Generation Y versus Generation X: Differences in Smartphone Adaptation

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Abstract

Smartphones are becoming ubiquitous and are owned by youngsters and oldsters alike. However, how many of them really use the "smart" functions of the mobile phone, such as mobile Internet services? Is there a generation gap in the adaptation to smartphone applications? This preliminary study suggests a novel perspective on adoption, by defining smartphone adoption as the free choice of its owners to use it when there is an alternative familiar technology available. Particularly, we investigated the proclivity of smartphone owners to use mobile Internet services when they have a personal computer available nearby. We examined how this tendency was influenced by the period of ownership of the smartphone. Adaptation to new technologies may take time. However, this aspect has not been much studied in the context of smartphones. Our main findings suggest that generation Y's tendency to use mobile Internet services when having a personal computer available nearby increases the longer they possess the smartphone. In contrast, there is no significant impact of the period of ownership on generation X's tendency to use mobile Internet services in such situation. We discuss the implications and suggest directions for further research.

Keywords: mobile Internet, incumbent system habit, mobile applications acceptance, period of ownership, age differences in technology adoption.

Introduction

Smartphones enable their holders the use of most of the services available on the Web, such as email, access to social networks, search, and much more (Gerpott, Thomas, & Weichert, 2012). The rate of people having a smartphone is increasingly growing, although the majority of them do not use many of these advanced functions. According to the Pew Research Center Internet Project, 35% of American adults had a smartphone in 2011, but only 25% of them (i.e., about 8% of the American adults population) went online mostly using their smartphone (Smith, 2011).

Why would people own a device that they do not need, or do not use much of its functions? There may be many reasons for it. The following are three possible explanations from an economic perspective (Shapiro & Varian, 1999). The first explanation relies on real options theory (Amram & Kulatilaka, 1999), which is mostly deployed in organizational settings but can serve as a framework for individual decision-making (McGrath, 1999). Even if before these people have bought their smartphone, they might have never used mobile Internet services, or other "smart" features, they would like to have the option to learn how to effectively use them in the future. The second plausible explanation is that it was worthwhile to buy a smartphone, rather than a less sophisticated device, as part of a bundle of services (Bouwman, Haaker, & De Vos, 2008) offered by a mobile service provider. A third alternative explanation is that they received the device from their employer, who also pays for its use. Alternatively, someone else,

e.g., a spouse, bought them the device as a gift. However, did such people really adopt the smartphone? What constitutes adoption? Should we use adaptation as a measure of adoption? Consider these three managers, who have all received a smartphone from their employers.

- Manager A figured out how to read her emails, but she does not know how to reply them. If the matter is urgent, she calls the sender.
- Manager B, who is very meticulous, has embarrassing typos when she sends emails from her smartphone.
- Manager C is out of his office or in meetings most of the time, so he uses his smartphone for responding to emails. His messages are very short, with no polite expressions, such as, hi, please, or thanks. Some of his colleagues consider such messages rude.

These managers use their smartphone when there is no other alternative available. For them, the decision is either to use the smartphone for the task, or not to perform the task at that time. In a sense, the smartphone in such situations is an obligatory information system. Therefore, the question of the adoption of its mobile Internet capabilities is less relevant. It also seems that measuring smartphone adoption just by the rate of people who own the device is unsuitable. Therefore, this study takes a novel perspective and defines smartphone adoption as the free choice of its owners to use it when there is an alternative familiar technology available. This preliminary study examines the tendency of smartphone owners to use mobile Internet services when they have a personal computer with Internet connection available nearby. This study focuses on the aspect of period of ownership of the smartphone, which has been scarcely studied, and its impact on mobile Internet services adoption. The study investigates whether there is a generation gap in the adoption of mobile Internet services. The findings of this preliminary study may contribute to our understanding of age differences in innovative technologies adoption.

Theoretical Background and Hypothesis Development

Technology acceptance and diffusion are among the widely studied subjects in information systems and technology management research (Rogers, 2003; Venkatesh, Morris, Davis, & Davis, 2003). However, technology rate of adoption has been less studied (Geri, & Naor-Elaiza, 2008; Jeyaraj, Rottman, & Lacity, 2006). Furthermore, mobile technologies may have special attributes that warrant their own study (Gafni, 2008). This may be due to the unique user interface of mobile devices, tiny screens and keyboards, and potential connectivity limits (Barnes & Huff, 2003).

The question of technology adoption is relevant when the user has a choice, and may decide not to use the new information system, and use either an alternative system or no technology at all. Smartphones apparently present a paradox: On the one hand, they are widely spreading, but on the other hand, the diffusion of their "smart" functions is slower (Smith, 2011).

RQ1: Do smartphone owners tend to increase their use of mobile Internet over time?

The first research question relates to the potential influence of the passage of time on the adaptation of the users to the more sophisticated functions of smartphones. This study regards the personal computer (PC) as the alternative information system that a smartphone holder may use for consuming Internet services. Habit is one of the main constructs that may influence user behavior. Limayem, Hirt, and Cheung (2007) define habit to use Information Systems (IS) as "the extent to which people tend to perform behaviors (use IS) automatically because of learning". There are two opposing forces: people are used to PCs, so this may weaken their inclination to use their smartphone for the same purpose (Polites & Karahanna, 2012),

especially if they think that it is more convenient to use the PC. Notwithstanding, smartphone holders may use its "smart" functions when there is no other alternative available, and as time goes by, they may accumulate positive experiences of mobile Internet services use. They may also learn how to use their smartphone effectively (Jiang, 2009), get used to its keyboard, and so forth.

H1: The longer users have their smartphone their tendency to use mobile Internet services increases.

RQ2: Is there a generation gap in adaptation to smartphones?

The second research question asks whether there is a generation gap in the adaptation to smartphone applications. Age is one of the factors that may affect intention to use an information system (Morris & Venkatesh 2000; Venkatesh, Thong, & Xu, 2012). Kumar and Lim (2008) found that baby boomers mainly used mobile phones for making voice calls, and rarely used them for text messaging, or Internet services such as email, and data downloads. While it may be claimed that younger people are more adaptable to new technologies, the proclivity to use mobile Internet services may be influenced by generational cultural differences, so it may be more appropriate to cluster age groups according to generations. Rather than examining the extremes of the age scale, i.e. children and youth on the one hand, and elderly on the other hand, this study examines two generations:

- Generation Y, refers to people born from the years 1982-3 until the year 2000. In this study, it refers to people aged 20-30.
- Generation X, refers to the generation that followed the baby boomers, and it usually includes people that were born in the early 1960's until the early 1980's. In this study, it refers to people aged 31-59.

H2: The longer users have their smartphone, generation Y users will be more inclined than generation X users to adopt mobile Internet services.

Methodology

Data for this study was gathered using a snowball data collection method (Corbitt, Thanasankit, & Yi, 2003), by undergraduate students who participated in a compulsory research methods course, in a college located in central Israel. Each of the 60 students was required to find 10 adults willing to answer an identical survey.

The participants had to be at least 20 years old. The students mainly interviewed their family members, friends, or neighbors. This increased the homogeneity of the participants, who mostly lived in the same region, largely belonged to the same middle class socio-economic group, and were exposed to similar cultural influences.

The respondents' identity was kept anonymous, but the students had to provide some details that allowed ensuring that the same person did not answer more than one survey. The data of the 600 completed surveys was integrated by one of the authors. Since most participants had either IOS (Apple) or Android powered smartphones, it was decided to exclude other operating systems, such as Blackberry. Consequently, there were 509 usable records.

The tendency to use mobile Internet services when there was a personal computer available nearby was measured on a scale of 1 to 4, where a higher score meant a higher inclination to use the smartphone.

Results

The data was analyzed with IBM® SPSS® Statistics, version 20. Table 1. summarizes the descriptive statistics of the two age groups. The average tendencies of generation Y (mean 1.59, SD 1.017, n=430) and generation X (mean 1.49, SD 1.119, n=79) to use their smartphone while having a computer nearby are very similar. Indeed, Mann-Whitney Wilcoxon test found no significant differences (two-tailed significance .422). However, Figure 1. suggests that the two generations are different in their adoption pattern of mobile Internet services, as a function of the period of smartphone ownership.

Table 1. Tendency to use mobile Internet services as a function of age (generation) and period of smartphone ownership

Dependent Variable: Smartphone use while having a computer nearby				
Generation	**Period of ownership (months)**	**Mean**	**Std. Deviation**	**N**
Y	1-6	1.35	1.082	99
	7-12	1.53	.989	133
	13-18	1.68	1.026	90
	19-24	1.76	.933	71
	25+	1.86	.976	37
	Total	**1.59**	**1.017**	**430**
X	1-6	1.68	1.041	22
	7-12	1.30	1.179	30
	13-18	1.82	1.250	11
	19-24	1.25	.886	8
	25+	1.50	1.195	8
	Total	**1.49**	**1.119**	**79**
Total	1-6	1.41	1.078	121
	7-12	1.49	1.027	163
	13-18	1.69	1.046	101
	19-24	1.71	.936	79
	25+	1.80	1.014	45
	Total	**1.57**	**1.033**	**509**

Figure 1. shows that the longer generation Y users have their smartphone their tendency to use mobile Internet services increases. Spearman's correlation test was significant (rho=.159, p<.001, n=430). However, no significant correlation was found for generation X users (Spearman's rho=-.049, one-tailed significance .333, n=79), as observed in Figure 1.

Discussion and Conclusion

H1 suggested that the longer users have their smartphone their tendency to use mobile Internet services increases. While a Spearman's correlation test of the entire sample of this study, 509 participants, supported this assumption, we have chosen not to present it as a result of this study because when examining the generations separately, H1 was supported for generation Y, but not for generation X. Therefore, the results suggest that there are age differences in mobile Internet services adoption.

The second hypothesis claimed that the longer users have their smartphone, generation Y users will be more inclined than generation X users to adopt mobile Internet services. The graphs in Figure 1 show that the results did not support this general claim. It suggests that relationships between the constructs may be more complex, and be influenced by other factors.

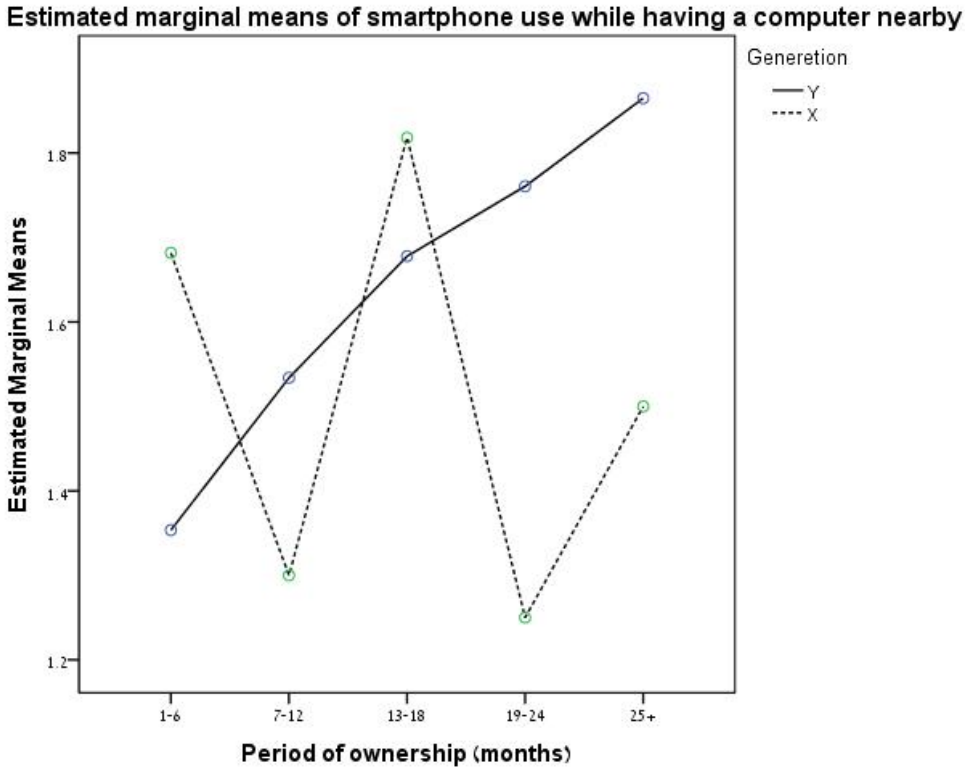

Figure 1. Tendency of generation Y and generation X to use a smartphone for Internet application when there is a personal computer available nearby, as a function of the smartphone's period of ownership

Still, the results demonstrate (Figure 1), that for generation Y, the longer a person has the smartphone, the stronger is the proclivity to use the device for consuming Internet service when the user has a choice to use a PC instead. These findings suggest that although habit is an important predictor of behavior, the fact that smartphone users may use its "smart" functions when there is no other alternative available, may gradually create a new habit.

Furthermore, the convergence of mobile and Internet technologies offers new opportunities and services. E.g., Waze.com, which is a free social mobile application that enables drivers to build and use live maps, provides real-time traffic updates, and turn-by-turn navigation for optimal traveling. People use such applications and get used to the general actions involved in operating the smartphone, like typing on the touch screen.

The findings indicate that generation Y users are gradually adapting to the new cyber environment. However, generation X and older generations may adapt as well. There was no significant difference between the general level of mobile Internet services usage of generation Y and generation X. More data is required to corroborate the findings. Another plausible development may be that innovative designs of smartphone user interface may make it easier for all users, regardless of age group, to use the devices, so it may increase mobile Internet services use.

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