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# I AM A SMART PHONE USER - KEY INSIGHTS FROM THE FINNISH MARKET

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# I AM A SMART PHONE USER - KEY INSIGHTS FROM THE FINNISH MARKET

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## Abstract

*Smart phones are seen to drive the development of mobile applications and a more or less intuitive belief is that once the users have a smart phone they will download applications and start using a wider variety of mobile services and/or more advanced mobile services. In this paper we describe Finnish smart phone users based on a survey study carried out with a random sample representative of Finnish consumers between the ages of 16 and 64. We divide smart phone users into three categories based on the range and frequency of using different mobile services and applications. We find, in addition to a small 'power user' group (15 %) and a substantial set of 'interested but inactive users' (47 %), that 38 % of smart phone users do not use their devices for any advanced services and have a low motivation to continue using smart phones in the future. The demand for and the sales of smart phones is growing rapidly; combined with this is the notion that users of smart phones will become users of more advanced applications and a wider variety of services, which will give a boost to the mobile service market. In light of our results we believe this development is slower to happen than expected. Also noteworthy is the sizeable minority of decidedly underwhelmed smart phone users, who are likely to jump ship to simpler devices.*

*Keywords: mobile services, smart phones, mobile applications, smart phone usage, smart phone users.*

## 1. Introduction

In 1991 the world's first commercial GSM network was launched in Finland. Finland was also the first country in the world where mobile phones outnumbered fixed connections, and that happened as early as in 1998. In year 1999 Finland was the first country in Europe to launch WAP-services and license 3G networks. In 2006 network operators were allowed to combine telephones and subscriptions in a single offering, which boosted the 3G network subscription base. Nokia, a company with Finnish roots, and a pioneer and market leader in mobile technology, has played a crucial role in the development of the Finnish mobile technology market. Finland has long been the international forerunner in mobile services, although it has gradually been losing ground to Asian countries like Japan, South Korea and China (Netsize guide 2010), and to some extent to the USA, as the introduction of Blackberry, iPhone and Android have made inroads especially in the business market.

The mobile subscription penetration rate in Finland reached 144.6 % in December 2009, with 7.7 million subscriptions. By June 2011 this number had grown to 8.8 million subscriptions, i.e. a penetration rate of 164.5 % (FICORA, 2011). This penetration rate is very high compared e.g. with Sweden's 135.6 % in March 2011 (Business Monitor International, 2011). Smart phones have emerged as a new generation of mobile phones and what we are witnessing today is a device shift from basic phones to smart phones. It has been projected that sales of smart phones will in 2012

surpass the feature phones when consumers in Europe purchase a new phone (comScore, 2012). Based on the same study by ComScore it was found that 44% of all subscribers in the EU5, i.e. France, Germany, Italy, Spain and UK, use smart phones. The corresponding figures for U.S. are 42%; in Finland 42% used smart phones in spring 2011 (age group 16-74, Statistics Finland). The market for mobile phones is very large as in 2010 the mobile phone subscribers were around 5.4 billion and are expected to reach nearly 7.5 billion in 2015. In Europe the subscribers were 1.06 billion in 2010, corresponding to 19.9% of the worldwide subscriber base. The forecast for year 2015 is 1.17 billion subscribers (15.8% of the worldwide subscriber base) which show that the strongest market growth is expected to be in Asia Pacific (<http://www.itu.int/ITU-D/ict/publications/world/world.html>).

Common questions when discussing smart phones are: (i) how does a smart phone differ from a feature phone, and (ii) what makes it so smart? There is no one definition of what a smart phone is but a common description is a phone that allows the user to make phone calls with add-in features that normally are found only on a personal digital assistant or a computer. Smart phones are the result of mating mobile phones with PDAs (Charlesworth 2009); smart phones have persistent network connectivity and support the installation of new applications (Oulasvirta et al 2012). The distinction between smart phones and feature mobile phones is gradually blurring, as low-end mobile phones are getting more capabilities (Charlesworth 2009). But the technology is constantly changing (Cassavoy, 2012) and what constitutes a smart phone today may be considered a basic phone in the near future. In our study we have defined smart phones as devices with (i) either iOS, Android, Symbian S60 (or above), the Windows smart phone OS, Blackberry OS or Linux distributions such as Maemo or MeeGo, and (ii) a possibility to download and install new applications.

Smart phones are seen to drive the development of mobile applications and a more or less intuitive belief is that once the users have a smart phone they will download applications and start using a wider variety of mobile services and/or more advanced mobile services. The application downloads have grown during the last few years; the downloads from Apple's App Store are by now 15 billion. In Europe there were 1.9% of the subscribers in 2010 that used mobile applications. This figure is expected to be 7.2% in 2015. The corresponding figures worldwide are a bit lower, 1.4% and 5.9%, whereas the figures for North America are in a class of its own, 7.7% and 26.9% (Portio, 2011). This development is described as an evolution of mobile telephony from voice and text communication to the use of value added services. This change is notable in three ways, which have precedents in the history of communication and media technology: (i) it changes the nature of mobile telephony; (ii) it is a challenge to the continuity of mobile telephony, making it a financially risky step to take; and (iii) we cannot yet say how and for what purposes the services will be used in the future. (Bouwman et al 2008a, 2008b, 2009, 2010). Adoption studies of mobile services with large consumer surveys (based on random samples) have been carried out in Finland 2003-2011; a major finding is that different groups of mobile services are developed and adopted at a different pace despite having the same technology base. Then, one of the generalizations that has been found is that the adoption of mobile services takes place asynchronously with the development of mobile technology (Carlsson et al., 2006). These results are consistent with previous research (Orlikowski and Iacono, 2001).

Mobile services need to be built in such a way that they are highly competitive on value creation for customers; the question is, if smart phones will play some decisive role in this or if they simply are needed to provide a platform for more advanced software solutions. Or maybe it is the case that the value of a mobile service is the crucial part – and it could easily be implemented on a basic mobile phone – then smart phones will not play any role (as they tend to be more expensive than feature phones).

The goal of this paper is to describe the Finnish smart phone market: who are the users, what kind of smart phone do they have, and what do they use their smart phones for. Are smart phone users actually using the phones in smart(er) ways, i.e. in ways that will create user value? The structure of the paper is as follows. In the following section we present previous research on the use of smart phones as a background and state-of-the-art for the present study. Then we go on to present the survey informing this research, our sample and data collection procedures. In the last two sections we present the analysis of our data, starting with the demographics and showing what services are used with the smart

phones on a regular basis. This is followed by a discussion of the results when compared with the state-of-the-art, some conclusions and some directions for further study.

## 2. Background

A number of recent studies have addressed the advent of smart phones into the consumer market. Much of the research attention has been directed on user patterns, predominantly through utilizing handset-based software tools to collect information on user behaviour, e.g. (Verkasalo, 2011, Smura et al., 2011, Falaki et al., 2010, Oliver, 2010). One of the benefits of this approach is gaining access to actual usage data, as opposed to self-reported accounts on usage or intention to use. The data is rich in character, giving information about a range of aspects of user behaviours; from diurnal patterns to session lengths and traffic volumes. There are, however, also a number of challenges to this data-collection method. Firstly, recruiting participants for this type of study is cumbersome and virtually eliminates the possibility to gain a sample which would be representative of smart phone users in general. The obtained samples are generally characterized as “early adopters” and technology-savvy. E.g. the sample used by Verkasalo (2011) is 81% male and 77% under 40 years old, and in Smura et al (2011) “mainly young to middle-aged men”. On the other hand, Oliver (2010) had access to a sizeable database of traces from over 17.300 Blackberry users, likely representing a wider population of users. This usage data could however not be combined with any knowledge regarding the individual users, making it unattainable to describe characteristics of the users themselves. In all of the studies conducted utilizing software-based data collection on the handset, there is very limited information regarding the users and this is one of the main limitations of the method. In this method, use context can be investigated on the level of i.e. time of the day and location (international vs. domestic) (Verkasalo, 2011), but a more nuanced investigation of context would likely require a different data collection method. There are a number of interesting findings from the above mentioned studies. Smura et al (2011) could find that over 50% of the Finnish mobile phone users in the study were not using mobile data, even though their devices were capable of it. Smura et al draw attention to the fact, that despite the rising penetration of smart phones among the Finnish population, mobile data services use has not penetrated to a corresponding degree. Smura et al draw a parallel to results by (Sugai, 2007) who found that upgrading the consumer handset has a relatively minor impact on mobile usage behaviour; improved technical capabilities of the new handset are less important than pre-existing usage habits. Among the most popular services used in their study, aside from calls and SMS, were web browsing (19% of panellists used at least twice a week), music playback (20%), maps and navigation (12%), email (7%). The percentage of users who had used these services once during the data collection period was naturally higher, e.g. 36% for maps and navigation, 21% for email.

Smart phones have also been studied using user surveys. Some researchers, e.g. (Kim, 2008) and (Park and Chen, 2007) report on studies adapting the technology acceptance model (TAM) to a smart phone context. Perceived usefulness and perceived ease of use were found to be positive determinants of attitude towards using smart phones among health care professionals (Park and Chen 2007). Organizational attributes such as organization size and top management support were also found to have a positive impact on intention to use smart phones. Respondents’ education, job status are experienced were, however, not found to be of significance regarding attitude towards smart phone usage. Kim (2008) tested a version of TAM, which had been extended by two new constructs – Perceived Cost Savings and Company’s Willingness to Fund - and two causal relationships – Job Relevance and Experience, through structural equation modelling (SEM). The new additions to the model were found to be supported in the analysis, suggesting that smart phone use is especially likely to happen when a) the necessity to use a smart phone is high in the work place, b) company had willingness to fund smart phone costs, and c) if the individual has prior experience of the technology, e.g. through demonstrations by sales personnel before buying. These studies provide added insight on how the technology acceptance model could be extended to better accommodate the peculiarities of mobile technologies.

Peslak et al. (2011) present a survey study examining differences between different types of cell phone and smart phone users and usage. The sample is a convenience sample of 101 university students in the United States. Peslak et al report that text messages (SMS) remain a very important activity among smart phone users, despite the added capabilities of smart phones. SMS is used 44.5% of the total smart phone usage time. Email and Internet activities comprise on average 11.4% and 17.3% of total smart phone usage. Other apps (not further specified in the study) are used 6.7% of the time. There were some differences between male and female use of mobile phones; e.g. females spent significantly more time text messaging than males. As expected, emailing, Internet-use, usage of apps, and time spent on games was significantly higher for smart phone users than for users of regular cell phones. Overall, smart phone users were more satisfied with their devices and their capabilities. Some loose ends are left to future research. For example, this study does not provide detailed answers on other services or applications than SMS, email and Internet. Smart phone users are compared to regular cell phone users but are not investigated in detail. Lane and Manner (2011) studied smart phone use in the light of the “big five” personality traits (agreeableness, conscientiousness, extraversion, neuroticism and openness to experience), with an online survey on a convenience sample. The studied personality traits were not found to have an impact on smart phone use, with the exception of extroversion. The researchers did, however, observe demographic differences between smart phone users. Females were found to be less likely to own a smart phone than men. Younger age and higher education were also associated with a higher likelihood of owning a smart phone. Finally, Karlson et al (2009) give an account of smart phone usage patterns in business users’ working days. The researchers could see that smart phones have become primary computing devices for many, frequently preferred to stationary PCs or laptops. The study participants were also continually connected to their work email through their smart phones, and highly appreciated this possibility – in contrary to the often mentioned intuitive belief that work invades workers’ private spheres against their wills and uninvited. Even though our study is in the consumer domain, it is interesting to keep in mind the potential pervasiveness of smart phone technology also in individuals’ overall life contexts. This highlights the fact that smart phones can be in many ways more present and entangled in individuals’ lives than any previous technologies, and understanding the intricacies of this entanglement is of high interest for anyone interested in consumer behaviour, technology and mobility.

Many of the studies done are based on convenience sampling covering only a certain group of smart phone users. Our study – in contrast - is based on random sampling which means that we can generalize to Finnish citizens in the age group 16-64. The sample covers mobile phone users in general, but based on our questionnaire we can extract smart phone users which makes it possible to describe the Finnish smart phone market.

### 3. Method

The empirical data were collected in spring 2010, via a self-administered questionnaire which was mailed out to a sample of Finnish consumers. The sample was selected from the electronic sampling frame provided by the Finnish Population Register Centre, based on a stratified sampling procedure. To select the sample we used a simple random sampling method and the frame we used offered a complete representation of the target population, which was defined as the Finnish population between the ages of 16 and 64, whose mother tongue was either Finnish or Swedish and who resided in mainland Finland. The sample size was 1300. To encourage respondents to complete and return the questionnaire, they were offered a chance to win a top-of-the-line mobile phone. The effective response rate was 28.9 %. The data is based on the information provided by 375 respondents. The questionnaire consists of three parts, the first of which contains questions about devices and subscriptions. In the second part items are presented that have to do with barriers, benefits and attitudes towards mobile devices, services and innovation. In the third part, questions with regard to actual and future use of thirty-one mobile services, as available on the Finnish market, are presented to

the respondents. In the paper at hand we concentrate on the issues concerning smart phone users and smart phone usage.

We set out to investigate three groups of smart phone users; *active* users who make use of the advanced features of their smart phones, *passive* users, who use their smart phones mainly for voice and SMS-messages and *medium* users who fall in between these two groups. As there is no accepted framework available for analysing levels of smart phone use we constructed these three rough groups of users. The groups make sense intuitively but the cut-off values will of course play a role for the results. As smart phones becomes more wide spread – the smart phone users were 42% in 2011 (Statistics Finland) – we will gradually get a more stable, statistical basis for the classification.

We were interested in (i) descriptive demographics of these three groups, (ii) the attitudes displayed by the groups towards mobile technologies, and whether they differ between the groups, (iii) any differences between the groups which might shed some light on the reasons behind active use, medium use and passive use, and (iv) the intended continuance of smart phone use in the future by active, medium and passive users.

In our sample we had 375 respondents in total, 294 of which reported their mobile phone make and model, which allowed us to decide the operating system of the mobile phone. Of those who could identify their mobile phone, 40.4 % (119) had a smart phone; with Symbian S60 or above-, Android-, iOS or other smart phone operating system. The operating systems can be seen in table 1 below.

Table 1. Operating systems used by the respondents.

| Operating system, n=294 |     |
|-------------------------|-----|
| Symbian smart phone OS  | 99  |
| Android                 | 2   |
| iOS                     | 8   |
| Other smart phone       | 10  |
| Basic cell phone        | 175 |

Significances were investigated using one way ANOVA procedure, and Scheffe as post hoc-test. In the cases where Levene's test of homogeneity of variances had indicated unequal variances, the Games-Howell test was used instead. Significance was interpreted at the 0.05 level.

We were specifically interested in how the smart phone owners are using their devices, and therefore the 175 respondents with basic phones were left outside of the investigation. In order to find both the most active, and most passive of the smart phone users, we investigated to what degree the respondents use different functions and services on their smart phones. Each of the respondents had rated their use of twenty-five different mobile services on a five-degree scale (1 = I have never used, 5 = I use this service daily) .The range of mobile services used covers the categories of services available in Finland (contact authors for a complete list of the services). Based on these answers, a mean score was calculated for each respondent. A low mean score was interpreted as representing low usage and a low number of used services. A high score was interpreted as reflecting frequent usage of at least some mobile services. In order to find a group of active users and a group of passive users, the following cut-off values were used: a mean score of  $\leq 1.4$  for passive users,  $\geq 2.5$  for active users. The number of respondents with a mean score equal to or below 1.4 was 45, the number of respondents with a mean score equal to or above 2.5 was 18 and the number of respondents with a mean score  $>1.4$  and  $<2.5$  was 56.

## 4. Results

First of all, we want to look at the demographic information describing the three smart phone user groups (Table 2).

Table 2. Demographic information for the three smart phone user groups.

|                      | Active users (n=18)  | Medium users (n=56)   | Passive users (n=45)  |
|----------------------|--|---|---|
| Age (mean)           | 40.8 years   | 39.0 years  | 45.1 years  |
| Gender               | 61.1 % male  | 61.8% male  | 62.2 % female   |
| Education            | 50% vocational,<br>5.6% higher vocational,<br>22.2% university,<br>5.6% elementary | 21.4% vocational,<br>17.9% higher vocational,<br>14.3% university,<br>8.9% elementary                 | 22.2% vocational<br>15.6% higher vocational,<br>17.8% university,<br>17.8% elementary                   |
| Yearly income        | 22.3% over 40.000 €/year<br>16.7% max 20.000 €/year                                | 45.3% over 40.000 €/year<br>28.3% max 20.000 €/year   | 24.4% over 40.000 €/year<br>31.2% max 20.000 €/year   |
| Socio-economic group | 27.8% manual workers<br>33.3% managers, upper-level administrative                 | 23.2% manual workers<br>23.2% managers, upper-level administrative<br>23.2% students, 7.1% pensioners | 31.1 % manual workers<br>15.9% managers, upper-level administrative<br>11.4% students, 15.9% pensioners |

There are no statistically significant differences between the groups regarding age, education, yearly income or socio-economic groups. There was also no statistically significant difference regarding the age of the mobile device in use between the groups, even though the active group possessed slightly newer handsets than the other groups.

Table 3. Percentage of respondents using the service daily or weekly.

|                            | Active users (n=18) | Medium users (n=56) | Passive users (n=45) |
|----------------------------|---------------------|---------------------|----------------------|
| SMS                        | 100.0%              | 98.2%               | 84.4%                |
| Navigation services        | 83.4%               | 17.8%               | 2.2%                 |
| Map services               | 83.3%               | 20.0%               | 2.2%                 |
| M-Email                    | 77.8%               | 32.1%               | 11.1%                |
| Search                     | 77.8%               | 25.0%               | 8.8%                 |
| Surfing                    | 77.8%               | 30.4%               | 8.9%                 |
| MMS                        | 66.7%               | 33.9%               | 15.6%                |
| Social community services  | 61.1%               | 23.2%               | 2.2%                 |
| Checking time tables       | 55.6%               | 5.4%                | 0%                   |
| Location-based services    | 55.6%               | 3.6%                | 0%                   |
| News and weather           | 44.4%               | 18.2%               | 0%                   |
| Travel info or reservation | 44.4%               | 0%                  | 0%                   |
| Ticket reservations        | 38.9%               | 0%                  | 0%                   |
| Downloading free apps      | 38.9%               | 5.4%                | 0%                   |
| Routine m-banking          | 33.3%               | 3.6%                | 2.2%                 |
| Reserve/buy travel tickets | 33.3%               | 1.8%                | 0%                   |
| Internet radio             | 27.8%               | 0%                  | 0%                   |
| Payments                   | 22.3%               | 5.4%                | 0%                   |
| Writing /reading blogs     | 22.2%               | 7.2%                | 0%                   |
| Work-related software      | 22.2%               | 7.7%                | 0%                   |
| Mobile TV and videos       | 16.7%               | 0%                  | 0%                   |
| Internet calls             | 16.7%               | 1.8%                | 0%                   |
| Downloading paid apps      | 16.7%               | 3.6%                | 0%                   |
| Download/play games        | 11.1%               | 7.2%                | 0%                   |
| Reading books/magazines    | 11.1%               | 5.4%                | 0%                   |
| Buying/download music      | 5.6%                | 12.5%               | 0%                   |
| Video calls                | 5.6%                | 1.8%                | 0%                   |
| Gambling                   | 0%                  | 3.6%                | 0%                   |
| Health care                | 0%                  | 0%                  | 0%                   |

In table 3, the differences, especially between the most active and the most passive group, become glaringly clear. The passive users, who make up 37.8% of the smart phone users in the study, make very little use of any services beyond SMS and MMS. The medium users (47 % of the smart phone users) also reach only modest usage of most services, with the highest usage beyond SMS and MMS being noted for email, surfing, search services and maps. The usage rates for the active users (15% of the smart phone users) are drastically higher than those for both of the other groups. Of the active users, 72.2% (13) have a flat rate data subscription, whereas only 37.8% (17) of the passive group have a flat rate data package. In the medium group, 58.9% (33) of the respondents have a flat rate data package. The most popular operating system in all three groups was the Symbian smart phone OS (83.3% in active group, 78.6% in the medium group and 88.9% in the passive group). Two respondents in the active group, five in the medium group and one in the passive group had an iOS device. In the future most (86.7%) of the respondents in the active group wished to continue using a smart phone, whereas only 28.6% in the passive group wanted their next phone to be a smart phone. Of the medium group 68.5% of respondents wanted to continue using a smart phone.

When investigating how the respondents rated fifteen statements describing the possible benefits of using mobile services, clear differences between the groups emerged, especially between the most active and the most passive. The active group rated most benefits significantly higher than their passive counterparts. The following benefits were significantly more important to the active group than the passive group (significance noted at the  $p < .05$  level). There was only one significant difference between the active and the medium groups; this statement is marked by an asterisk:

- Flexibility regarding place (anywhere) [F(2, 113) = 5.65,  $p = 0.005$ ]
- Flexibility regarding time (anytime) [F(2, 112) = 6.803,  $p = 0.002$ ]
- Connection to the Internet [F(2, 111) = 17.42,  $p = 0.000$ ]
- Wireless-feature [F(2, 112) = 6.71,  $p = 0.002$ ]
- Reminder/information services in real time [F(2, 112) = 4.38,  $p = 0.015$ ]
- Possibility for individuality (personalisation) [F(2, 110) = 8.69,  $p = 0.000$ ]
- Possibility "to kill time" [F(2, 112) = 8.15,  $p = 0.000$ ]
- Entertainment features [F(2, 111) = 8.14,  $p = 0.001$ ]
- Communication becomes more effective [F(2, 114) = 3.88,  $p = 0.024$ ]
- New dimensions of communication [F(2, 111) = 8.25,  $p = 0.000$ ] \*
- Use of time becomes more effective [F(2, 113) = 9.15,  $p = 0.000$ ]
- Convenience (I can e.g. easily check a fact) [F(2, 112) = 17.74,  $p = 0.000$ ]
- Possibilities for virtual networking, e.g. on social networks [F(2, 112) = 10.72,  $p = 0.000$ ]

The benefits which all groups rated equally important were

- Possibility to lower prices / special offers [F(2, 112) = .56,  $p = 0.571$ ]
- Staying in touch whenever I want [F(2, 112) = 1.25,  $p = 0.290$ ]

The respondents were also asked to rate how important it is for them to use mobile services in a number of different contexts. Also in this respect there were some differences between the groups. Regarding the following contexts, there were **no** significant differences:

- In a public location [F(2, 111) = 2.62,  $p = 0.077$ ]
- On the road [F(2, 111) = 2.65,  $p = 0.075$ ]
- At home [F(2, 112) = 0.34,  $p = 0.967$ ]
- While travelling for work [F(2, 107) = 1.77,  $p = 0.175$ ]
- While working [F(2, 108) = 1.23,  $p = 0.296$ ]
- When I'm alone for a while [F(2, 113) = 1.10,  $p = 0.336$ ]
- When I'm with family [F(2, 112) = 1.41,  $p = 0.248$ ]

The following contexts were rated as significantly more important by the active group than the passive group. There were no significant differences between the medium group and the active group:

- At work [F(2, 109) = 3.36, p = 0.038]
- In a meeting [F(2, 108) = 4.67, p = 0.011]
- On public transportation [F(2, 110) = 4.62, p = 0.012]
- On vacation [F(2, 113) = 5.13, p = 0.007]
- When in the company of others [F(2, 112) = 4.29, p = 0.016]

The respondents were also asked to rate their opinion on a number of statements describing the use of mobile devices and mobile services. When contrasting the three groups' answers to these statements, some differences become visible between the active and the passive group. Again, the medium group was similar in profile to the active group and there were fewer significant differences between these two groups. The statements with significant differences between the medium and the active group are marked with an asterisk.

The active group rated significantly higher than the passive group:

- It is more efficient to communicate thanks to mobile services [F(2, 115) = 6.87, p = 0.02]
- Information that I obtain from mobile services is information I need [F(2, 115) = 5.44, p = 0.006]
- With mobile services I can do my tasks anywhere, anytime [F(2, 115) = 8.61, p = 0.000]
- Mobile services make me more efficient [F(2, 115) = 5.66, p = 0.005] \*
- I have a clear understanding about what services can be used with my mobile device [F(2, 114) = 11.61, p = 0.000]
- I have the knowledge and skills to operate mobile services [F(2, 114) = 12.12, p = 0.000] \*
- How to use mobile services is clear to me [F(2, 115) = 10.59, p = 0.000]
- Learning to deal with mobile services seems easy to me [F(2, 115) = 11.71, p = 0.000]
- It is easy to me to learn how I have to use mobile services [F(2, 114) = 6.13, p = 0.003]
- Mobile services seem easy to deal with to me [F(2, 114) = 5.89, p = 0.004] \*

and the following statement significantly lower:

- It takes too much time and effort to learn how to use the mobile services [F(2, 114) = 15.45, p = 0.000]

To get a more nuanced view on the three smart phone user categories, we wanted to investigate how many different services the respondents used frequently (i.e. monthly, weekly or daily). We used the same set of twenty-five services used above to classify respondents into the three groups to check how many services each respondent uses. These results can be seen in figures 1 - 2.

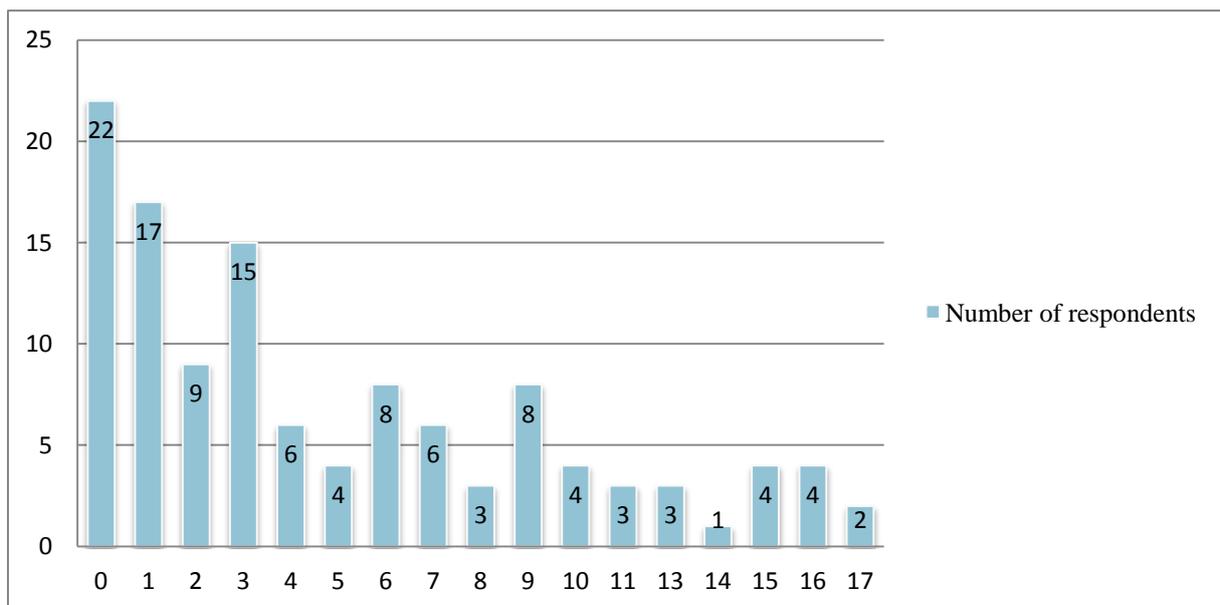


Figure 1. Number of services used by respondents, all smart phone users (n=119).

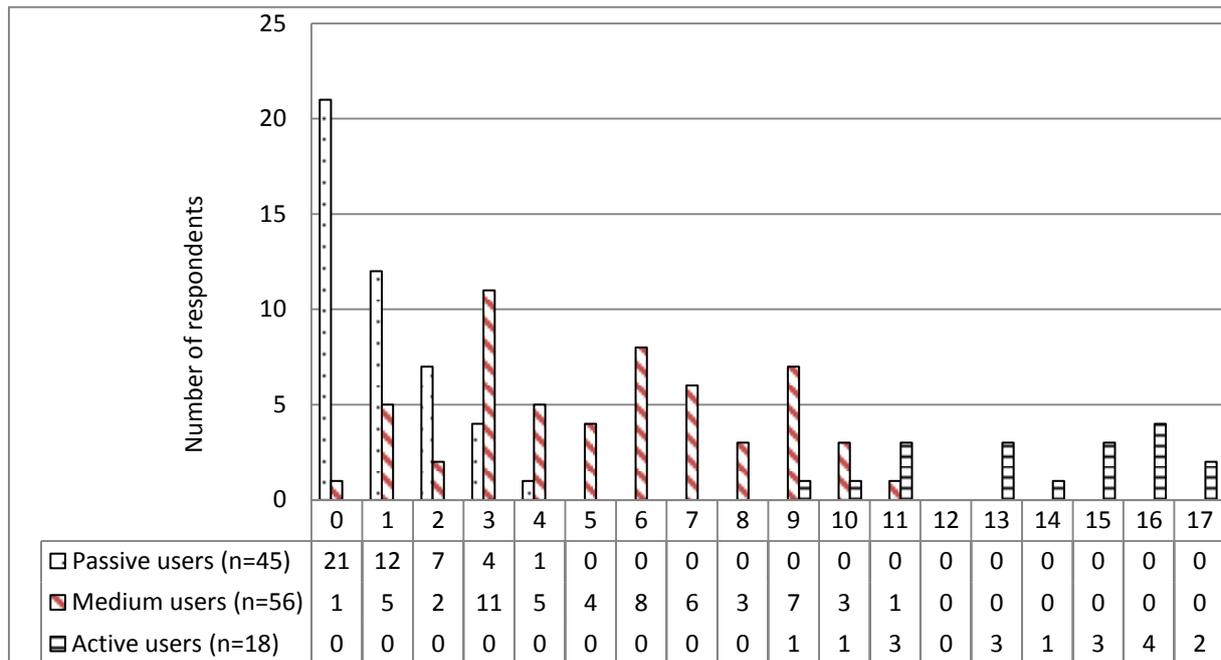


Figure 2. Number of services used by respondents, passive smart phone users (n=45), active smart phone users (n=18) and medium smart phone users (n=56).

As expected, the active users made use of the highest number of different services or applications, ranging from nine to seventeen services per respondent. In the passive group, the range was zero to four applications and services, and in the medium group from zero to eleven.

## 5. Discussion and conclusions

Smart phones have emerged as a new generation of mobile phones and we can see a device shift from feature phones to smart phones. In Europe the sales of smart phones will in 2012 surpass the sales of feature phones.

Finland was long the international forerunner in mobile technology and mobile services but has gradually been losing ground to Asian countries (Netsize guide 2010), and to some extent to the USA. In spring 2011, 42% of all subscribers in Finland used smart phones, the corresponding figures for U.S. being 42% as well.

We set out to describe the Finnish smart phone market: who are the users, what kind of smart phone do they have, and what do they use their smart phones for. Are smart phone users actually using the phones in smart(er) ways, i.e. in ways that will create user value? We found that there are no statistically significant differences between the usage groups regarding age, education, yearly income or socio-economic groups. There are however some slight differences, i.e. the passive users are a bit older than the active and medium users and the majority of passive users are females. Of those who could identify their mobile phone, 40.4 % (119) had a smart phone but there was no difference regarding the age of the mobile phone in use between the groups, even though the active usage group possessed slightly newer phones than the two other groups.

We were specifically interested in how the smart phone owners are using their devices. Looking at our results, there are some striking and interesting observations which we will discuss in more detail in this section. First of all, in our study, 38 % of the smart phone users make no use of any of the more

advanced functions of their smart phones. This raises certain questions, most importantly: (i) why do they not make use of the functions available on their smart phones? And (ii) why do they have a smart phone if they are not interested in the more advanced functions? When thinking over these questions, we should note that only a minority of the most passive group has a flat rate data package in their use. In other words, many have opted out from the flat rate at the point-of-sale – perhaps with the pre-destined opinion that they do not need any functions beyond voice and SMS? As discussed by (Sugai, 2007), pre-existing usage habits can be more important than new capabilities of the technology. In other words, the answer to question (i) might be, that in this case the habit of using the mobile phone as a *telephone* is stronger than the lure of any new services or modes of communication. We found no evidence that the passive users would have been newer smart phone users than the respondents in the active or medium groups, making it unlikely that the passivity would be due to novice user status. Taking this into consideration, it does not seem likely that the passive users as a group would be in the process of migrating towards more active usage patterns – or the migration is very sluggish. Further supporting this notion is the fact that 71 % of the passive smart phone users would willingly switch their smart phones to a basic feature phone. They have probably not found smart phone use beneficial, entertaining, valuable, easy or useful enough to warrant continued use of the technology.

The second question and its possible answers are equally interesting. How did the passive users end up owning a smart phone, if they are not interested in the added capabilities of such a phone? Company-provided smart phones are naturally one answer, but smart phones have also in the recent years been forcefully pushed out on the consumer market by device manufacturers and operators. In our study, 62% of the passive smart phone owners stated that they ‘fully agree’ with the statement *I replace my mobile phone only when it does not function properly*, versus 22% of the active smart phone owners. These numbers paint very different pictures of the motivations behind the decision to acquire a smart phone between these two groups. Could it be that mobile phone retailers and telecom operators need to critically review their sales strategies and customer communications if they wish to better engage this sizeable group of mobile technology consumers, who are not from the on-set interested in the technology itself, only in replacing their malfunctioning (feature) phone? For future revenues, it might not be enough to make the sale and place the smart phone in the consumer’s possession for the following one or two years (as is customary in bundled sales of mobile phones and subscriptions), if the consumer is left uncertain regarding the usage of the smart phone, and wishes to return to the simpler technology even after a considerable period of time. E.g. training device selling personnel to engage the consumers’ interest and meeting their individual needs at the point-of-sale might remedy this asynchronicity to some extent.

The passive users have not been won over by smart phones and their advanced capabilities, benefits and services. The passive users’ current interest to use advanced mobile services is negligible and not likely to grow in the foreseeable future. The medium usage group is somewhat more enigmatic. In most measured respects, they were more similar to the active group than the passive group – their attitudes and opinions resonated along the lines of the active group. There were some differences, e.g. in their opinion regarding the ease-of-use of mobile services. The most noteworthy difference was in their rate of usage of different mobile services and applications. The medium group used a narrower range of services and less frequently. The medium users are more likely to continue using smart phones than the passive group. It is, however, not possible within the scope of this paper to give a prediction whether the medium users are likely to continue making limited use of the capabilities offered by the technology, or whether some of the medium users will migrate towards the more dynamic usage patterns exhibited by the active group.

In an earlier study we found that the relevance of context-of-use strongly depends on the type of mobile service considered (Sell et al.2012). In this study researching smart phone users we found some significant differences between the active and the passive usage groups, but none between the passive and medium usage group and none between the active and medium usage group. Using mobile services in a certain context is important for the active users. The active users use mobile services when in a social context, i.e. when in company with others. Also the physical context, at work, in a meeting, on public transportation and on vacation, was significantly more important for the active

users than for the passive users. One possible explanation may be that the active usage group is employed in work tasks for which the workers are highly mobile, but this is not immediately clear from the material. Smart phone technology is the first technology in history which has the potential to be truly intimately tied to the personality and physical being of an individual. When fully embraced, smart phones have a special relation with their users, forged by the private, valued and important data and functions carried on the device. They carry an important role in both personal and professional life and are very likely the only piece of technology taken everywhere the user goes, including to bed at night. We would like to argue, that when smart phones are used to the full extent of their capacity, they are no longer seen only as pieces of technology by their users, as they become an extension of self and an irreplaceable part of everyday life. The devices themselves are naturally replaceable; but the functions they fill in everyday life are not, and thus continued smart phone usage is natural. Then smart phones will have fulfilled the Braudel rule and expanded the limits of the possible in the structure of everyday life (Keen and Mackintosh, 2001). The active users in our study are likely to have formed this kind of intimate bond with smart phone technology.

The passive users in our study have not formed such a relationship with their smart phones. For them smart phones seem to remain anonymous tools; appliances which are approximately equal in personal value and function to toaster ovens or mp3 players. Where do the medium users belong in this sense? As they are the largest group of smart phone users, this question is of high importance for operators, service designers and device manufacturers. If they are to form an intimate bond with the technology, which would be highly beneficial considering the future of mobile services consumer markets, services answering to their needs and values are needed. User friendliness and usability are of high importance in both services and devices, as this group of users is not as certain of their capabilities and self-efficiency in the world of mobile technology as the active users.

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