Exploring the Relationship Between Mobile Phone and Senior Citizens: A Malaysian Perspective

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Abstract

There is growing ageing phenomena with the rise of ageing population throughout the world. According to the World Health Organization (2002), the growing ageing population indicates 694 million, or 223% is expected for people aged 60 and over, since 1970 and 2025.The growth is especially significant in some advanced countries such as North America, Japan, Italy, Germany, United Kingdom and so forth. This growing older adult population has significantly impact the social-culture, lifestyle, healthcare system, economy, infrastructure and government policy of a nation. However, there are limited research studies on the perception and usage of a mobile phone and its service for senior citizens in a developing nation like Malaysia. This paper explores the relationship between mobile phones and senior citizens in Malaysia from the perspective of a developing country. We conducted an exploratory study using contextual interviews with 18 senior citizens of how they perceive their mobile phones. This paper reveals 4 interesting themes from this preliminary study, in addition to the findings of the desirable mobile requirements for local senior citizens with respect of health, safety and communication purposes. The findings of this study bring interesting insight to local telecommunication industries as a whole, and will also serve as groundwork for more in-depth study in the future.

Keywords: Mobile Phone, Senior Citizens, Ageing Population.

1. INTRODUCTION

Owning a Personal Computer (PC) at home and electronic gadgets such as a mobile phone in our daily lives have become indispensable tools for all folks of lives. According to ITU statistics (2010) [1], the global mobile phone subscriptions have shown a phenomenal growth of a total of 4.7 billion in 2009 as compared to 1.4 billion in 2003. This rapid development in mobile sector has been able to change the ICT landscape. Mobile phone is claimed as the most popular and widespread personal technology on the planet. This is especially so for the urban population. However, the rural areas are slowly being introduced to new technologies as well.

There is also a growing ageing population of 694 million, or 223% growth is expected for people aged 60 and over, since 1970 and 2025 as stated by World Health Organization (2002) [2]. In the United Nations' Demographic Yearbook (2005) [3], the percentage of those aged over 65 range from 6% to 16%. By 2030, the percentages are estimated to range from 17% to 29% (Fisk et. al., 2009). This group of older adults is the fastest growing population, and the majority of them live in the developed world. In addition, the older adult population over the age of 60 is expected to reach 1.2 billion in 2025; by 2050, there will be 2 billion with 80% of them living in the developing countries [2]. Having said this, Asia is described as the world's most rapidly ageing region. Due to longer life expectancies and falling birth rates, Asia is rapidly getting older. By year 2050, Asia will be home to almost two-thirds of the world's population of people over 60 [4]. Developing nations like Malaysia has also shown a sign of declining population growth rate due to several reasons such as getting married at an older age, and with fewer children [5]. According to the United Nation, the proportion of Malaysia's population aged 65 and above is projected to reach 7.1% in 2020 [6]. Often attributed to the United Nation, a society with 65 and above groups that accounts

for more than 7% of the total population is deemed as an ageing society. On one hand, according to the Department of Statistics (2000) [7], Malaysia is projected to cross that mark by 2020 as well, when the percentage of people in Malaysia aged 60 and above will be 9.9% (or approximately 3.5 million) of the entire population.

In the past decade, a large shift is appearing in social values and daily lifestyles in Malaysian society. Malaysians are exposed to more multimedia technologies and ubiquitous wireless technologies. In the 9th Malaysian Plan, Malaysian government started a commitment to bridge the digital divide by implementing a plan to provide the necessary infrastructure for universal access to the Internet by implementing the National Strategic Framework for Bridging the Digital Divide (BDD). Furthermore, Malaysian Communications and Multimedia Commission (MCMC) and the local government have put more emphasis in utilizing the rich, local resources and in promoting creative content with the aid of ICT technologies and multimedia services. Thus, Malaysia is determined to achieve a Digital Inclusive Society by 2020, great amount of effort and money have pumped in to ensure economic sustainability and to enhance human capital resources in order to benefit all citizens regardless of age, race, and belief.

In Malaysia's National Policy for the Elderly by Ministry of Women, Family and Community Development (2009) [8], the government is committed to develop a caring and considerate society with a social system that emphasizes on universal needs, that is to enhance and strengthen continually the welfare of the senior citizens to center on a strong and established family system. Action plans were ironed out in the implementation of National Policy to provide the local elderly with continuous employability, awareness campaign of 'respect to the elderly' via education for younger generation, and other support systems such as recreation, transportation, facilities, healthcare, media, housing, social security, education and training. In order for the elderly to stay 'active ageing', some community centers and senior clubs provide various activities such as yoga, tai-chi, line dance, and social dance; and also offer some ICT trainings i.e. learning how to use mobile phones and computers to allow the elderly stay physically healthy and mentally 'active'.

2. LITERATURE REVIEW AND RESEARCH RATIONALE

2.1. AGEING POPULATION

The United Nations World Assembly on Ageing held in Vienna (1982) identified "60 years old and above" as the cut-off point for elderly or senior citizens (Economic and Social Commission for Asia and the Pacific [9]). It was a clear indicator that a large proportion of the population remains economically active beyond the age of 60. Over 82 million people, who constituted the 'baby boom' population (born 1946-1964), will join the older adult population for the next 15 years [10]. This is due to declining mortality rates at younger ages, decline of birth rates, improvements in medical facilities, and better health care resources have resulted in longer life expectancy in both the developing and developed world.

It has been estimated that one in four Europeans will be over 60 years old by year 2020 [11]. In Japan, there are 24.8 million people age 65 and older, accounting for 19.5% of the entire population in 2004 [12]. In Malaysia, we have not even reached a rapid ageing society like Japan, the number of senior citizens in the country almost doubled over the twenty years.

Basically, senior citizens are categorized into 2 groups, young–old adults (age 55 to 74) and old-old (age 75 and above) [13]. In general, senior citizens are naturally experiencing a decline of their physical, motor, cognitive and memory abilities. The official retirement age for Malaysian civil servants is 55. This group of elderly, aged between 55 and 65, falls under the young-old adult group, and still remains active and productive in many aspects. A majority of them, especially those who are still able, are equipped with invaluable experiences, knowledge, and practical hands-on skills compared to the younger generation in their respective field.

By and large, youngsters and young adults aged from 18 to 30s make up the largest share of mobile subscribers, which promises the largest revenue stream for mobile operators from this market segmentation [14, 15]. However, with the rise of ageing population, and prevalence of mobile ubiquitous technologies permeating everybody's daily lives, we should not underestimate the capability of the so-called *'silver surfer'* group to stay connected and work as a mobility aid for communication. The local market of mobile phones and their services for senior citizens remains widely unexplored and potentially lucrative. Therefore, we cannot underestimate the market share of this growing elderly population in using and purchasing mobile telecommunication and IT services in their daily lives.

To achieve the mission of bridging the digital divide, we should not marginalize these elderly users in taking up mobile communication in assisting their daily mobility and improving the quality of lives. Although considerable research had been done in the advanced countries to study the perception of mobile phone usage [16, 17, 18, 19, 20, 21], there are scarce information and limited studies done on the perception and usage of mobile phones and services among the senior citizens in developing nations such as Malaysia. Hence, this paper aims to explore the relationship of mobile phone with the local senior citizens in Malaysia. A small-scaled study with in-depth interviews was conducted to investigate the user perceptions for mobile phones usage and its services among the local senior citizens in the Malaysian context. Ultimately, this study constitutes to the findings of a larger project with the aim of promoting a Digital Inclusive Society to bridge the knowledge gap of elderly users in their daily lives.

2.2. SENIOR CITIZENS IN MALAYSIA CONTEXT

In 2000, the Malaysian Department of Statistics revealed the elderly population at 1.4 million, which constitutes 6.3% of a total of 23 million population. The census also projects that, by year 2020, the percentage of elderly will increase to 9.9% of the total population, which will be equivalent to 3.43 million elderly; and by year 2030, the percentage is projected to increase to 12%, which is around 5 million [22]. Globally, the population of ageing is expected to exceed one billion by 2020.

Due to the historical context of Malaysia, senior citizens who were born in 1953 and earlier generally receive less formal education. The findings from the 2000 Population Census showed that 51% of the local senior citizens received no schooling [22]. For those who fall under young-old adults (aged 55 to 74), they are either semi-literate or received less formal education in the primary school. On the other hand, the old-old adult group (aged 75 and above) generally received no formal education. However, there are a small number of elderly populations, who received formal schooling up to secondary or university level compared to their peers. We consider this group as the senior intellect group who possess the ability of speaking, reading and writing in at least one to two languages.

In general, Malaysia is a multi-racial country with a diverse cultural society that consists of different ethnic groups such as Malay, Chinese, Indian and other minorities. Due to the diverse culture and ethnic values, Malaysians generally possess different language abilities in terms of writing, reading, and speaking skills. The official language is Bahasa Malaysia (the national language of Malaysia) while English, Mandarin and Tamil are widely used in official documents and public domains. Having said this, the mother tongue for Malaysians is generally quite diverse as reflected by the different ethnic groups. This scenario is more obvious for the older generations whose mother tongues are in different dialects e.g. Cantonese, Hokkien, Hainanese, Teochew (for Chinese community), Tamil and Hindi (for Indian community) and other local Malay dialects.

2.3. Innovation Diffusion Theory

To study the relationship of mobile technology and its adoption by a user segmentation, it is essential to look into the aspect of technology diffusion. Rogers [23] stated there are five categories of adopters of an innovation, which are innovators, early adopters, early majority, later majority, and laggards. The Innovation Diffusion Theory (IDT) was introduced in 1962 and later

refined by Rogers [23]. IDT is a well-established theory to study user adoption of different innovations in target populations, not only technical but all kinds of new ways to act. The theory explains the process of the innovation decision process, the determinants of the rate of adoption, and various categories of adopters [24]. Diffusion is defined as '*the process by which an innovation is communicated through certain channels over time by members of a social system'*, whilst an innovation is 'an idea, practice, or object perceived as new by an individual or other unit of adoption' by Rogers [25].

As highlighted earlier, Rogers [23] categorizes five adopters: innovators (2.5%), early adopters (13.5%), early majority (34%), late majority (34%) and laggards (16%) (see Figure 1). These categories, based on standard deviations from the mean of the normal curve, are illustrated as normal distribution Bell-curve. When the adoption curve is converted to a cumulative percent curve a characteristic S-curve (see Figure 2) is generated that represents the rate of adoption of the innovation within the population. There are five (5) factors that influence the rate of adoption of an innovation [23]:

(i) Relative advantage: the extent to which it offers improvements over available tools.
(ii) Compatibility: its consistency with social practices and norms among its users
(iii) Trialability: the opportunity to try an innovation before committing to use it.
(iv) Observability: the extent to which the technology's gains are clear to see.
(v) Complexity: its ease of use or learning.

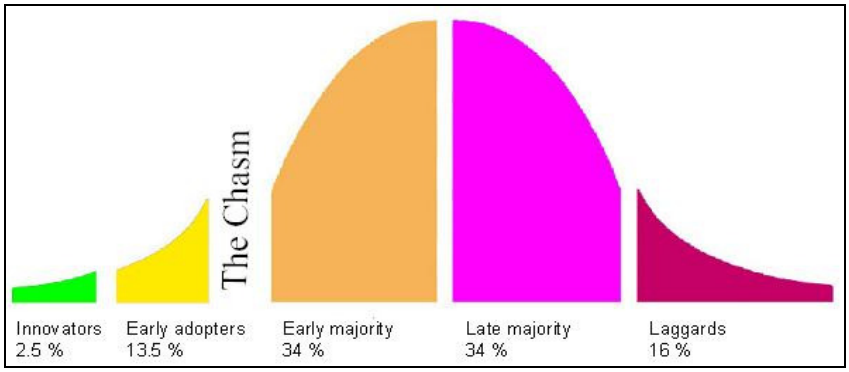

FIGURE 1: Categories of Innovation Adopters by Rogers (1995) [23] with the chasm as defined by Moore (1999) [26].

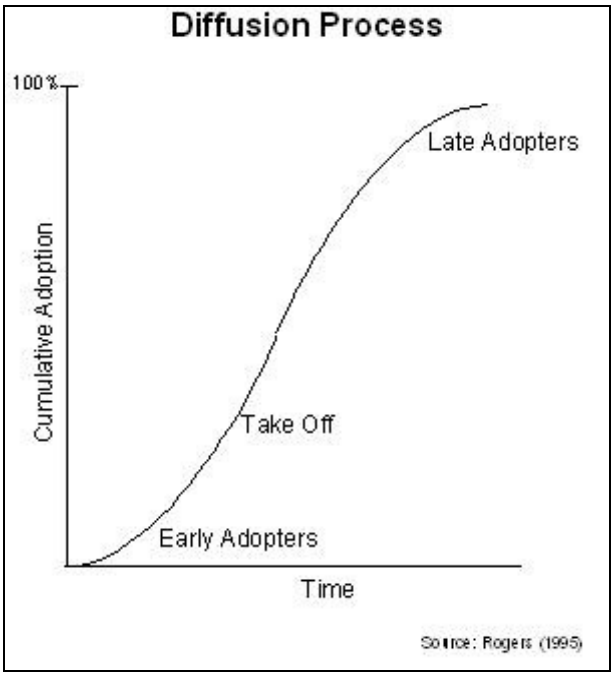

FIGURE 2: The Diffusion of Innovation S-curve (Rogers, 1995) [23].

The first four factors are generally positively correlated with the rate of adoption while the last factor, complexity, is generally negatively correlated with the rate of adoption. The actual rate of adoption is governed by both the rate at which an innovation takes off and the rate of later growth.

Moore [26] later expanded diffusions of innovations model in his book, *Crossing the Chasm*. He argued that there was a chasm between the early adopters of the products (the technology enthusiasts and visionaries) with the early majority (the pragmatists). Moore more focused on the specific of marketing high tech products as compared to Rogers's IDT on the adoptions of multitude disciplines, including hybrid seed corn, water purification in Egypt, adoption of family planning in Korea, and educational innovations. According to Moore, the marketer should focus on one group of customers at a time, using each group as a base for marketing to the next group. He refers the chasm to the difficult step of making the transition between visionaries (early adopters) and pragmatists (early majority). Moore's theory is more applicable to disruptive or discontinuous innovations. Thus, for those innovations do not require significant change of behaviour by the customers or mass users, Rogers' innovation of diffusion is still best to describe the adoption pattern.

In IDT, Rogers [23] stated that the individuals in a social system do not adopt an innovation at the same time. Rather, they adopt it in an over-time sequence. Each of the five adopters shows different adoption behaviours. Below are the five (5) categories of adopters of an innovation [23, 27]:

(i) Innovators: they are described as 'venturesome risk-takers who serve as gatekeepers for those who follow'. They are daring, rash, risky, and able to cope with uncertainties. Rogers [23] explained, "the innovators play an important role in the diffusion process; that of launching the new idea in the system by importing the innovation from outside of the system's boundaries. Thus, the innovator plays a gate-keeping role in the flow of new ideas into a system."

(ii) Early adopters: they are opinion leaders, who are the first within their group to adopt, and are willing to maintain their position by evaluating innovations for the others. They often serve as

a role model for other people. They are more integrated into a society than the innovators. According to Rogers [23], "the early adopter is respected by his or her peers, and is the embodiment of successful, discrete use of new ideas. The early adopter knows that to continue to earn his esteem of colleagues and to maintain a central position in the communication networks of the system, he or she must make judicious innovation-decisions. The early adopter decreases uncertainty about a new idea by adopting it, and then conveying a subjective evaluation of the innovation to near-peers through interpersonal networks."

(iii) Early majority: they are users, who are deliberate in their adoption decision, but want to wait until others have assessed the innovation. However, they do not want to be the last to change. This group of adopters makes up one-third of the total numbers of adopters. "The early majority may deliberate for some time before completely adopting a new idea. Their innovation-decision is relatively longer than that of the innovator and the early adopter. They follow with deliberate willingness in adopting innovations, but seldom lead [23].

(iv) Late majority: include skeptical users who prefer to wait until most others have adopted the innovation. Like early majority, this group of adopters also makes up one-third of the total numbers of adopters. Most of the time they adopt an innovation due to the pressures from peers, or an economic necessity in their lives. "The weight of system norms must definitely favor an innovation before the late majority is convinced. The pressure of peers is necessary to motivate adoption [23]."

(v) Laggards: they are the last in a social system to adopt an innovation. They base their decisions on the past rather than the future. Rogers [23] described, "laggards tend to be suspicious of innovations and change agents. Their innovation-decision process is relatively lengthy, with adoption and use lagging far behind awareness-knowledge of a new idea." Thus, resistance to the innovation may be entirely rational from that laggard's point of view. As their resources are limited and they must be certain that a new idea will not fail before they can adopt. For instance, his or her economic position may force him or her to be extremely cautious in adopting innovation [24].

In a nutshell, users who fall under each category possess certain characteristics as shown below [23]:

- Innovators – venturesome, educated, multiple information sources;
- Early adopter – social leaders, popular and educated;
- Early majority – deliberate, many informal social contacts;
- Late majority – sceptical, traditional, lower socio-economic contacts;
- Laggards – neighbours and friends are main information sources, fear of debt.

Albeit there are heterogeneous characteristics of senior citizens, the senior citizens are generally perceived as late majority and laggards, especially for those who resist to adopt new innovation. However, some studies have argued that it is a fallacy to mistakenly associate the older adult populations to either late majority or laggards [28, 29]. It is believed that generally the older adult population will face physical-and-cognition decline due to age increase, but their characteristics are heterogeneous rather than homogeneous. Thus, I would argue that quite a number of product or system design does not meet the older adults' expectation and requirements in their daily lives. Hence, this study tends to explore the relationship of local senior citizens in perceiving mobile phones and their services in their daily lives.

3. METHODS

In this particular research, the researcher is engaged as an industrial researcher by a local telecommunication company to find out the general perception of and their usage pattern mobile technologies among the local senior citizens. This exploratory study serves as a preliminary study, which was conducted using structured and unstructured interviews in order to study the general perception of mobile phone usage, and map the relationship of mobile with local senior

citizens for Malaysian context. There were 18 senior citizens, age range from 55 to 82, involved in this study, of which 11 were females and 7 were males.

In order to build the rapport with the local elderly, the researcher conducted the interviews using native languages to ensure the interviewees were comfortable communicating with their first language. The interviews were recorded using note-taking and also audio-recorder. As the researcher is conversant with different native languages (Mandarin, Bahasa Malaysia, Cantonese, English), thus, there is not much issue of translating the transcripts into English. The data was transcribed using Nvivo 7. Thus, the findings below were translated from the original language to accommodate this report. The data were then analysed using thematic analysis. As this is a preliminary study, the result is not meant to have in-depth analysis with rigorous data analysis, but rather serve as an exploratory understanding towards a more comprehensive larger study in the future.

Generally, the researcher adopted an open-question approach during the interview sessions by asking and probing the local senior citizens about their views and experience of using their mobile phones and its related services. The sample group is mobile phone users with at least 6 months experience. The researcher had several questions in mind as a guide during the interviews, in particular to tap into their experience of using a mobile phone. Examples of questions are as follows: “do you use a mobile phone?”, “how do you own this mobile phone?”, “why do you use the mobile phone?”, “which model are you currently using?”, “is this the first mobile phone you own? If not, how many mobile phones have you used before?”, “which particular features do you usually use?”, “What do you usually use the mobile phones for?” and so forth. The researcher also approached the users by using a walk-through approach to demonstrate how they used their mobile phones in their daily life.

4. RESULTS

The study revealed interesting input and feedback data from the respondents, in particular the role of a mobile phone for senior citizens, and how they perceive the mobile phone usage and its services in their daily lives. There are 4 areas emerged from the contextual interviews of how the senior citizens perceive their mobile phones in their daily lives. They are: mobile as a social device, mobile as an emotional tool, mobile as a reminder aid and mobile as a personal guide.

4.1. MOBILE AS A SOCIAL DEVICE

In general, most respondents perceived the mobile phone as being important for communication purpose. As arguably, senior citizens are generally perceived as late majority and laggards; however, not all senior citizens resist to adopt new innovation. Haddon [30] had pointed out *‘domestication is not a one-off process*’, thus user acceptance of mobile technologies among the local senior citizens takes substantial period of time for its fullest adoption. There must be a specific reason that triggers the senior citizens in finding their needs when it comes to adopting a new innovation. This is especially so for the likes of keeping in touch with their peer groups. One female respondent aged 60 stated:

> *“I can’t be bothered having a mobile phone. I hate having one because I think my children want to check my whereabouts. They bought me one mobile phone as my birthday’s gift two years ago, but I refused to use it until my friend started to ask me for my phone number. Then, I started receiving calls from my friend, and then more friends. Now, I can even spend half an hour chatting with my friend over the mobile phone. I love chatting…”*

At first instance, it seems that the local elderly adopting a mobile phone has changed from resistance to acceptance although it took longer time when it comes to the adoption of new technology. It is interesting to learn that peer’s recommendation did work as a stimulant among the seniors when it comes to mobile adoption. Most of the time, late majority adopts an

innovation, in this case, a mobile phone, due to the pressures from peers, or an economic necessity in their lives, which is consistent as explained by Roger's IDT [23]

When asked about the frequency and satisfaction of using the mobile phone, it is interesting to learn the feedback in relation to the user interface issues of mobile phone. For instance, one female respondent, 60, reiterated,

> *"I am using this as my third phone since the past 3 and half years. I like the first one, there…[try to recall] the Nokia model [3310], I can feel the buttons , and [the menu is] very straight-forward. I don't need to put on my glasses you know... I know how to make calls, then the battery didn't work anymore. Not like this one so difficult. Aiya…I don't feel like using this one. My friend gave me another one from Korea, like no brand like this….but, I hate this mobile phone, the battery didn't last that long like the Nokia. Only one day [usage], then it is K.O. liao…[battery ran out]. I have to recharge it everyday….I can't hear it ringing when I put it inside my bag…."*

An effective human-mobile interface also plays an important role for senior citizens to determine whether to accept the usage of a mobile phone and its services. Generally, the senior citizens experience deterioration in terms of physical and cognition capability [29]. This is consistent in the previous studies done by Kurniawan [16, 20] highlighted that the user interface problems of older adults faced in using their mobile phones such as buttons are too small and rubbery, menus with too many options that are often unnecessary, and the display is too small in size. The feedback showed that senior citizens prefer an ease-of-use interface with straight forward menu navigation, intuitive icons design and louder ringing tone. The battery life is also very important of making their longer mobile usage, which was also mentioned in [31].

4.2. MOBILE AS AN EMOTIONAL TOOL

Apart from perceiving the mobile as a communication tool, a female elderly consider them as "emotional engagement" devices and to be able to foster a closer relationship with her family members. A female respondent, a housewife with 72 years old, considered photo-taking with her mobile to be exciting and being able to share the joy and emotions with her granddaughter.

> *"I never bought a mobile phone. It was my daughter who wanted to contact me, and they afraid I lost my way when I go to the market. But, they never taught me how to use it. Instead my granddaughter, Cheryl, is the one who teach me how to use the camera feature. She showed me how to take the picture. So, u can see the picture of me and Cheryl on the mobile phone [wallpaper]. Cheryl helped me to put the pic on the front [of the mobile]. Whenever I open the mobile phone, I like to see this pic. You know…I see Cheryl growing from a baby to become a teenage girl now. I miss her so much when she is not beside me these days. When she is not with me, I can see her smiling from my mobile…. see how close we are on the phone."*

Senior citizens may be perceived as late majority and laggards [23] in general. However, it is arguably to stereotype their demographic profiles as homogenous characteristics. The scenario above highlighted that a female elderly would not think of owning her own mobile phone until there is a kinship association of social emotion between the artifact (mobile phone) with her closed family member (in this case her granddaughter). It is also interesting to learn that the human relationship factor and its emotional aspect are crucial to encourage the elderly to learn and further adopt additional features of mobile phones.

> *"She will call me and report to me what she learns and experiences at school almost every day. She sometimes will send me some pic, and I also don't know how to see them. Then, when Cheryl is here, she will show me how to read the pic [open the message]…. Now, I am eager to learn how to use it, and communicate with Cheryl…but, I am too old, and feel stupid don't know how to use my mobile…."*

To encourage an adoption of mobile phone for senior citizens, emotional engagement with an artifact, in this case a mobile phone triggers the sense of ownership between the elderly and his or her important person. In short, social emotion has gone beyond the mere functionality of communication, but more of an emotional artifact that foster the kinship relationship between a grandmother and her granddaughter. As such, an older adult most possibly will consider adopting a mobile phone when there are features or applications that trigger their needs and desires. Unfortunately, the current mobile operators are still mainly focus on the youth market as the largest targeted market segmentation in Malaysia. Comparatively with some advanced countries, such as Japan, South Korea, U.S.A. and Europe [11, 12], the mobile operators have been taking care the concerns of its growing ageing populations in their own countries. As a result, with the growing ageing phenomena worldwide, it is crucial for the local mobile industries to look into such a potential 'grey' market in the future of tapping into their needs and wants.

4.3. MOBILE AS A REMINDER AID

As age increases, it is common for the elderly to experience health deterioration in various aspects of physical strength, cognition and memory. From the interviews conducted, we found out the elderly would prefer given choices of their mobile phones to help check their health status, or monitor their health condition. This somewhat obscure relationship in providing some local elderly groups the encouragement to adopt a mobile device. For instance, a 56 year old male respondent commented,

> *"You know I am so forgetful nowadays, I am not sure whether my mobile allows me to set the time and remind me, 'hey, it is time to take your pills.' The best is to hear someone's voice to remind me taking my pills from the phone. I can also set it with different ring tones like beep beep reminding for taking my pills….when it is time for my medical check-up, it can tell me 'it is time to see my personal doctor'…"*

The idea of perceiving mobile phones as a reminder tool recurred several times from the interviews. In addition, the elderly describes a mobile as not only for health monitoring, but also being useful for reminding them of their daily routines. This was expressed by the 56 years old senior, who received higher education that,

> *"You know what…nowadays I use my hand phone as my alarm clock. Every time when it beeps, it tells me, 'hey it is time to wake up.'… I don't need to write notes everywhere and simply place the paper to remind me what I need to do every day. When the time comes, I am automatically reminded to do a task I suppose to do…."*

It is also interesting to learn that the local elderly desire to have an indicator, reminder and a locator feature when the phone is misplaced or taken away from them. They blame themselves for misplacing the mobile phone due to their absent-mindedness. A 61 year old male respondent reveals that,

> *"I always forget where I place my mobile [phone]. Like that day Rami called me, and I brought the phone to the bathroom, and after talking, I went out. The time I wanted to find my mobile phone, I couldn't recall where I placed it. So I had to use the house phone to call, and see whether I can find it. But, … there was one time, I left my mobile phone*

> *at the restaurant, paid the bill, and left….and totally forgot about it. Luckily the waiter came after me and gave me back the phone. What happened if I forgot to locate my mobile… I wish my phone could give me a ring-ring tone when it is away from me within 5 meters."*

Apart from expressing the desire of perceiving mobile as a reminder aid, the researcher also discovered through the interviews that there is a dichotomy of mobile interfaces and the user's mental model of the mobile phones as compared to the fixed-line phone. As suggested by Norman [32, 33] in the concept of gulf of execution and gulf of evaluation, apparently there is a gap between the mismatch of action and user expectation, especially from the old-old adults. On one hand, a 74 year old, an illiterate female respondent complained about her mobile not functioning like the fixed-line phone at home. She expects that by putting down her mobile phone, the action will end her calls (without pressing the end call button on her mobile phone).

> *"I hate my mobile [phone] because it can't be the same like the house phone. I just do like the house phone, put down my mobile [phone] after finish talking. I don't understand why my phone no more battery so quickly. Every time, I just shout loudly to the phone, 'hello…' and no answers… Then, my granddaughter told me the phone credit was finished. I also don't know when it was finished so fast…."*

It is interesting to learn that older generation still treats their mobile phones as though their habitual behavior of using a fixed-line phone at home. The mobile manufacturer should take this issue into consideration of providing a reminder aid, or an automatic call shut-down feature after a certain period of silence. This will somehow prevent any credit loss, and eventually save unintentional battery consumption. Further design consideration of this feature will not only cater for the needs of elderly, but it also benefit for all types of mobile users.

4.4. MOBILE AS A PERSONAL GUIDE

When prompted further about the experience of using the mobile phone while the elderly are out from home, it was found that one elderly required some sort of a personal guide built into the mobile phone.

> *"… I usually go to the market, and do my shopping. There are more and more shops around these days. I am not good at map… I sometimes feel lost and forget where the exact shop I went. Then, I wanted to call my son, but they are working, and not good for me to disturb them…."*

This was reiterated by a 64 year old male respondent:

> *"….that day I was at the shopping mall. It was so huge at the Mega Mall, and I nearly got lost in the maze. Ask people where I can get out from the mall, but I was walking round and round until so tired…I was panic that I afraid I couldn't get out from the place. I tried to call for help, but my phone didn't tell me where I am in the mall."*

Having a built-in personal guide feature can be considered included, for instance using a visual map for senior mobile phones. However, the map feature is still perceived as being too sophisticated for local senior citizens to find their directions. They still prefer to seek help from someone they can trust, or even a security guard or policeman around when finding their ways. Having said this, for the consideration of some more techno-inclined senior citizens, 2-D map illustration in a simpler version with voice command in their senior phones, showing an indication of their current position, and guide of next destination will be a useful resource as their personal guide in the future usage.

5. CONCLUSION

In general, majority of senior citizens are perceived as late majority and laggards as regard in Roger's Innovation Diffusion Theory, especially for those who resist adopting new innovation. However, there are heterogeneous characteristics of senior citizens that we should not generalize their characteristics of adopting a new technology. Thus, I would argue that quite a number of products, in particular mobile phone designs, do not meet the older adults' expectation and requirements in their daily lives. As a result, there is a slow uptake of local senior citizens in adopting mobile phones. Hence, this phenomenon could be a fallacy if the mobile phone is designed with the consideration of senior citizens' needs and wants at the beginning. Some exceptional cases as illustrated above where the senior citizens would consider adopting a mobile phone when there is a needs that trigger their interest in using a particular feature.

Apart from this, the researcher also found several interesting issues related to the user interface, level of interactivity and language criteria that somewhat discouraged the local senior citizens in taking up and exploring further the mobile phone's features. Somehow, the researcher classifies the senior citizens as novice, regular and explorer. Although there are exceptional cases, mainly derived from individual interests and educational background, the senior citizens generally are regarded as late-comers when it comes to adopting new technology as compared to the younger generation.

This study also has its own limitation, in which a small number of senior citizens were involved in this preliminary study. However, the initial findings from this exploratory study provide important feedback and will help the researchers to formulate the groundwork for a larger scale study in the near future. Therefore, further studies will be conducted to look into a larger scale of sample population. The researcher also intends to examine the user interface issues on user-mobile interaction for local senior citizens in regards of usability and user experience aspects; and social relationship aspects of inter-generational studies. In summary, the perception and attitude towards mobile phones and its services among the local senior citizens are generally quite encouraging. This promises a bright prospect for local mobile operators in exploring an untapped and lucrative market.

6. REFERENCES

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