The over 50s and their motivations for using technology

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ABSTRACT

Despite the growing body of research into older adults’ use of technology and the Internet, little is known about their motivations for taking up these products and services. The overall image that emerges from the literature is negative: low self-efficacy beliefs, computer anxiety and usability issues, which exacerbated by the decline of abilities that occurs naturally with ageing, prevent older people from using unfamiliar interactive consumer products. However, there is evidence to suggest that older adults want to be able to use new technology in order to feel included in society, and are willing to invest in learning how to use them provided the expected outcomes are perceived as obviously beneficial. This paper details a qualitative study designed to investigate what benefits older adults expect to gain from the technological products they acquire and use. The Technology Biography method was adapted and applied to participants in three age groups: 50-64, 65-75, and over 75 years old. The findings indicate greater acceptance of technology than expected from existing studies. This work is discussed in the context of older adults’ motivations to use technology, and how their expectations and aspirations affect the uptake of these products.

Keywords

Older adults; technology; motivation

INTRODUCTION

Huppert (2003) claims ‘older users are us’, either because we are or because eventually we will be over 50 years old. This means that a growing number of older adults will rely on technology and they will have increasingly higher expectations of its benefits in their daily lives. With technology playing an increasingly important role in work, education, communication, entertainment and even healthcare, those with less experience of using technology run the risk of becoming disadvantaged and marginalized (Hiltz and Czaja, 2006).

Research to date has centred on an age-related digital divide. Multi-generational studies such as the one conducted by Czaja et al. (2006) have shown that older adults are less likely than their younger counterparts to use technology in general, including computers and the World Wide Web. Their findings indicate that technology adoption is determined by a combination of socio-demographic factors, attitudinal variables, and cognitive abilities. In terms of attitudinal variables, self-efficacy and computer anxiety were identified as important predictors of general use of technology. Older adults are more likely to have higher computer anxiety and are, therefore, less likely to use computers or have experience with computers and the Internet. Furthermore, older adults tend to have lower self-efficacy when it comes to using computers, which has been linked to less motivation to engage in
tasks. To put it simply, people who have a positive attitude are more likely to be interested in using new technologies.

It is often accepted that older people have difficulty using interactive devices and perform less well during these interactions due to the physical, sensory and cognitive decline that occurs with ageing (Kang and Yoon, 2008). Yet, in a survey on older adults’ use of computers, Goodman et al. (2003) found that most people who reported problems using a computer attributed them to complexity and jargon rather than physical difficulties. This view is supported by Czaja et al. (2006) who mention increased complexity of systems and technical manuals, and new procedures as constraints on the adoption of new technology. This suggests that, even though physical difficulties do exist, older adults do not perceive them as significant barriers to interaction with technology.

Older adults’ resistance to technology may be explained by differing needs and expectations, since the extent to which these needs and expectations are met directly influences the affective response to a product and determines its acceptance and use (Medeiros et al., 2008). This theory does not address needs and expectations that are shared across the age range. Monk (2004) suggests that investigating the similarities between older adults and younger generations will point to universal requirements for home technologies, such as dependability, sociability and enjoyment. In fact, there is evidence to suggest that older adults welcome state-of-the-art interaction paradigms and appreciate how technology can improve their lives (Lundell, 2004).

Other researchers believe that there is a generational reason for the digital divide. Weinschenk (2008) describes how people born between 1943 and 1960, commonly referred to as Baby Boomers, consider technology to be a tool and prefer straightforward and predictable designs as a result. In terms of the type of technology they use, this author suggests that Baby Boomers tend to stick to what they know and are not interested in experimenting with new devices or services for entertainment or social networking purposes. However this belief is, by the author’s own admission, a stereotype and would benefit from a more in-depth analysis of this user group’s attitudes and expectations toward technology. In reality it seems that older adults want to be able to use software and hardware in order to feel included in society; in other words “older people like to be like others” (Wales, 2004).

Motivational factors are a central issue in older adults’ adoption of new technology. Melenhorst (2002) demonstrated that older individuals are willing to invest in using new technology, providing the expected outcomes are perceived as being obviously beneficial. Her research dismisses evidence that reducing costs – such as the investment of time and effort – will encourage older adults to use new technology. Even though older individuals may consider costs to be barriers to their use of technology, it is more likely that an absence of benefits is the key disqualifier.

This paper details a study on the motivational issues surrounding the adoption and use of technology among older adults, in order to gain a deeper understanding of the diversity which occurs within this user group. Findings from this study are expected to have practical implications for the design of products that encompass the needs and expectations of a wider scope of the population.

BACKGROUND ON MOTIVATION

It is generally accepted that people use products that suit their needs and abilities. However, sometimes people engage with products that do not fulfil these criteria. And, even within the realm of products deemed ‘useful’, people will engage more with some than others. The characterization of user experience put forward by Kankainen (2002), which describes it as “a result of a motivated action
in a certain context”, accounts for this apparent selectivity by highlighting the importance of motivation in human behaviour. In the literature, motivation is analyzed from many different viewpoints and there is no single prevailing theory. For the purpose of this study, motivation will be discussed from the design research perspective and, therefore, no attempt will be made to explain related issues such as mental states, cognition, values or drives.

Krippendorff (2006) defines motivation as the reason to perform a certain action and, therefore, links it closely to human agency and the ability to make choices. According to this author, when discussing the use of products, motivation can be divided into two types:

- Extrinsic motivation pertains to the completion of tasks and the instrumental benefits that this entails. In design terms, extrinsic motivation allows little if any scope for action, since it relates to issues outside of designers’ control (Krippendorff, 2006).
- Intrinsic motivation explains why people perform actions that surpass the achievement of measurable goals. Intrinsic motivation relates to the emotions experienced during a process and, consequently, has the potential to be enhanced through design (Krippendorff, 2006).

Jordan (2000) explores the concept of needs that exceed basic usability issues in his Four Pleasures framework. In the context of products, the author claims that, on the one hand, pleasure should derive from the practical benefits to be gained from using a product for the purpose which it was intended; on the other hand, emotional and hedonic benefits can and should also be associated with product use in order to create pleasurable experiences. In addition, Jordan (2000) criticises the tendency for the relationships that people form with objects to be overlooked when taking an approach based solely on usability. Since intrinsic motivation cannot be explained in terms of the physical attributes of the object or be measured mechanically (Krippendorff, 2006), understanding people’s relationships with products may provide insight into how behaviour gets started and what sustains it over time.

The concept of product relationships is illustrated by Battarbee and Mattelmaki (2004), who generated three main categories of product relationships. The first category is Meaningful Tool, which describes an object required to perform a meaningful activity. In this relationship, the object is necessary for the activity to take place but could be substituted for a comparable object. Within this category an object can represent: facilitator, when the emphasis is on its functionality and usefulness; challenge, when the emphasis is on learning; or self-expression, when the emphasis is on creativity and enjoyment.

The second category proposed by Battarbee and Mattelmaki (2004) is Meaningful Association, assigned to products that relate to cultural or individual meaning. In other words, the significance of these objects stems from something outside the actual objects, representing: identity, such as personal, cultural or professional identities; style or taste, which reflects individual aesthetic values; and link to a memory, a person, an emotion or a story when an object evokes past events or experiences.

The final category of product relationships is Living Object (Battarbee and Mattelmaki, 2004), which describes an emotional bond formed between a person and an object. In this instance, the person perceives the object as a companion with human characteristics, like a personality, soul or character. These researchers present distinct categories of product relationships, but often a variety of relationships occur simultaneously with a given object and uncovering these relationships provides a context for designing new products.

The relationship between motivation and ability has been explored by Fogg (2009), who lists three factors of persuasive design that determine whether behaviour takes place. The Fogg Behaviour Model (FBM) states that motivation and ability play an important role in human behaviour, but specific behaviour will not occur without an appropriate trigger. In fact, Fogg argues that behaviour can occur
even when ability is low provided motivation is sufficient, and the inverse also applies. According to this model (Figure 1), elements of ability – also called Simplicity Factors – are time, money, physical effort, brain cycles, social deviance, and non-routine. Motivation can be explained through three core motivators with opposing dimensions: pleasure/pain; hope/fear; and social acceptance/rejection. But, whereas levels of ability and motivation can be manipulated, people depend on triggers to prompt behaviour.

![Fogg Behaviour Model](image)

Figure 1. The Fogg Behaviour Model.

Triggers are calls to action and Fogg (2009) points to three main ways in which they can intervene. When motivation is lacking, a Spark is required to trigger the target behaviour. Conversely, if motivation is high but there is a lack of ability, behaviour should not only be triggered but also made easier through a Facilitator. Finally, if both motivation and ability are present, a Signal will serve as a cue or reminder to perform a particular task. Fogg emphasizes the importance of choosing the correct type of trigger – for example, people may find Sparks annoying because they attempt to motivate them to do something they don’t intend to do, or a Facilitator may be considered patronising by people who have sufficient ability to perform the task at hand. Overall, people will be more tolerant of Facilitators or Signals as triggers than they will be of Sparks.

**RESEARCH METHOD**

Battarbee and Mattelmaki (2004) state that rich descriptions of products and their stories are a valuable way of gaining a deeper and more empathic insight into people’s use of technology. For this reason, this research employed an interpretivist approach which focused on understanding significant phenomena and the meanings they convey within their context (May, 2008). Since the Technology Biography method (Blythe et al., 2002) requires participants to tell their own stories and illustrate their experiences with examples, it was chosen as the basis for this study.

Technology biographies are a combination of various elements: Technology Tours (Baillie and Benyon, 2001), where participants show the researcher round their home and answer questions about their use of technology; Last Time questions which are adapted from the critical incident method (Flanagan, 1954); Personal History interviews focusing on technology and routines that participants remember from the past; Guided Speculation on possible future developments; and finally cultural
probes (Gaver et al., 1999) adapted to elicit Three Wishes for products that participants would like to see. This method combines a number of research and design orientated methods to generate both critical and creative responses to domestic use of technology, illustrated through people’s hopes, fears and expectations towards technology use (Blythe et al., 2003).

Technology biographies were originally used to develop assistive technologies for user groups with varying support needs, but the method can be tailored to elicit relevant data according to the purpose of the study as data collected will be invariably rich and interesting (Blythe et al., 2002). Therefore, the technology biography elements were adapted to focus on understanding older adults’ experience of interactive consumer products in context rather than to develop technological solutions.

**Participants and procedure**

Since the nature of the method required the researcher to have access to participants’ homes and investigate the technology they own, a non-probability convenience sampling method was initially adopted. As the research progressed and participants became engaged in the outcome, some snowball sampling was also employed. Even though these strategies often introduce bias and the generalizability of findings may be compromised, they were deemed acceptable since the study was intended as an in-depth exploratory investigation of older adults’ attitudes and feelings toward technology.

The sample for this study consisted of 24 participants segmented into three age groups: 8 participants between 50 and 64 years old, 8 participants between 65 and 75 years old, and 8 participants over 76 years old. Distribution of participants according to age and gender can be seen in Table 1. Six participants in the over 76 age group had their spouses present during the collection of the data and, as a result, spouses would often take part in the dialogue. Participants in the younger age groups (50-64 and 65-75 years old) were interviewed individually.

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All technology tours occurred in the participant’s home. Ethical protocols were followed with regard to interviewing older people in their own homes, participants were given information ahead of the visit and gave their informed consent before taking part.

The first step was a semi-structured interview to inquire about participants’ feelings toward acquiring and using new technology. Then participants were asked to show and discuss their most recently acquired, favourite and least favourite technological products, being prompted by questions like how the product was acquired, their expectations before first use and what the product enables them to achieve. Following on from these three product types, participants were asked to show the researcher round their house and talk about the technology present in each room. Finally, participants were asked about technology that they don’t currently own but might like to own, and what benefits that they expect from technology in the future.
Thematic analysis was used to sort the data, which allowed high frequency patterns to emerge as meaningful themes in the research (Aronson, 1994). These themes are presented and discussed in the following section.

FINDINGS AND DISCUSSION

How do older adults feel about technology?

Most of the participants reported an interest in using technology and were even willing to invest time in learning new skills, provided they felt there were benefits to be gained from using the new product. For example, one participant in the over 76 age group said that he borrowed books from the library or from family members to help him overcome problems with the computer, and several other participants had taken training courses before acquiring their first computer.

In terms of older adults’ attitudes towards technology, one participant in her 80s remarked:

_We’re probably more vocal when we say “oh, it is a nuisance”, but we wouldn’t be without it!_

In fact, participants in the over 76 age group were generally more positive about technology than those in other two groups, even though they usually owned fewer technological products. It was more evident in this group that products were selected after careful consideration of costs, benefits and relevance to lifestyle, as was proposed by Melenhorst (2002).

In contrast, younger participants were more likely to take a more impulsive and exploratory attitude towards acquisition of technology. One 60 year old participant’s opinion on using new technological products:

_I think they’re fun. Often more fun than useful, but who cares._

Participants who reported being less enthusiastic about technology were usually in the 50-64 or 65-75 age groups. This is not surprising since many of these individuals use technology in their jobs and, therefore, equate it with work. In the words of one participant:

_I use company computers and business systems and that’s what my career has been, so the thought of coming back and sitting on the computer when I’ve got home from work...I just don’t want to do it. I only use it when I need to use it, but when I retire I might find I want to do more things with it._

In this instance, when motivation to use technology is low, the Fogg Behaviour Model (2009) highlights the importance of using a Spark as a trigger. However, in this type of situation where not performing the behaviour has been a considered choice, it is likely that attempts to trigger behaviour would not present benefits and may even be irritating.

Applying the Fogg Behaviour Model (2009) to the overwhelming majority of participants in this study who had high motivation to use technology combined with varying degrees of ability, there is a challenge for designers to create Facilitator-triggers to build older adults’ confidence to interact with new technology and Signal-triggers that would prompt them to engage more with these products. In order to achieve this, it is important to further understand what motivates choices of technology among this segment of the population.
Why don’t older adults use technology?

Unfamiliarity, complicated jargon and instructions were cited as typical barriers to the uptake of new technology, a finding which is supported by the literature (Czaja et al., 2006; Goodman et al., 2003). Judging from participants’ responses to questions about their least favourite technological product, usability issues play a central role in older adults’ frustration with technology. Moreover, products like DVD players and microwaves were most often named as least favourite products, which could be explained by the lack of emotional and hedonic benefits when using these devices (Jordan, 2000).

A significant pattern that arose from this study was the difficulty in setting up new products. Given the choice, participants would rather someone else set the products up for them. But, as it is not always feasible to rely on other people to perform this task, it is suggested that improvements at this level could encourage the take up of new technology among a wider user group.

Contrary to what has been suggested (Kang and Yoon, 2008), the decline in abilities that occurs naturally with ageing was not mentioned as a deterrent to the use of technological products and was even cited as a reason to upgrade existing products. Several participants mentioned the important role technology plays in keeping active:

*We’re quite keen about remaining agile from a brain angle but, physically, I don’t think anybody is going to stop you getting older and less able to do things; so some of the things that are used by younger people as a luxury, for elderly people would make it easier to continue living in their own home.*

Why do older adults use technology?

While discussing the role of technology in households today, one participant observed:

*This is where I think you only get involved in new technology when you need it, I think I am making more of an effort, gradually, to use the computer and learn a little bit more about it as I go along. So, in other words, it’s a positive projection in a way, rather than just a passive projection – like when you get used to television and the DVD because everybody else does.*

Interestingly, this distinction between “positive projection” and “passive projection” can be compared to examples from the Meaningful Tool category of product relationships put forward by Battarbee and Mattelmaki (2004). In this case the computer, which encourages the participant to learn and interact constantly, can be considered a challenge; the “passive projection” description could represent a facilitator, as these products help to meet all kinds of needs.

All relationships with technology described by participants in this study would fit into the Meaningful Tool category (Battarbee and Mattelmaki, 2004). Occasionally some mention was made of the importance of aesthetic attributes when choosing products, but the focus of the relationship was always on what goals technology enabled participants to achieve.

For instance, technology as facilitator:

*I was really pleased to find that my mobile phone links up to my computer via Bluetooth and so I can send text messages by typing them out on my keyboard. That makes it much easier to mix up languages, and quicker to send them. I can type much faster than I can text.*

Technology as challenge:

*Once I’ve gotten over the terror of learning about a new (digital) camera, I like playing with it.*
Technology as self-expression:

*I’ve got a desktop publishing program that I can do all sorts of Christmasey decorative labels.*

In general, technology biography was an effective method of eliciting information as the participants were enthusiastic to share stories about the products they own. This correlates with findings by Blythe et al. (2003), who stated that this method provides an engaging way of opening up a dialogue with user groups that are difficult to research by other means.

Since participants were prompted to talk about favourite and least favourite technological products, they felt more comfortable to share negative feelings toward certain products but were also encouraged to reflect on the positive aspects of technology. The technology tour provided a valuable means of establishing rapport between the researcher and the participants because, by creating the feeling of showing a friend round the house, the conversation was kept informal and participants were less likely to feel they were being evaluated. However, two participants were unable to perform the technology tour to its full extent due to mobility issues. This hints at a limitation of the technology biography when conducting research across the ability spectrum. Another potential drawback of this method is its intrusive nature, so sufficient trust needs to be established between the participants and the researcher beforehand.

This research has attempted to empathize and understand, for a sample of older adults, their experiences of technology. It is anticipated that these findings will provide rich context for the design of new products and stimulate additional research on older adults as a diverse sector of the population.

From the responses gathered, there was a clear focus on what technology enables people to do rather than on the characteristics of the product itself. From a design perspective, this emphasises the need to clearly communicate the potential benefits of new technology to the older population.

**CONCLUSION**

The combination of a rapidly ageing population and society’s growing reliance on technology presents a significant challenge for designers to create products that meet the needs and expectations of increasingly diverse users. A significant amount of research has been published on the difficulties that older adults experience with technology. However, findings from this study suggest older people are keen to use technology as long as it entails obvious and relevant benefits to their lifestyle. By focusing on older adults’ motivation to use technology, this paper presents an opportunity for a more positive intervention from designers to encourage and support the uptake of new technology among older adults.

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**REFERENCES**


