem to play any significant role in explaining behavioral intentions.

From the analyses of section 4.1, we found indications that interesting sub-sample model differences were to be expected. For example, the intentions of trial users and registered users were expected to require different explanations. The same situation was observed for male and female users, for users with higher versus lower education, and for users with high versus low income. These differences may be considered as adoption model segment differences. To simplify the analysis of segment differences, a table of the motivational, attitudinal, social and situational control processes may be set up. In table 4.4 and 4.5, these processes are illustrated for all the four relevant segment categorizations.

Table 4.4 Influences on intention to use across segments

Influence	Motivational			Attitudinal	Social	Control
	Express-iveness	Enjoyment	Usefulness	Attitudes	Norm	Behavioral control
Trial	++	+	0	+	0	0
Reg.	0	0	++	0	0	0
Male	++	0	++	0	0	0
Female	+	0	++	0	0	0
High ed.	+	0	+	0	0	0
Low ed.	++	0	++	0	0	0
High inc.	0	0	0	0	0	0
Low inc.	++	0	++	0	0	0

(+) and (++) indicate significance at $p<0.05$ and $p<0.01$

Table 4.5. Adoption model sub-processes of segments

Process	Usefulness determination			Attitudinal process			
	Express-iveness	Enjoy-ment	Ease of use	Express-iveness	Enjoy-ment	Ease of use	Useful-ness
Trial	0	++	++	0	0	0	+
Reg.	++	0	++	0	+	0	++
Male	++	0	++	0	0	++	++
Female	0	0	++	0	0	0	++
High ed.	0	0	++	0	0	0	++
Low ed.	++	0	++	0	0	++	++
High inc.	++	0	++	0	0	0	++
Low inc.	0	0	++	0	0	0	++

	Norm process			Control process	
	External influence	Interpers. influence	Self-control	Self-efficacy	Facilitating conditions
Trial	++	++	0	++	++
Reg.	0	++	--	++	++
Male	+	++	-	++	++
Female	0	++	0	++	++
High ed.	0	++	0	++	0
Low ed.	++	++	--	++	++
High inc.	++	++	0	++	++
Low inc.	0	++	-	++	++

(+) and (++) indicate significance at $p<0.05$ and $p<0.01$

All the models illustrated in tables 4.4 and 4.5 showed acceptable fit and high explanatory power. From table 4.4 we see that there are segment differences in the motivational processes explaining intention to use mobile parking services. Trial users are mainly influenced by expressiveness, enjoyment and attitudes towards use whereas registered users are mainly influenced by usefulness. However, the levels of intention to use mobile parking services are very different in the two segments. Thus, the interval of variance explained in each segment is very different making it difficult to interpret the model differences. Still, trial users with high intentions of using mobile parking have so because they consider the services enjoyable and expressive whereas registered users with high intentions have so because they consider the services as particularly useful. Almost no differences are found between the adoption models of female versus male users and between low educated versus high educated subjects. For income, low income users seem to be more influenced by expressiveness and usefulness than high educated users. However, for high educated users, no single significant variables were identified. We also found that the intention to use mobile parking services were generally higher among high income subjects. Thus, the variance in intention to use may be insufficient

to identify the relevant explanatory variables when studying the high income subjects separately. When investigating the influences on intention to use mobile services among high income users, subjective norm with a regression coefficient of 0.15, and expressiveness with a coefficient of 0.20, were significant at the 8% and 7% level, respectively. When compared to the significance at the 1% level for expressiveness and usefulness for the low income users, we still feel it is sensible to say that the adoption models of high and low income users are somewhat different. It is also surprising that subjective norm is significant at the 7% level for these users. When including income as an observed variable in the model, explained variance increased from the 54% of the general model to 57%, and income, expressiveness and usefulness were all found to significantly influence intention to use mobile parking services at the 1% level. Thus, including income as a moderator in the model does not change the fact that expressiveness and usefulness are the perceived variables most significantly influencing intention to use. Thus, expressiveness, usefulness and income all have main effects on the intention to use mobile parking services. When trying to implement the interaction effect of income and expressiveness identified in table 4.2, the effect is, however, not significant. Also, when using the original operations of expressiveness, the model including the main effects of income, usefulness and expressiveness is the best. The interaction effect of expressiveness and income is still not significant.

From table 4.5 we see that the attitudinal social and situational control processes are much more different between segments than the motivational processes were. The individual differences are best identified by investigating table 4.5. There are some general findings common to all segments. They show that ease of use influenced usefulness, that usefulness is the most important determinant of attitudes, that subjective norm is mainly influenced interpersonally and that behavioral control is influenced by both self-efficacy and facilitating conditions. However, there are also segment differences. For example, we find some trends indicating similar processes among registered users, male users and low educated users that are different from the other users. Among these users, perceived usefulness seems to be influenced by expressiveness and ease of use, attitudes are influenced by usefulness and ease of use (enjoyment for registered users), and subjective norm is influenced by self-control.

4.3 Cross service comparisons

We have previously studied traditional text messaging, contact services, mobile payment services and mobile gaming applying the model of section 2. A comparison of the means of the perceived variables across studies is illustrated in table 4.6.

Table 4.6 Means of the perceived variables of five mobile data services

Variable	Texting	Contact	Payment	Gaming	Parking*
Expressive-ness	2.4	1.4	2.4	3.0	2.6
Enjoyment	4.0	2.1	3.5	5.0	2.6
Ease of use	5.8	3.7	4.1	5.3	5.2
Usefulness	4.6	2.4	4.0	4.0	4.4
External influence	3.8	3.9	4.0	3.5	2.9
Interpersonal influence	3.1	1.7	2.5	3.1	2.4
Self-control	2.7	1.9	2.5	2.5	2.2
Self-efficacy	5.7	3.7	4.0	5.2	5.3
Facilitating conditions	4.6	3.5	4.0	3.9	5.1
Attitudes	4.9	2.6	4.5	4.7	5.3
Subjective norm	3.4	1.6	2.4	2.2	2.3
Behavioral control	5.8	4.9	4.5	5.3	5.8
Intention to use	4.9	1.8	3.5	4.7	4.2
Use	3.1	1.5	2.4	3.6	2.4

(*) Comparable variable operations used across all services are used

The figures should be interpreted with care due to sample and context differences. The mean values should be interpreted as absolute level values, but they are comparable across service categories. Comparisons across variables should be done with even more care. For parking services we see that they are generally perceived as surprisingly expressive, low on enjoyment value, easy to use and useful. Of all studies conducted, the attitudes towards mobile parking services are the most positive. User intentions and actual use are also surprisingly high. However, these results should be interpreted with care due to the sample consisting of users actively showing an interest in trying out mobile parking services. Finally, both the external and interpersonal influence on using mobile parking services seem perceived as low, and the services are generally perceived as well facilitated and within what the users feel they control and manage.

When comparing the adoption models across mobile data services we apply the notations of tables 4.4 and 4.5. In table 4.7, the influences on intention to use each of the five mobile data services are shown.

Table 4.7 Adoption model influences of five mobile data services

Influence	Motivational			Attitudinal	Social	Control
	Express-iveness	Enjoyment	Usefulness	Attitudes	Norm	Behavioral control
Texting	++	++	++	++	0	++
Contact	++	++	0	+	++	0
Payment	++	++	0	0	0	++
Gaming	++	++	+	0	0	++
Parking	++	0	++	0	0	0

(+) and (++) indicate significance at $p<0.05$ and $p<0.01$

From table 4.7 we see that the influences of intention to use are different across mobile data services. It is also generally difficult to identify any patterns of influences common to services of a specific category (e.g. information versus communication services, entertainment versus instrumental services). However, we see that as opposed to all other services investigated, perceived enjoyment does not significantly influence intention to use mobile parking services. We also see that consistent with all the other services, expressiveness is influential. The lack of influence from attitudes and behavioral control is difficult to interpret, whereas the influence from usefulness is shared with the instrumental texting services. Comparison with the model of the mobile gaming services should also be done with care because this study was conducted in an international setting while the other four studies were conducted in a Norwegian setting.

In table 4.8, the attitudinal, social and situational control processes are illustrated.

Table 4.8. Adoption model processes of five mobile data services

Process	Usefulness determination			Attitudinal process			
	Express-iveness	Enjoy-ment	Ease of use	Express-iveness	Enjoy-ment	Ease of use	Useful-ness
Texting	++	++	++	0	++	++	++
Contact	++	++	++	0	++	++	++
Payment	0	++	++	0	+	++	++
Gaming	++	++	0	0	++	0	++
Parking	++	+	++	0	0	+	++

	Norm process			Control process	
	External influence	Interpers. influence	Self-control	Self-efficacy	Facilitating conditions
Texting	0	++	0	++	++
Contact	0	++	0	++	++
Payment	+	++	--	++	++
Gaming	0	++	--	++	++
Parking	+	++	--	++	++

(++)/(--) and (+)/(-) indicate significance at $p<0.01$ and $p<0.05$ respectively

From table 4.8, usefulness is generally influenced by all three variables of expressiveness, ease of use and enjoyment except for payment and gaming services. Attitudes are generally not influenced by expressiveness and consistently influenced by usefulness. We also see that the social norm process is equal for payment and parking services with an important influence from self-control. Finally, behavioral control is influenced by self-efficacy and facilitating conditions across all services. Generally, these results show that there is no simple way to categorize mobile data services according to the influences on intention to use the services or according to influences on usefulness, by attitudinal process, by social norm process or by situational control process. The results also illustrate how difficult it is to identify simple adoption-triggering factors for mobile data services.

5. CONCLUSIONS AND DISCUSSION

This report extends previous research on mobile service adoption from SNF (Pedersen, 2001, 2002, Pedersen et al., 2002). It is based on a modification and re-specification of the theory of planned behavior and includes analysis of the motivational, attitudinal, social and situational control influence on adopters' intention to use mobile services. Previous findings from this line of research have shown how mobile data service adoption is influenced by intrinsic and derived motivations in addition to instrumentally extrinsic motivations. In this paper we investigate services designed particularly for satisfying instrumental gratifications – mobile parking services. Even though the external validity of our results is somewhat limited, we show that adoption of even the most instrumental mobile data services seems to be influenced by intrinsic and derived motivation. In this section we summarize our conclusions, discuss the validity of the study and suggest some implications for providers of mobile data services.

5.1 Conclusions

In section 2.1 a model of mobile data services adoption was suggested based upon the theory of planned behavior, but modified and re-specified using findings of mobile service end-user behavior in uses and gratifications and domestication research. The model included four primary influences of adopters' intention to use mobile services. The motivational influence included intrinsic, extrinsic and derived motivations for using mobile services. The attitudinal influence stemmed from motivational determinants and social norms. The social influence was determined by external and interpersonal influence, and was moderated by self-control - the individual user's tendency to resist external and interpersonal influence. Finally, resource-related influence was determined by users' self-efficacy and perceptions of service facilitation.

This model was tested with empirical data on users' adoption and intention to adopt mobile parking services. These services were selected for their focus on instrumental gratifications meeting users' extrinsic motivations for using mobile data services. A total of 459 users having tried mobile parking services responded to our questionnaire, and these data were used to estimate the model presented in section 2. The general results of the analyses of these data and the model estimations may be summarized as follows:

- General findings:
  - The measures of the adoption model proved to be reliable and valid when applied to mobile parking services users.
  - Mobile parking services were perceived as surprisingly expressive, low on enjoyment value, easy to use and useful.
  - Attitudes towards mobile parking services were very positive among trial users.
  - Intention to use mobile parking services was high among trial users when compared to trial users of other mobile data services investigated.
  - External and interpersonal influences on using mobile parking services are low.
  - Mobile parking services are perceived as well facilitated and within what users feel they control.

- Segment differences:
  - Perceptions of model concepts differ considerably between trial users and registered users.
  - There are gender differences in the perceptions of expressiveness and enjoyment of mobile parking services, and in the external and social pressure towards using such services.
  - There is an effect of education on the perceptions of mobile parking services' expressiveness, enjoyment, ease of use and usefulness, in the attitudes towards these services, and in the perceived social influence on using such services.
  - There is an effect of income on end-users intention to use and actual use of mobile parking services.

- Adoption model findings:
  - The adoption model showed good fit and explanatory power.
  - Intention to use mobile parking services is mainly influenced by perceived usefulness and expressiveness.
  - There are no effects of subjective norm and behavioral control on intention to use mobile parking services.

- Usefulness is influenced primarily by ease of use and expressiveness, while attitudes towards use are influenced primarily by usefulness.
- Norms are determined primarily by interpersonal influence, but external influence and self-control is also influential
- As for all mobile services studied, behavioral control is determined by facilitating conditions and self-efficacy.
- There are differences between trial and registered users' adoption models, whereas there are only minor differences in the adoption models by gender and education. There seem to be differences in the adoption models by income, but this should be interpreted with care due to small high income sample size.
- The parking services adoption model differs from the adoption models of other mobile data services with less influence of enjoyment, attitudes and behavioral control (situational control)

Among the general findings of most interest were the surprisingly high mean value of perceived expressiveness and the positive attitudes towards using the services. Even though these findings should be interpreted with care due to the interest shown by respondents in first trying the service and then answering the questionnaire, attitudes were surprisingly positive when compared to the attitudes towards using other mobile data services found in four previous studies. Also, intention to use mobile parking services was generally higher than that found in previous studies.

We found significant segment differences in perceived variables between trial users and registered users. The latter category of users was generally more positive and found the services to be more expressive, more easy to use and so forth. In general there were few gender, age and income differences in mean values of the perceived variables. However, differences were found in perceptions of expressiveness, enjoyment and social influence between male and female users. Also, for the same variables, and for attitudes as well, differences between high and low educated subjects were identified. However, no differences were identified in intention to use the mobile services between male and female users and between high and low educated users. On the other hand, high income users generally had higher intention to use the service and higher mean values of perceived actual use.

When estimating the adoption model of section 2, results showed good fit and explanatory power. One of the most surprising results was the consistent influence of expressiveness in addition to an expected influence of usefulness. As expected, subjective norm was not influential and, surprisingly, neither was behavioral control. The lack of influence from subjective norm and behavioral control is consistent with the propositions suggested in section 2 indicating that social influence is less important to older users and to mobile information and transaction services, and behavioral control is less important to skilled, innovative and high income users.

When investigating segment differences, we found consistent differences in the adoption models of trial and registered users. These results should, however, be interpreted with care. One reason is the different motives for registering as a user. For example, several users were registered with company accounts and were obliged to use the parking service. Another reason is that the generally higher intention among registered users makes intention to use vary over a smaller interval in both trial user and registered user categories when performing a sample split based analysis. When investigating segment differences using demographic variables, surprisingly few differences in the motivational parts of the model were found while greater differences were found in usefulness determination, attitudinal, social and situational control processes. However, as long as these processes do not affect intention to use the services, the observed differences are of less relevance. Based upon the results and differences in levels of intention to use the services between high and low income users, it was somewhat disappointing to see that no variables significantly influenced intention to use mobile parking services in the high user segment. However, when analyzing the model further, we found that expressiveness was significant at the 7% level and subjective norm at the 8% level indicating differences in the adoption models of low and high income users. Further analysis of the relationship between income, usefulness and expressiveness showed that there are main effects of all three variables on intention to use mobile parking services, but the interaction effect of income and expressiveness identified in table 4.2 was not significant in the adoption model.

5.2 Discussion

This study is based on the developed procedures, measures and results of five previous studies of mobile service adoption. For a discussion of the validity issues of these studies, we

refer to Pedersen (2001, 2002) and Pedersen et al. (2002). Thus, we propose that the theoretical and methodological foundations for acceptable internal and external validity are sufficient. In section 3, we presented the procedures and measures applied. In general, all theoretical concepts have been discussed in section 2 or in previous work (Pedersen, 2001, 2002, Pedersen et al., 2002), and are well founded in the research reviewed in section 2. Thus, the construct validity is considered acceptable. Furthermore, the analyses of section 3 showed that measures were reliable and that constructs had acceptable convergence and discriminant validity. However, there are still issues of relevance to the internal and external validity of this particular study that requires further discussion.

With respect to internal validity, the procedure used to recruit subjects in this study may have resulted in subjects with a more positive attitude towards the service than the population of trial users. To obtain respondents with some experience of the services, we only recruited subjects participating in a user trial. Thus, our first validity issue is if the results generalize to subjects with some experience in using the mobile parking services. Even though we may have recruited subjects with positive attitudes, many of the comments found in the survey questionnaire were also negative, and an equally important motivation for participating in the survey may have been to express bad experiences from using the trial services. Thus, we assume the recruitment and experimental procedures have not made the sample systematically different from the sampling frame representing the population of trial users. Another advantage of the procedure was that it provided a large sample of trial users further reducing the threat of self-selection to internal validity. The discriminant validity of our original usefulness and expressiveness measures were somewhat lower in this study than in previous studies. When investigating the items further we found that one of the usefulness items brought the mobile parking services into the driver context (“makes me a better car driver”) – a context perceived as different from the parking context of the service. We also found that the two components of social identity and self-identity in expressiveness were not as well integrated when exposed to the parking contexts as for the other service contexts previously studied. Thus, it seemed social expressiveness was not relevant of parking services whereas individual expressiveness was. Except for these issues, internal validity is considered good in the study, and further arguments supporting this conclusion are found in section 3.

The issue of external validity may be discussed with reference to subject-, setting- and time-specific threats. Even though we argue that internal validity is not threatened by the self-

selection procedure applied to recruit subjects, external validity may be. Thus, one should be careful in generalizing our findings to users not having tried mobile parking services. For example, consumers with no experience in trying this kind of service may perceive service characteristics as different and their intention to use mobile parking services may be based upon different judgments. It is, for example, not unlikely that these subjects will be more influenced by attitudes and social pressure. Still, users are not likely to adopt these kinds of services without some initial trial, making our findings externally valid anyway. In a recent survey of mobile users versus shoppers in Finland, Germany and Greece, Vrechopoulos et al. (2002) found few demographic differences between the two user categories in the three countries. However, mobile shoppers were less focused on price and more on ease of use than mobile users but these differences were not consistent across countries. Thus the findings may indicate that the early adopters of mobile data services and adopters of traditional mobile services are not that different. Another issue with respect to the subjects recruited is the skewed distributions of demographic variables such as age, gender and income. However, we have reported model differences and perception differences by age, gender and income. Some differences were revealed between different demographic segments, but our results may also be used to generalize these differences. For example, adoption models were estimated of male and female users, of high and low educated users and of high and low income users. For generalizing to populations with a different distribution of these demographic variables, the findings generated from these models may be applied.

Another issue threatening external validity is the stimulus context used in this study. One may suggest that the EasyPark mobile parking services are unique in some way that makes our results less valid to the adoption of other mobile parking services or other instrumentally oriented mobile data services. Furthermore, one may argue that the free trial campaign used as a basis for recruiting subjects to this study is unique and thus, the results are only unique to this particular trial setting. With respect to this issue, the free trial period was limited to one hour free parking. It is not likely that this has generated any situation specific threats to external validity. Besides, it is not likely that this affected our findings of usefulness, expressiveness and income as determinants of intention to use the services in any particular way that threaten the external validity of the setting. The mobile paring services of EasyPark is a fairly simple and general mobile parking service, and most other mobile parking services are very similar to this service. Generalizing our findings to other instrumental mobile data

services, is however, another issue. We argue that the selection of mobile parking services represents a “crucial test” of the external validity of our TPB-model extensions (intrinsic and derived motivations of enjoyment and expressiveness). We argue that if finding enjoyment and expressiveness to be influential in the adoption of this service, we may well generalize this to most other instrumental data services. Thus, we conclude that our finding of expressiveness as influential in the adoption of mobile parking services makes it very likely that expressiveness is a unique gratification of all mobile data services, and that developers should take this adoption determinant into consideration when designing and marketing their services. There were no particular media events, campaigns (other than the free trial campaign) or service defects during the trial and data collection period of the study. Consequently, time has not threatened the external validity of our results during the study. Still, our findings should be interpreted with care because more attention was given to internal than to external validity in the design of the study.

5.3 Implications

Mobile parking services were found to be perceived as useful and easy to use, well facilitated and within users’ control. Thus, attitudes towards use among our trial users were generally very positive and intentions to use were high. To the mobile parking service provider EasyPark, this means that there is no obvious lack of information in the potential user segment. Neither are there any immediate needs to improve usability and facilitate the service in specific ways. There are, however segment differences indicating that these perceptions are not shared by all users. This information may be used to communicate usefulness and ease of use, to facilitate particular user groups and so on. When it comes to stimulating adoption, the findings from our adoption model estimations are most important. They show that little is gained by affecting attitudes, utilizing interpersonal influence to develop stronger norms, or to improve the way the services are facilitated or the skills of end-users. Instead, much may be gained by communicating the usefulness of the service in general, and to find new ways of communicating the instrumental usefulness of mobile parking services to new potential user groups. Furthermore, segments focusing particularly on the expressiveness of their consumption seem to have the greatest potential for adopting mobile parking services. Among users in general, adoption may also be stimulated by communicating the expressive values of using mobile parking services. In particular the self-identifying elements of using these

services may provide a basis for new ways of communication with potential adopters. How this may be done except from initiating regular attitudinal campaigns, is beyond the scope of this paper. These results and implications also generalize to other providers of mobile parking services.

To other mobile data service providers, the results should be interpreted with reference to our previous studies of mobile messaging, contact, gaming and payment services. These results show that attitudinal, social and situational control elements are less influential in the intention to use mobile data services. This means providers and distributors can not easily influence user intentions through attitudinal information, interpersonal "word-of-mouth" processes and through educating their users and facilitating their services in simple ways. Instead, the motivational process involved when adopting mobile data services is far more complex than we originally anticipated. In this process, the influences of intrinsic, extrinsic and derived motivations are complex. Thus, developing useful and instrumental services is a requirement for widespread adoption. Communicating this usefulness is also important. However, this is far from enough. In addition, services should include elements of intrinsic motivations. Ease of use is an element in providing intrinsic motivations, but for some service categories, challenge is equally important. Another element of intrinsic motivation is enjoyment. Even though this was not found to directly influence intentions for mobile parking services, it indirectly affects intentions through usefulness. For other, less instrumental mobile data services we have found enjoyment to be directly influential as well.

The most consistent effect on intention to use mobile data services across all our studies has been expressiveness. Expressiveness includes elements of social identity and self-identity. For mobile parking services, the self-identity element of expressiveness was found to be most important. For other services, the element of social identity and self-identity was found to be converging parts of the expressiveness concept. Expressiveness is often unanticipated by service designers and adopters, and is thus not something that was planned or designed by intent. Social identity is based upon social norms and conforming with these norms. Thus, to propose that social norms are not important in mobile service adoption is not supported. However, direct subjective norms of using a specific mobile service are not found influential. Instead, it is the social norms of belonging to a particular social group, having a well developed social network and so on that the user displays that is of relevance in the social identity conception of expressiveness. The other element – self-identity is even more subtle

indicating that the user “displays to himself” the fulfillment of a specific role or identity by using a service. To design mobile data services that are consistent with such subtle motivational processes is not simple, and represents a challenge to providers, operators and service aggregators and distributors. It is also obvious that the service characteristics that provides perceived expressiveness will differ across service categories and user segments making this challenge even greater.

For researchers, the results provide a “crucial test” of non-instrumental influences on adoption of instrumental mobile services. Given this setting, it is surprising to see such a consistent influence of expressiveness across services. This indicates the motivational process of adoption is more complex than previously assumed suggesting this process should be further elaborated on. For example, the relationship among intrinsic, extrinsic and derived motivations requires further analysis. For mobile parking services in particular, the influences of the self-identity elements of expressiveness is particularly interesting. In applied social psychology and consumer psychology, the element of self-identity in consumption has been given some attention (Mannetti et al., 2002, Sparks and Guthrie, 1998). Self-identity in many of these contributions is seen somewhat different from the socially constructed self-identity of Mead and Goffman (Mead, 1934, Goffman, 1959) and in the structuration theory of Giddens (1991). This line of research has mainly been applied to the consumption of value expressive products (Mittal, 1994) such as objects of display or style and products related to personal life-styles such as environmentally relevant products (Cook et al., 2002). In IS-research, these concepts have been given little attention. Instead, symbolic elements of media choice and use have been investigated in this tradition, focusing more on the symbolic effects of using specific technologies and services rather than their role in the formation of users’ self-identity. As mobile services are introduced in work contexts, the influences of social-identity and self-identity in the process of adopting these services should be given more attention. The development of the expressiveness concept in this and previous reports, the evaluation of the validity and reliability of the concept and the demonstration of its relevance in five different empirical studies on mobile service adoption across user segments represent significant contributions to this research.

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APPENDIX A

Professor Per E. Pedersen
Samfunns og Næringslivsforskning
Breiviksveien 40
5045 BERGEN

Bergen, 111002

Undersøkelse om bruk av mobiltjenester

Takk for din interesse for å delta i denne undersøkelsen som er en del av flere vi gjør om synspunkter på nye **mobiltjenester**. Vi er interessert i dine synspunkter på EasyPark's tjeneste for betaling av parkering med mobilen. Selv om du **ikke** bruker denne tjenesten i dag er vi likevel interessert i dine synspunkter. Undersøkelsen gjennomføres av Samfunns- og Næringslivsforskning uavhengig av teleselskaper eller andre kommersielle interesser, og resultatene brukes kun til forskningsformål.

Hele undersøkelsen er ikke ment å ta deg mer enn ca. **10 minutter**. Du trenger ikke å bruke lang tid på å tenke deg om ved hvert spørsmål, men prøv å besvare så **mange av spørsmålene som mulig**.

Ved å gjennomføre undersøkelsen deltar du også i **trekningen** av:

- **5 gavekort a kr. 1000,- i valgfri lokal butikk, som ringetid, eller satt inn på SmartCash eller PayEx konto**
- **20 gavekort på CD hos AkersHic**

Alle svar er konfidensielle for andre enn de som skal analysere resultatene. Svarene er anonyme og knyttes ikke til noe som kan identifisere den som har avgitt dem.

Hvis du vil være med i trekningen av premiene over må du fylle inn ditt telefonnummer nederst på denne siden. Alle vinnere vil bli kontaktet på det angitte telefonnummeret. Hvis du ikke ønsker å bli kontaktet pr. telefon må du angi alternativ kontaktinformasjon, fortrinnsvis epost, men du kan også oppgi navn og adresse hvis du foretrekker det.

Hele skjemaet ferdig utfylt og påført kontaktinformasjon returneres i svarkonvolutten du finner vedlagt. Husk at du alternativt kan gi dine svar på Internett på http://emarkets.grm.hia.no/park/ .

Tusen takk for at du tok deg tid til å delta i undersøkelsen !

Med vennlig hilsen

Per E. Pedersen
Professor (faglig ansvarlig)

Kontaktinformasjon

Telefon:	
Epost (eller annen kontaktinformasjon som navn, adresse el. lign):	

Kontaktinformasjonen holdes atskilt fra dine svar og brukes bare til å trekke vinnere. Denne siden rives fra dine svar og kontaktinformasjonen registreres uavhengig av svarene.

Side **1** av 3

Vi vil at du nå konsentrerer deg om **EasyPark's parkeringstjeneste.** Tjenesten lar deg bruke mobiltelefonen til å starte og stoppe betaling av parkeringstid. Du angir en kode etter hvor du parkerer og betaler bare for tiden du står parkert. Betaling kan skje med samlefaktura for kredittkort, Statoilkort, Eurocard, MobilHandel™(SmartCash og SmartPay) eller PayEx elektronisk lommebok.

Svar på spørsmålene ut fra dine **erfaringer**. Hvis du ikke har erfaringer vil vi likevel at du svarer på spørsmålene ut fra det du **vet** eller **tror** om **EasyPark's parkeringstjeneste**.

Vennligst ta stilling til følgende utsagn, der du angir grad av enighet på en **skala** fra 1 til 7 der **1 er svært uenig** og **7 er svært enig**:	Svært uenig 1	2	3	4	5	6	Svært enig 7
EasyPark's parkeringstjeneste gjør at jeg sparer tid når jeg parkerer	☐	☐	☐	☐	☐	☐	☐
Det er enklere å være bilist med EasyPark's parkeringstjeneste	☐	☐	☐	☐	☐	☐	☐
EasyPark's parkeringstjeneste gjør meg til en bedre bilist	☐	☐	☐	☐	☐	☐	☐
EasyPark's parkeringstjeneste er nyttig når jeg skal parkere	☐	☐	☐	☐	☐	☐	☐
Det forventes at folk som jeg bruker mobiltjenester som EasyPark's parkeringstjeneste	☐	☐	☐	☐	☐	☐	☐
De som betyr noe for meg forventer at jeg bruker mobiltjenester som EasyPark's parkeringstjeneste	☐	☐	☐	☐	☐	☐	☐
Folk jeg ser opp til forventer at jeg bruker mobiltjenester som EasyPark's parkeringstjeneste	☐	☐	☐	☐	☐	☐	☐

Angi langs en **skala fra 1 til 7** hvordan du, sett under ett, ser på **EasyPark's parkeringstjeneste**:

Dårlig	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7	Bra
Ufornuftig	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7	Fornuftig
Ugunstig	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7	Gunstig
Negativ	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7	Positiv

Vennligst ta stilling til følgende utsagn, der du angir grad av enighet på en **skala** fra 1 til 7 der **1 er svært uenig** og **7 er svært enig**:	Svært uenig 1	2	3	4	5	6	Svært enig 7
Det er lett å lære å bruke EasyPark's parkeringstjeneste	☐	☐	☐	☐	☐	☐	☐
Det er lett å få EasyPark's parkeringstjeneste til å fungere slik jeg vil	☐	☐	☐	☐	☐	☐	☐
Bruken av EasyPark's parkeringstjeneste er enkel og forståelig	☐	☐	☐	☐	☐	☐	☐
Det er lett å bruke EasyPark's parkeringstjeneste	☐	☐	☐	☐	☐	☐	☐
Massemediene er fulle av artikler og nyheter som hevder at bruk av mobiltjenester som EasyPark's parkeringstjeneste er smart	☐	☐	☐	☐	☐	☐	☐
I medier og reklame finner jeg til stadighet anbefalinger om å bruke mobiltjenester som EasyPark's parkeringstjeneste	☐	☐	☐	☐	☐	☐	☐
	Svært uenig 1	2	3	4	5	6	Svært enig 7
Jeg snakker ofte med andre om mobiltjenester som EasyPark's parkeringstjeneste	☐	☐	☐	☐	☐	☐	☐
Jeg viser gjerne EasyPark's parkeringstjeneste til andre	☐	☐	☐	☐	☐	☐	☐
Å bruke mobiltjenester som EasyPark's parkeringstjeneste er en del av den måten jeg uttrykker min personlighet på	☐	☐	☐	☐	☐	☐	☐
Andre blir ofte imponert over min bruk av EasyPark's parkeringstjeneste	☐	☐	☐	☐	☐	☐	☐

Fortsett på neste side når du er klar.....

Side 2 av 3

Fortsett å ta utgangspunkt i **EasyPark's parkeringstjeneste**, og besvar følgende spørsmål:

Vennligst ta stilling til følgende utsagn, der du angir grad av enighet på en **skala** fra 1 til 7 der **1 er svært uenig** og **7 er svært enig**:	Svært uenig 1	2	3	4	5	6	Svært enig 7
På jobben/skolen synes alle at mobiltjenester som EasyPark's parkeringstjeneste er noe man bør bruke	☐	☐	☐	☐	☐	☐	☐
Vennene mine synes at man bør bruke mobiltjenester som EasyPark's parkeringstjeneste	☐	☐	☐	☐	☐	☐	☐
Jeg får stadig anbefalinger fra venner om å bruke mobiltjenester som EasyPark's parkeringstjeneste	☐	☐	☐	☐	☐	☐	☐
Jeg føler meg fri til å bruke EasyPark's parkeringstjeneste hvis jeg selv ønsker	☐	☐	☐	☐	☐	☐	☐
Jeg har fullstendig kontroll over bruken av mobiltjenester som EasyPark's parkeringstjeneste	☐	☐	☐	☐	☐	☐	☐
Generelt sett har jeg de midler og ressurser jeg trenger for å bruke EasyPark's parkeringstjeneste	☐	☐	☐	☐	☐	☐	☐
	Svært uenig 1	2	3	4	5	6	Svært enig 7
Jeg har tenkt å bruke EasyPark's parkeringstjeneste de neste seks månedene	☐	☐	☐	☐	☐	☐	☐
De neste seks månedene har jeg tenkt å bruke EasyPark's parkeringstjeneste mye	☐	☐	☐	☐	☐	☐	☐
Jeg har tilstrekkelig tid til å bruke EasyPark's parkeringstjeneste på en smart måte	☐	☐	☐	☐	☐	☐	☐
Jeg har de kunnskaper og ferdigheter som er nødvendig for å bruke EasyPark's parkeringstjeneste	☐	☐	☐	☐	☐	☐	☐
Jeg føler at jeg behersker bruken av EasyPark's parkeringstjeneste fint på egenhånd	☐	☐	☐	☐	☐	☐	☐
Generelt sett ønsker jeg å gjøre det mine venner synes jeg burde gjøre	☐	☐	☐	☐	☐	☐	☐
Generet sett ønsker jeg å gjøre det familie eller kollegaer synes jeg burde gjøre	☐	☐	☐	☐	☐	☐	☐
	Svært uenig 1	2	3	4	5	6	Svært enig 7
Jeg har de økonomiske ressursene som er nødvendig for å bruke EasyPark's parkeringstjeneste	☐	☐	☐	☐	☐	☐	☐
Jeg har det som trengs av teknisk utstyr for å bruke EasyPark's parkeringstjeneste	☐	☐	☐	☐	☐	☐	☐
EasyPark's parkeringstjeneste er sikker og teknisk velfungerende	☐	☐	☐	☐	☐	☐	☐
Det teleselskapet jeg bruker tilrettelegger godt for bruk av mobiltjenester som EasyPark's parkeringstjeneste	☐	☐	☐	☐	☐	☐	☐
EasyPark's parkeringstjeneste fungerer fint sammen med de andre mobiltjenestene jeg bruker	☐	☐	☐	☐	☐	☐	☐

Fortsett på siste side når du er klar.....

Side 3 av 3

Fortsett å ta utgangspunkt i **EasyPark's parkeringstjeneste**, og besvar følgende spørsmål:

Vennligst ta stilling til følgende utsagn, der du angir grad av enighet på en **skala** fra 1 til 7 der **1 er svært uenig** og **7 er svært enig**:	Svært uenig 1	2	3	4	5	6	Svært enig 7
Jeg synes det er underholdende å bruke EasyPark's parkeringstjeneste	☐	☐	☐	☐	☐	☐	☐
Jeg synes det å bruke EasyPark's parkeringstjeneste er hyggelig i seg selv	☐	☐	☐	☐	☐	☐	☐
Å bruke EasyPark's parkeringstjeneste er spennende	☐	☐	☐	☐	☐	☐	☐
Det er morsomt å bruke EasyPark's parkeringstjeneste	☐	☐	☐	☐	☐	☐	☐
Sammenliknet med andre bruker jeg EasyPark's parkeringstjeneste mye	☐	☐	☐	☐	☐	☐	☐
Jeg bruker EasyPark's parkeringstjeneste ofte når jeg kjører bil	☐	☐	☐	☐	☐	☐	☐
Jeg ser på meg selv som en storbruker av EasyPark's parkeringstjeneste	☐	☐	☐	☐	☐	☐	☐

Vennligst ta stilling til følgende utsagn om **mobiltjenester mer generelt** (ikke bare EasyPark's parkeringstjeneste).	Svært uenig 1	2	3	4	5	6	Svært enig 7
Hvis jeg hører om en ny mobiltjeneste som er kommet er jeg svært interessert i å prøve den ut	☐	☐	☐	☐	☐	☐	☐
Sammenliknet med mine venner bruker jeg mange nye mobiltjenester	☐	☐	☐	☐	☐	☐	☐
Jeg er generelt blant de første i min vennekrets som har hørt om nye mobiltjenester når de kommer på markedet	☐	☐	☐	☐	☐	☐	☐
Jeg prøver ut nye mobiltjenester selv om jeg ikke har hørt om andre som har prøvd dem	☐	☐	☐	☐	☐	☐	☐

Vennligst **besvar følgende spørsmål**:	
Omtrent hvor mange ganger bruker du EasyPark's parkeringstjeneste i løpet av en uke?	☐ ganger
Hvordan er ditt kundeforhold til EasyPark (med parkert mener vi om du har parkert ved bruk av EasyPark's tjeneste) ?	☐ Bedriftsabonnement ☐ Registrert med verdibrev (1 time gratis). Har bare parkert en gang med verdibrevet eller ikke brukt det ☐ Registrert med verdibrev (1 time gratis). Har siden parkert flere ganger med tjenesten ☐ Registrert på annen måte (veb/telefon)
Er du kvinne eller mann?	☐ Kvinne ☐ Mann
Hva er din alder?	☐ 0-19 ☐ 20-29 ☐ 30-39 ☐ 40-49 ☐ 50-59 ☐ 60 og over
Hva er din høyeste utdanning?	☐ Grunnskole ☐ Videregående skole ☐ Universitet/høyskole 1-3 år ☐ Universitet/høyskole 4 år eller mer
Omtrent hva er din personlige bruttoinntekt (kroner)?	☐ Under 200 000 ☐ 200 000 - 399 000 ☐ 400 000 - 600 000 ☐ Over 600 000

Husk å fylle ut kontaktinformasjon på første side av undersøkelsen og returner dine svar i vedlagte svarkonvolutt!

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