

OLDER ADULTS' USE OF COMPUTERS: A SURVEY

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ABSTRACT

Older people are an important and growing sector of the population, of whom the numbers who use computers are increasing rapidly. Yet their requirements are not often considered in the design of computer systems and software, and as a result they often find them difficult to use. In order to include them effectively, it is first necessary to find out more about how this population interacts with computers. As a first step towards this, we carried out a questionnaire and interview survey with 353 participants over the age of 50, including questions on computer use and ownership. This paper discusses the implications of some of the results for design and marketing, in particular the importance of simplicity and an application's perceived usefulness.

Keywords

older people, survey, computer use, interaction design

1. INTRODUCTION

The number of older people in the developed world is increasing. This group has many members with considerable disposable income who are becoming more and more conscious of new technology, with increasing rates of computer access and use [6]. It is therefore important to ensure that such technology is designed to meet their needs, and, in order to do this effectively, to investigate how they relate to computers. This can be done in several ways, but the diversity within the older population renders large-scale methods particularly useful for an initial investigation. In the past such work has tended to focus on particular applications such as the Internet or general information on computer use, without going into further details of older peoples' interactions with computers. There have been some notable exceptions,

such as [1], but more in-depth study of technology use as a whole in the older population is needed.

To this end, we carried out a questionnaire and interview study on the use of technology by older people in Scotland. This was done in the context of the UTOPIA project [2]. In this paper, we consider the part of the study concerned with the computer literate older population, and discuss how their characteristics could impact on design.

2. METHOD

2.1 Questionnaire Design

The questionnaire was designed to obtain information about the reaction of the older population towards technology, including, but not exclusive to, computers. The sections of most interest to this paper are those focused on computer use and ownership. These contained questions on the reasons for using a computer, the types of computer applications used and the frequency with which they were used. In addition questions were asked about the computers used, including their age and type. The information obtained from these questions provides us with a picture of why older people use computers, the types of computers to which they have access, and a rough estimate of their general level of technical expertise. Space was available throughout the questionnaire for comments, which enrich our picture of the population and provide deeper insight into the difficulties that older people have with computers.

2.2 Questionnaire Distribution

The questionnaire was distributed to older people across Scotland, mostly through contacts with organisations that work with older people. In order to elicit richer, more in-depth information, particularly with frailer, older people who might find it difficult to fill in the questionnaire on their own, many of the questionnaires were administered by researchers who used them as the basis for semi-structured interviews.

2.3 Sample

In total, questionnaires were received from 353 participants over the age of 50. 68% of these were female and 32% male. In addition, 25% were aged 50-64, 43% 65-74, 27% 75-84 and 5% 85 or older.

These age brackets were chosen because 50 is commonly used to identify older people, e.g. in [4]. The population was then divided at 65, the current UK retirement age, and then into 10 year age brackets. The over 85s were considered together because their numbers are relatively small.

Much of this paper is focused on the 237 participants who had used a computer. The rates of computer use in our sample are higher than in the general population, due to a number of respondents recruited from computer classes (roughly 7%) and self-selection of respondents. However the focus of this paper is on trends in computer use and ownership and on characteristics of the computer-literate, rather than on these figures themselves.

More information on our method and a discussion of questionnaire use with older people, can be found in [3].

3. RESULTS AND ANALYSIS

3.1 Computer Use

67% of respondents had used a computer, but the rates of use varied with age, as shown in Figure 1 below. The decline in use with age was highly significant ($p < 0.01$).

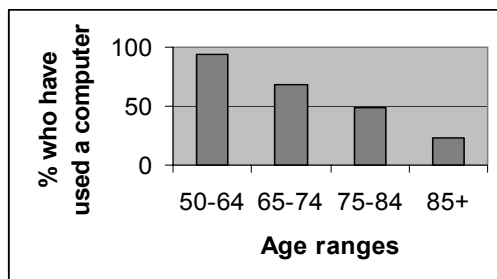


Figure 1: Use of computers among the over 50s

3.2 Computer Access and Ownership

In addition, 57% of all respondents said that they had access to a computer and 43% of participants owned a computer. These percentages both significantly decreased with age ($p < 0.01$).

Of those with access to a computer, 72% used a PC, 7% a Macintosh and 4% another type of computer, while 8% did not know what kind of computer they used most frequently and the remainder chose not to answer.

Those who owned a computer had owned them for widely varying lengths of time. The mode was between one and two years, but 16% had obtained their computer more than four years ago and 28% of computers were obtained second-hand, indicating older models.

When asked to provide more details about their computer, such as the type of processor or memory size, 28% of computer owners did so, around a quarter of whom provided very vague information, such as “Intel”, “XP” or “Pentium”. In addition, only 33% of computer owners reported choosing them themselves, with the majority of

computer owners relying on friends and family to choose for them.

3.3 Reasons for Computer Use

Those respondents who were interested in using computers were asked what they were interested in using them for. As an open-ended question, this produced a varied set of responses. Many of them referred to general areas of use, such as shopping, family research or correspondence, as well as, or instead of, computer applications themselves. Interestingly, despite the variety in the comments, many of them fell into the same few categories. The most popular category was the Internet or some use of the Internet such as information access, research or shopping. E-mail and communication as well as word-processing and correspondence were also popular.

The reasons for computer use are further illuminated by the general comments at the end of the questionnaire where the most common positive comments about computers concerned their “usefulness”.

3.4 Computer Activities

Reasons for computer use are often linked to the activities they are used for. Therefore we asked those who had used a computer about their use of different computer activities and applications. The results are shown in Figure 2.

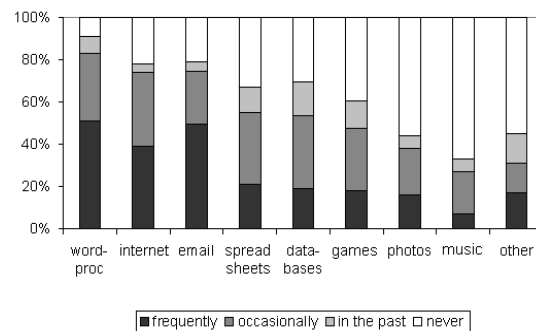


Figure 2: Use of computer applications among over 50s who have used a computer.

Word-processing, the Internet and e-mail are the most commonly used applications (significant at $p < 0.01$ using a Wilcoxon signed ranks test). Word-processing is significantly the most popular ($p < 0.01$) and is not significantly affected by age. However use of the Internet and e-mail both decline with increasing age, although they remain (marginally) more popular than other activities.

Games, while not among the most popular, are currently used by 47% of computer users, many of whom play simple games like Solitaire. The rate of games use was not significantly affected by age.

3.5 Learning

In order to find out more about the computer-literate older population, we also asked respondents about how they learnt to use a computer. After removing responses from

participants known to be recruited through computer classes (as they were likely to skew the data), the answers were categorised. The results are shown in Figure 3 below.

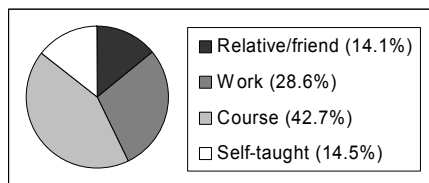


Figure 3: How respondents who have used computers learnt how to do so

Despite removing respondents recruited through computer classes, the most common method was still through a course (significant at $p < 0.05$ with a one-sample proportions test). Both community-based and other courses (e.g. at a college) were popular, with community-based courses accounting for 42% of those who learnt through a course.

3.6 Problems and Difficulties

In response to open-ended questions on technology use, as well as positive comments, we received some descriptions of difficulties with computers. Although these difficulties were varied, it was clear that problems are often caused by applications and their documentation being too complicated, with too much jargon and inadequate support, both during learning and on-going use, as illustrated by the comments in Figure 4.

“Sometimes I get into difficulties such as not understanding certain terms or which button to touch.”
“I dislike the amount of information you need to digest in order to do quite simple things.”
“I find it now too complicated.”
“Little support for older person like me to gain help. My son is fed up with me phoning for help, so I try not to bother him”

Figure 4: Sample comments from the questionnaire on difficulties with computers

In contrast, only three participants mentioned physical difficulties (e.g. visual or motor).

4. DISCUSSION

4.1 Computer Use, Access and Ownership

In common with previous studies [1, 4] we found that older people do use and own computers, although this decreases with age.

The age and type of computers used has an impact on design, as it indicates the kind of applications that older people are likely to be able to run. Most, but not all, of their computers are PCs and many are not the newest models. These results could be of use when designing an application, by considering the specifications of the computers available and adapting the design accordingly.

The extent of respondents' computer knowledge is considered later in Section 4.5.

4.2 Computer Activities

The current study found that the most common activities were word-processing, the Internet and e-mail. This updates a previous survey of older (55+) computer users [1] which found a similar use of word-processing, but much lower use of the Internet and e-mail, probably due to the date of the study. Similar surveys of the general population are not common but an example is [8], which found a much lower rate of word-processing. This may be due partly to the wider age range surveyed as well as to different emphases in the questions asked, allowing answers such as “working from home” and “access health information”.

We observed that the use of e-mail and the Internet decline with age. Other surveys have also found a decline in Internet use with age, although among Internet users, the popularity of e-mail actually increases with age [6, 7].

These results indicate areas that older people are particularly interested in and therefore important areas to target and develop. The decline with age of Internet and e-mail use, despite their popularity, may indicate a particular need to consider the oldest age groups in design and marketing.

Other applications were also used widely, although not to the same extent. In particular, 47% of computer users play computer games. This backs up Adler's findings in 1996 that 60% of computer owners aged 55+ played computer games [1]. This is particularly interesting as computer games marketing and design often seem to ignore the older population. The fact that many older people do play simple games indicates a potential untapped market.

Further research is needed into the reasons for these figures. An important question is whether these are the applications that older people actually *want* to use or if they are just what is available or what is taught in computer classes. The last point is particularly relevant in light of the large numbers of respondents who learnt to use a computer through courses.

4.3 Reasons for Computer Use

The most commonly used applications all have an obvious practical purpose. The comments on reasons for computer use often referred to general areas of use instead of referring to applications themselves. In addition, the most common positive comments on computers concerned their usefulness. When these are taken together, they indicate that older people may often be motivated by the perceived practical use of computer applications.

This observation could be taken into account in design and marketing by targeting particular needs and trying to find out what older people themselves want from computers.

4.4 Learning

We found that the most common method of learning to use a computer was a course, followed by work. This does not agree with results from surveys in the USA which found that self-teaching was the most common method for older people [1]. One survey [5] even found that the percentage of self-taught users increases with age. These differences are likely to be due, at least in part, to cultural differences in the construction and marketing of courses, but may also be affected by differences in sampling methods.

The prominence of computer courses indicates the importance of designing them well. They could also have a useful impact on product design as it is possible to get a picture of what older computer-literate people are likely to know and be familiar with by examining the content of these courses. It may also be possible to use them as valuable tools in marketing and distribution.

4.5 Problems and Difficulties

The lack of response to questions on the type of computer owned, the large proportion of computer owners who did not choose their computer themselves and the complaints about complexity and jargon suggest that the older computer-literate population may not in general have a great deal of technical knowledge. It seems likely that they know less about computers than younger people, but this is uncertain due to a lack of research on this topic.

In particular, the complaints about complexity and jargon indicate a need for simpler applications and documentation, designed with older people in mind, as well as for greater support. The mention of such problems rather than physical difficulties suggests that, while physical difficulties do exist, they may not be as important to respondents as difficulties with complexity and jargon.

This gives some indication of where problems lie and where more work is needed. However further investigation of the problems is also required because these observations rely on responses to optional open-ended questions.

5. CONCLUSIONS

Our survey has illustrated that questionnaires can be useful as a first step towards finding out about the older population, providing useful information for design.

In particular, the high use of computers in our survey indicates that it is worth-while considering older people in design. The popularity of word-processing, the Internet and e-mail suggests that these are areas useful for concentrating on, while other areas, including games, suggest little-tapped opportunities for development. The indication that older people are often motivated by perceived needs means that it is important to discover and address these needs. It is also important to consider the content of computer courses in design and consider how they can be used in the development process. Lastly, problems and difficulties

brought up by respondents show that complexity and jargon can be significant barriers during computer use with older people, barriers that it is important to address.

More study is needed into older people's interactions with computers, the factors affecting these areas and how they can be most effectively addressed. We are investigating learning and support in more depth and hope to carry out more in-depth experiment-based studies of interface issues.

6. ACKNOWLEDGEMENTS

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