EVALUATING THE DIGITAL DIVIDE: THE SILVER SURFER'S PERSPECTIVE

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ABSTRACT

*The aim of this paper is to explore and ascertain using an information systems perspective evaluation framework, the factors that are encouraging the adoption and usage of online products and services, namely, in this case, broadband, within one particular population group – the silver surfer. Data were collected through e-mail, interviews and an online survey within OECD and non-OECD countries. The findings of this study illustrate that technical factors were not of primary importance. Non-technical factors were considered to be fundamental and clearly need to be taken into consideration when encouraging silver surfers to be come online interactive. What was also discovered is that **interest, whether** in technological or non-technological factors as well as **communication** are very pertinent in adopting and using technology. This research should offer a substantial contribution to various stakeholders including government agencies, management consulting firms, Internet Service Providers and IT organizations that may want to identify what drives the online interactions of silver surfers. This will also assist government agencies to understand the problem of low adoption and formulate a strategy to promote awareness and diffusion. The contribution to theory that this research offers is the development of an evaluative framework that has a household perspective and emphasises the silver surfers. Further, the framework should be applicable to both OECD and non-OECD countries provided the administered survey instrument is in the indigenous language and there is immense awareness to the questionnaire.*

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INTRODUCTION

Recognising the potential that Information and Communications Technologies (ICTs) offer for competitiveness and the effectiveness of communities, Governments across the globe are striving to provide online products and services[2] to all user groups. This has led to a 'push and pull' strategy in economies, and efforts from and partnerships to be formed between many government (public) and private sector organisations and citizens. However, despite all efforts, certain groups of society-disadvantaged groups such as the disabled, older people and people from poorer backgrounds are not using online products and services, which has led to a 'digital divide' .

Presently, new technologies, such as Information and Communication Technologies (ICTs) [3] are viewed as critical tools for the future prosperity and growth of economies and there is a drive from both the public and private sectors to have ICTs adopted and used in daily lives. From UK official published figures, it was discovered that although ownership of ICT related artefacts, the internet and mobile phones, was increasing amongst all age groups, it was not so pronounced in the older groups.

"Just over four in ten over-65s (41%) had a PC or laptop in Q1, compared to the UK average of 72%, while 37% had internet access at home against an all-adult average of 67%. The difference was even more apparent with broadband, where those aged over 65 were less than half as likely to have a home connection (27% compared to the UK average of 58%). For all of these services the figures became even more pronounced when looking at the over-75 age group. Almost all of those aged 75 or older had a landline at home and just over half (51%) said that they personally used a mobile phone, while seven in ten said that they had digital TV. Over a quarter (28%) had a PC or laptop but only 22% had home internet access and this fell to 15% with a broadband connection" (Ofcom, 2008).

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[2] There are various definitions of e-government, but for the purposes of this research, the definition used is: E-government is more commonly known as the the provision of online products and services

[3] Examples of ICTs include broadband (the offering of a faster internet service), personal digital assistants, such as, blackberries and mobile telephones

While the above offers a UK perspective, such trends are also emerging in Europe where internet penetration is lowest amongst the elderly, lowly educated or low income people, confirming that socio-economic factors are important when considering aspects of the digital divide (Kaplan, 2005).

According to the United Kingdom (UK) Office of National Statistics (2008), people aged over 60 in the UK outnumber children for the first time. However, in the current environment where there are dramatic transformations occurring in medicine, health care and the environment, this is not an uncommon situation in many countries across the globe. It was noted that such situations are not disappearing and may eventually become common place. Presently, as mentioned above, there are numerous e-government efforts being undertaken by global governments. Since e-government services are primarily web based services, older users could face cognitive, visual or physical problems when trying to access information using this medium (Becker, 2005). Further, adults over the age of 60 usually experience a decrease in motor coordination, hence, making it increasing difficult for them to use web sites to retrieve information (Becker, 2005). For example, older users may find it difficult to coordinate on screen mouse activity or scroll down a Web page (Becker, 2005).

In the above context, the **aim** of this study is: *To explore and ascertain using an information systems evaluation framework, the technical and non-technical factors that are encouraging the adoption and usage of online products and services, namely, ICTs known as broadband, within one particular population group that is of immense current interest– the silver surfer*[4].

Associated with this, the following research question was established:

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[4] An adult, generally 50 years of age or older, who frequently surfs the Web and spends time online ("silver" refers to the color of their hair). The phrase silver surfer is commonly heard in the U.K., but applies to midlife adults (generally those in their 40s, 50s and 60s), and seniors (age 70 and over) everywhere (netlingo, 2008)

"To establish the technological or non-technological factors that influence senior citizens' online interactions and thereby their digital inclusion"

This research is considered beneficial and timely as Governments are striving hard to provide all the citizens with online access- a 'universal' broadband, which is succeeding but to a limited extent (BBC, 2008). This has led to the issue of the digital divide to become a subject of immense importance, and one which is being increasingly researched. This research adds to the discussions regarding silver surfers and the potential digital divide. The academic contribution of this research is the employment of a particular information systems perspective evaluative technique that is being employed to determine the technical and non-technical factors that will lead to a narrowing or elimination of the digital divide.

For **policy makers**, the implications of this research are that policy makers working hard at ensuring broadband provision for all can understand and determine the initiatives being achieved at grassroots levels. Therefore, they can utilize such results as test beds for future programmes and have a pre-understanding of the efforts that their support would achieve. Such research can also support policy makers and public and private sector organizations that are considering the continuing challenge of digital exclusion and what can be done to alleviate it. For **ISPs**, this research is vital as it draws attention to factors that may not have been clearly articulated. For instance, the research draws attention to the fact that although silver surfers state that they have broadband, they are not making use of it; therefore, there is a gap for the providers of broadband to fill.

In the following sub-sections a discussion of the other topics of this research, the digital divide and e-government in the UK, which is the main context of this research is offered. Section 2 then reviews some of the theoretical aspects of evaluation, followed by section 3 which details the approach applied to this research. The findings and analysis resulting from the research approach are presented in Sections 4 and 5. This is then followed by conclusions in section 6.

1.1 Defining Digital Divide

Although measures are being taken to offer online products and services, this is also leading to a 'digital divide' that not only extends to the provision of computers and the appropriate infrastructure, but is also linked to ideas of social inclusion and exclusion.

There are various forms of digital divide that have been discussed in academic literature, but recently the OECD (2008) has also noted:

"*Despite progress in broadband usage and access, certain divides are evident. Household use is often related to income, education levels, gender (males having more access), the number of children (households with children having more access), age and disability. As data for 2006-2007 from Australia shows, use is significantly higher for the age group 15 to 17; people from households in the top two income quintiles; people with higher levels of educational attainment; and the employed*"(Australian Bureau of Statistics, 2007).

As observed above, there are various levels to the digital divide. Our top level definition of the digital divide follows Norris (2001). Norris conceptualized the digital divide as operating on three levels:

- **The global divide** refers to the divergence of internet access between industrialised and developing countries;
- **The social divide** concerns the gap between information rich and information poor in each nation;
- **The democratic divide** signifies the difference between those who do, and those who do not, use the panoply of digital resources to engage, mobilise, and participate in public life.

A basic strategy for overcoming the digital divide has been to provide physical access to computers; but, as Warschauer (2003) clarifies, there are additionally three further aspects with regard to resources: Digital resources (material made available online); Human resources (in particular literacy and education) and Social resources (the community, institutional and societal structures that support access to IT). The aspects that Warschauer (2001) identified as important

formed the basis of this research when evaluating and identifying the non-technical and technical factors that lead to the adoption and usage of technology by silver surfers.

1.2 Examining E-Government in the UK

To ensure that all citizens in a country have access to technology, to achieve digital inclusion and to show a clear vision to all, Governments have formed and implemented policies and also undertaken programmes to encourage awareness and usage amongst citizens. An example is the launch of the eEurope Action Plan in 2002 that places digital inclusion at the top of the EU policy agenda. Alakeson et al (2003) in their report for the EU on Social Responsibility and the Information Society made a number of recommendations for government, for business and for further research. With regard to the latter, they identified a need for greater understanding of digital inclusion, and in particular, identifying the factors that enable people to move up and down the digital ladder. They acknowledge that there is already evidence of a payoff to commitment to digital inclusion. For example:

Household internet penetration in the EU has increased dramatically from 18.3% in March 2000 to 34.3% in December 2001. But, this positive headline masks various discrepancies in uptake. Household internet penetration in the Netherlands is over 65% and rising, in contrast to Greece where it has fallen last year to below 10%.......Similarly, internet penetration among other traditionally disadvantaged groups – the disabled, the elderly, and the poorly educated- falls far below the EU average. (Alakeson et al, p.25).

An example of policies used to overcome the digital divide further away from the UK and Europe which has led to increasing success and obtained a leading position for a country in terms of broadband use, is the case of South Korea.

"The South Korean government used a variety of promotion policies designed to boost Internet use amongst the population. These measures included IT literacy and Internet literacy programmes targeted at particular populations such as housewives, the elderly, military personnel, farmers and socially excluded sectors such as low-income families, the disabled and even prisoners. The government set up the "Ten Million People Internet Education" project in

June 2000 to provide Internet education to 10 million people through a range of programmes. This promotion activity contributed to the nationwide Internet boom, with 3.4 million people including one million housewives being provided with basic Internet skills by December 2000 (Lee et al., 2003)."

In the UK the digital divide is considered an important issue, but has not been undertaken on a government and policy level to the same extent as South Korea. Instead initiatives at a more local level have occurred and led to a narrowing of the digital divide gap. A key principle of the UK e-government initiative is to socially include all citizens into the modernisation process. This includes members of society who are poor, disabled, and unemployed, ethnic minority groups, young, old and the educationally and culturally deprived (Hicken, 2004; Crown, 2004).

Nonetheless, to encourage e-services adoption amongst citizens, the UK Government has pioneered projects using UK online centres, Learn Direct, and Wired up Communities, as well as valuable local initiatives. Local initiatives include, People's Network, which was a scheme offered by the local governments using lottery provided funds, within public libraries. This scheme offered access to the internet and computers to the citizens. Additionally, the Government has created Directgov (www.direct.gov.uk), an online portal that allows citizens to access services offered by Government from a centralised location. As Selwyn and Craven (2008) found: *"ICT has fallen significantly down the agenda of more recent strategies, largely as a result of the success of regional campaigns to promote access to broadband services".*

The UK Government has been supporting e-government and narrowing of the digital divide in the following ways.

- In 2007, at least £424m of mainly UK government money was currently invested in projects that promote digital inclusion or that could be leveraged to do so (Digital Inclusion Team, 2007).
- A Social Exclusion Unit being established by the current (Labour) government in 1997 to examine and develop policy dealing with social exclusion. One of the Policy Action Teams-PAT 15 was focused on looking at ICTs and social exclusion with the goal "to

develop a strategy to increase the availability and take-up of information and communications technology (ICT) for people living in poor neighbourhoods"[5]. The team commissioned reports on a number of issues, including, women, race, disability, White Males with manual backgrounds, and current ICT use in deprived areas. A final report with findings and recommendations was presented in February 2000.

- Recently (2008) a new ministerial position to combat the digital inclusion issue has been established. The Secretary of State for Wales, Mr. Paul Murphy attained the position in January 2008 and is attempting to overcome the issue. This move has also obtained the formation of a cross-sectional cabinet committee and a Digital Action Plan to overcome the digital inclusion gap.

However, such efforts are still not being considered enough. Despite all efforts, provisions for the elderly are still low. Recent research has found:

"Absolutely no progress has been made in getting older people online and the spotlight is now on Government and the industry to get switched on," Head of Policy, *Help the Aged* (BBC, 2008)**.**

2 EVALUATION MEASURES USED TO EXAMINE THE TECHNICAL AND NON-TECHNICAL FACTORS OF TECHNOLOGY ADOPTION

From the aforementioned discussion, the digital divide, specifically with an emphasis upon broadband is still in existence and warrants attention. Previous studies on broadband digital divide have used diffusion theories to form an understanding (Choudrie et al, 2004). Although this research offered a richer understanding than in previous IS focused research, it could not provide theories that were citizen centric and offered a more government and supplier perspective. To overcome that gap, there has been the application of conceptual models based upon Rogers Diffusion of Innovations Theory (1995), the Model of Adoption of Technology in the Household, Theory of Planned Behaviour and the Decomposed Theory of Planned Behaviour (Choudrie and Dwivedi, 2006; Choudrie and Dwivedi, 2004). However, such research is

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[5] http://www.cabinet-office.gov.uk/seu/2000/Compendium/15.htm

quantitative in nature and offered little rich and deeper understanding of the external factors and other important issues, such as identifying technical and non-technical factors.

This research is different to previous research undertaken on broadband as it will utilize an evaluation framework that has a technical and non-technical aspect to form an understanding. Within the IS discipline, evaluation is critical and is considered within the adoption and implementation of many IT/IS solutions such as Enterprise Resource Planning (ERP), Supply Chain Management (SCM), Customer Relationship Management (CRM) and eBusiness solutions. Evaluation is considered important as it can help in the design, production and delivery of manufactured goods (Goldman et al., 1995; Tapscott et al., 1998; Sharp et al., 1999; Themistocleous et al., 2004).

IS evaluation is a decision-making technique that allows an organization to benchmark and define costs, benefits, risks and implications of investing in IT/IS systems and infrastructures (Farbey et al., 1993; Remenyi et al., 2000). The information and knowledge requirements of evaluation appear to suggest that mapping benefits, risks and costs to organizational objectives and strategy should result in a clearer and more rational appraisal process (Irani et al, 2005).

In this case, an initial understanding was formed by referring to an evaluation study by Elliman et al (2007). Elliman et al (2007) developed a framework from a technical, social and organizational perspective. Elliman et al's (2007) framework differs from this research in that it does not emphasize the silver surfers, but does investigate e-government and its application from the citizens' perspective. However, whilst research studies such as Elliman et al (2007) have resulted in the development of frameworks, there have been others that have adopted a different perspective. This has resulted in the formation of a deeper and richer understanding by using an ethnographic and experimental approach (Reed and Monk, 2004).

An evaluation study that was considered useful for this research project was a framework that has been developed by Clegg et al (1997). The evaluation studies that they undertook focused upon the factors that obtained the implementation and development of technology and the role of

human and organizational factors, political, management and end-users in the performance of technology.

However, what can also be noted is that evaluation studies have been considered in the context of organizations and from our search within the IS, engineering and management literature, evaluation frameworks for the consideration fo society are minimal. This research also adopted similar approaches to previous evaluation research and attempted to identify how policies, technology, or social factors lead to the social inclusion or differences in the digital divide of silver surfers. Therefore, the main theoretical contribution of this research is that from the obtained results of this paper, such a framework can be applied to evaluate societal and household focused research.

3 RESEARCH APPROACH

A multi-method approach to data collection was used for this research. This was appropriate given the multi-faceted nature of the aims and the target sample group. We also began with the intention of examining only the UK (due to the assistance of a charity organization, Citizens Online) but we quickly learnt that there are factors to consider for the aim that examined the factors leading to online interaction. Consequently, this led to the research widening to include silver surfers end-users from both the categories of OECD and non-OECD countries. For this an online survey that contained close-ended, Likert scale questions was used, which were based on Rogers Diffusion of Innovations Theory (1995), the Model of Adoption of Technology in the Household, Theory of Planned Behaviour and the Decomposed Theory of Planned Behaviour (Choudrie and Dwivedi, 2006; Choudrie and Dwivedi, 2004). However, these questions were different in that we had also categorized items into what we considered to be technical and non-technical factors beforehand.

In terms of actual responses, a large majority of the respondents were from the UK. The large response rate was obtained due to the survey instrument being administered within countries where the English language is not dominant and indigenous languages are employed in daily lives. Therefore, although the peers who assisted with this research were co-operative and

enthusiastic about the research, but the sample population that provided responses was not willing to spend time completing the questionnaire and instead offered incomplete or blank responses. When asked about the reasons for this, peers commented that time was scarce or that people did not find the research of importance to them. Some did state that the questionnaire was long for them. This was something that some of the peers did also acknowledge but felt that the findings of this research would not be achievable without them. The analysis of the online survey was undertaken using SPSS.

The first part of the research involved a literature review. This was to inform the research team of the theoretical aspects and also the policies and definitions to use within this document. An extensive literature review of almost 80 published reports and archival documents was conducted. Since this research was evaluating the factors leading to a digital divide amongst silver surfers, interviews were selected. To determine the support programme provided by Citizens Online and Microsoft, a series of pre-determined questions, semi-structured interviews were conducted with individual representatives of Citizens Online. The qualitative data (interviews) were either telephone or face-to-face and recorded using a Dictaphone and hand written notes. The qualitative results were then analysed utilizing a grounded theory perspective.

3.1 Demographics of the Online Respondents

An online survey open to all respondents was posted using an application (Survey monkey) for 3 months. To prevent a low response rate the online survey was not restricted to only silver surfers. This obtained a good response rate of 650. Within this broad sample, 123 of the 650 respondents were 50 years and above. Henceforward, this particular age group will be referred to as "Silver Surfers". The age distribution of the latter group is as follows (Table 1):

Table 1: The Age Distribution of Silver Surfers

Age Band	Frequency
50 – 54 years old	49
55 – 64 years old	52
65 – 74 years old	19

75 - 85 years old	3
	Total: 123[6]

Within this particular age group, 22 respondents lived in non-OECD countries (mainly India and Malaysia) and 101 respondents live in OECD countries (mainly Britain).

When referring to *gender* distribution, there was some missing data. More specifically, 10 respondents refused to or failed to disclose their gender. This practically meant that the effective sample size was reduced to 113 with 70 respondents being male (62%) and 43 being female (38%).

The highest educational level category of the "Silver Surfers" appeared to be high (Table 2). The greater majority of this particular group held either the qualifications of a degree or postgraduate degree. Of the 113 respondents, 3 respondents did not provide any information on their educational attainment. This reduced our effective sample to 110 respondents. The final distribution of the 110 respondents is as shown.

Table 2: The Educational Level of Silver Surfers

Highest Educational Attainment	Frequency
GCSE (SPM)	5
A Levels (STPM)	2
GNVQ / Diploma (Diploma)	13
Degree	40
Postgraduate (Masters/PhD/DBA)	50
	Total: 110

The majority of the "Silver Surfers" appeared to be earning an annual labour income in the region of 50,000 Euros (Table 3). However, 12 respondents (out of 110) failed to provide any information on their income and as a result; the effective sample size was reduced to 98 respondents. Also, the missing values were deleted, which resulted in an effective sample size consisting of 98 respondents (Table 4). The new distributions are as follows:

Table 3: Income Levels of Silver Surfers

Income pa in Euros	Frequency	%
<10,000	1	1.02

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[6] Of the 650 responses 123 were applicable to the 50 years and above categories and are distributed as shown in the table.

10,000-19,000	10	10.20
20,000-29,000	5	5.10
30,000-39,000	8	8.16
40,000-49,000	12	12.24
50,000-59,000	12	12.24
60,000-69,000	6	6.12
70,000-79,000	12	12.24
80,000-89,000	7	7.14
90,000-99,000	4	4.08
100,000-109,000	12	12.24
110,000 ++	9	9.18
	Total: 98	

Table 4: Regions of Silver Surfers

Region	Frequency	%
Non-OECD	20	20.40
OECD	78	79.60
	Total: 98	

3.2 Supporting the Survey responses

To support the online survey findings we contacted some of the silver surfers located in the OECD and non-OECD regions. This was to ensure that not only a surface understanding resulting from the survey's results would be used. If a surface understanding would have occurred, a deeper and richer feel for the research would have been prevented. For example, form the survey it was learnt that silver surfers had an immense interest in music. However, from the undertaken interviews and e-mail exchanges it was learnt that downloading is something that silver surfers do not indulge in.

3.2.1 Interview Respondents Details

For the interviews there were 14 participants-8 female and 6 male (Table 5). All of them were retired, from the OECD countries and the 65-74 years old groups. The females were educationally qualified as follows: 2 degree holders and 6 GCSE qualified individuals. Of the male respondents, 2 were degree holders and 4 GCSE holders.

Table 5: Details regarding the Interview respondents

| Gender	Age	Education	Frequency	Region
Female	65-74 years old	GCSE (SPM)	6	OECD
Female	65-74 years old	Degree	2	OECD
Male	65-74 years old	GCSE (SPM)	4	OECD
Male	65-74 years old	Degree	2	OECD
Total			14	

4 FINDINGS OF THIS RESEARCH

4.1 Findings regarding Technical and Non-Technical Aspects

The question guiding this research was to determine what technical and non-technical factors lead to silver surfers' online interaction. For this, a small number of the survey questions asked respondents about the technical nature of broadband. However, as the participants ranged in terms of education qualifications we had to have simple, technically focused questions. For this purpose, we asked respondents about the types of broadband that they were using, which was answered to a large extent.

With reference to the technical characteristics of Broadband, those having Broadband at home seemed to have a preference for 'ADSL' followed by 'Cable' (see Figure 1). In non-OECD countries, the ADSL share is even more prominent as it is the preferred mode -73%.
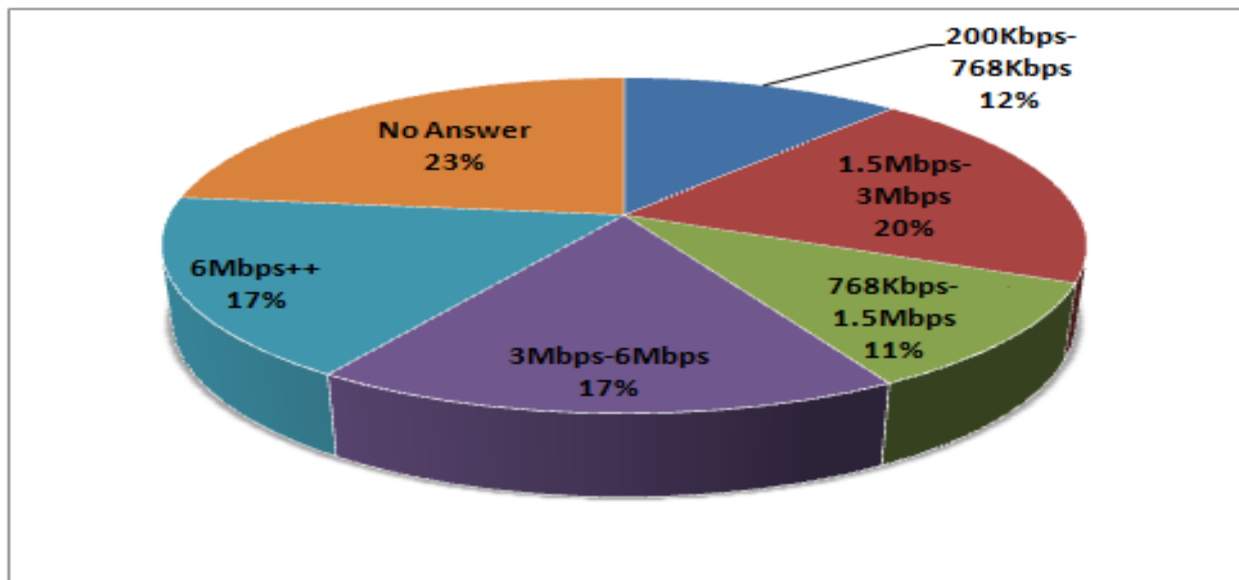
Figure 1: Types of Broadband in terms of Broadband Holders
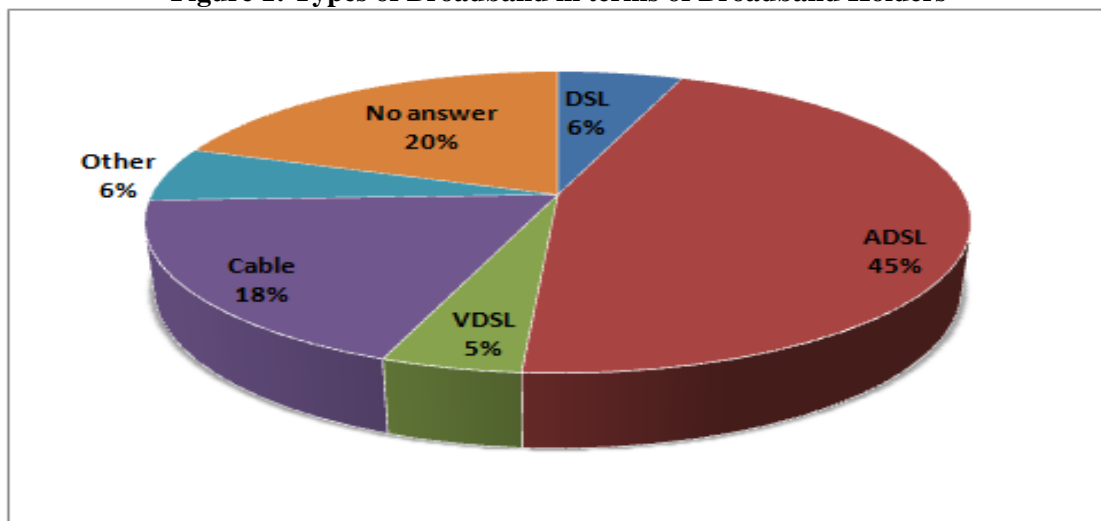
On the other hand, when identifying the Broadband speed, the distribution is more even with 1.5Mbps to 3Mbps being the most popular speed (see Figure 2). In the non-OECD countries, three quarters of the Broadband holders used 200Kbps to 768Kbps.

A point to note is that although respondents offered replies about the speed, many were not entirely confident about the true speed as they felt that they were obtaining a lesser speed than they were paying for.
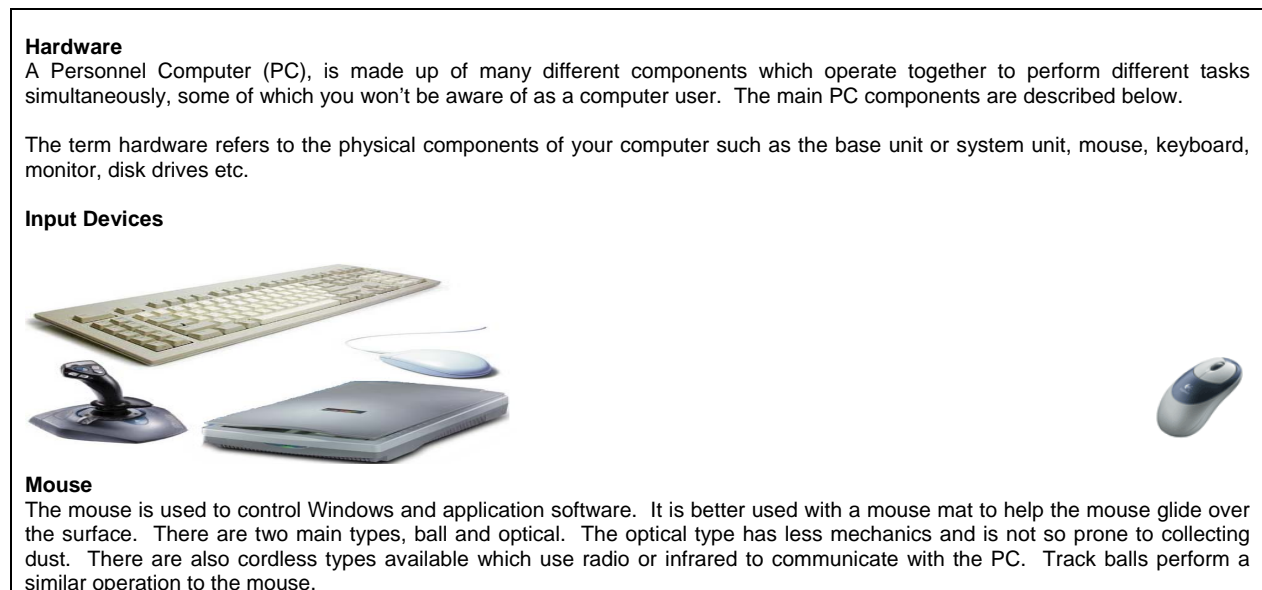
Figure 2: Broadband Holders, Speed of the Broadband

In the above two figures we found that respondents answered questions relating to the types of broadband that they have. However, it is only from our qualitative data that it became evident that when an individual is first introduced to a computer, the technical factors are not issues of importance.

From the interviews with the members of Citizens Online we learnt that when silver surfers first attend a taster session the information initially relayed to them refers to very basic items associated with the computer (e.g. the use of a mouse). Illustrations of the mouse are shown to the users and explanations are provided by the trainers (Figure 3). There are also handouts that the silver surfers take home and an illustration can be provided if needed. However, from these conversations and also from the findings of the online survey it can be learnt terms such as ADSL would not be appropriate when first introducing a silver surfer to the computer or Internet. The type of broadband that one has may be something that a silver surfer may never know. It depends upon one's own interest.

Figure 3: Handout explanations of a computer provided to silver surfers at Citizens Online

Hardware
A Personnel Computer (PC), is made up of many different components which operate together to perform different tasks simultaneously, some of which you won't be aware of as a computer user. The main PC components are described below.

The term hardware refers to the physical components of your computer such as the base unit or system unit, mouse, keyboard, monitor, disk drives etc.

Input Devices

Mouse
The mouse is used to control Windows and application software. It is better used with a mouse mat to help the mouse glide over the surface. There are two main types, ball and optical. The optical type has less mechanics and is not so prone to collecting dust. There are also cordless types available which use radio or infrared to communicate with the PC. Track balls perform a similar operation to the mouse.

5 ANALYSIS OF RESULTS

After examining the general characteristics of the respondents aged 50 and above, the factors that lead to Broadband adoption were examined. Since the purpose of this research is to evaluate the technical and non-technical factors, we used some of the categories that Clegg et al (1997) developed. These are itemised into the factors, technical (speed and accessibility to broadband) and social (how broadband is used). Following the identification of the categories the factors were categorised as follows:

1. Technical factors (Table 6).

2. Work –related factors (Table 7).

3. Household activities factors (Table 8)[7]

4. Entertainment Factors (Table 9)

Table 6: Technical Factors that Led to Broadband-*Percent*

	Faster Access	Always-On Access	Unmetered Access	Free Phone Line
1 Least Relevant		1.16	3.49	13.95
2		2.33	2.33	3.49
3		0.00	4.65	2.33
4	2.33	5.81	2.33	3.49
5 Most Relevant	22.09	15.12	11.63	1.16
No Answer	75.58	75.58	75.58	75.58

Faster access appeared to be a decisive factor encouraging people aged 50 and above to connect to the internet at home via Broadband (Table 6). Convenience such as always-on or unmetered access is quite important as well. Given the income of the occupational distribution, it is assumed that this particular group of people already had a landline; hence, the offer of a free landline offered by the Broadband providers is not a vital factor.

Table 7: Work-related Factors that Led to Broadband-*Percent*

	Work Related	Research	Home Business	Government Services	Communication
1 Least Relevant	2.33	1.16	9.30	5.81	1.16
2		3.49	1.16	4.65	1.16
3	4.65	1.16	2.33	2.33	4.65
4	4.65	4.65	4.65	4.65	9.30
5 Most Relevant	12.79	13.95	3.49	6.98	8.14
No Answer	75.58	75.58	79.07	75.58	75.58

Table 7 illustrates another set of factors that led to obtaining Broadband at home. Given the occupational distribution of this particular age group, it is not surprising that research activities were foremost when considering the factors that lead to the adoption of Broadband. Obviously,

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[7] Household activities are: online shopping, online banking and information search

the latter factor is closely correlated to work-related aspects, which comes second. This particular age group seems to take advantage of the on-line Government services but does not seem to use Broadband extensively for Home business. One explanation might be that not too many people work from home. Finally, communication was a very important social factor as the two top bands attracted a significant combined percentage. Communication in conjunction with certain technical aspects (see Table 8) appeared to be an essential combination that appealed to people aged 50 and above.

Communication is a vital aspect of Broadband that the older participants valued and this was confirmed by an e-mail exchange with one of the female participants: *"My only interest in computers was in e-mailing my daughter in Canada as timing telephone calls is so awkward. Most of my e-mails are actually to my son (in Birmingham) as we just carry on conversations. Also, since I got the scanner we can send each other articles from papers and magazines"* (**83 years, OECD**).

Research is also something that is important and another female participant confirmed in the undertaken interview is important and supported the obtained statistical results. However, the research that the participant undertook is related more to the participant's hobbies rather than being work related. *"I use the Internet for getting tutorials on everything from lawnmowers to sheet music. A recent thing that I have also started to do is to read the reviews and story of a movie before I go to view it. I have also used it to get a diet plan set up for my husband. I am using Tesco's diet programme and it appears to be working"* (**Female, 74, Music interest**).

Table 8: Household Factors that Led to Broadband-*Percent*

	Household Activities	Children' Homework
1 Least Relevant		11.63
2	4.65	1.16
3	6.98	1.16
4	2.33	2.33
5 Most Relevant	8.14	3.49
No Answer	77.91	80.23

Table 8 shows the impact exerted by household activities on the decision to use and obtain Broadband. Household activities appear to be quite important but do not attain to very high percentages compared to other activities shown above. Broadband is used for helping Children with their homework, but the latter usage is rather limited.

Entertainment factors such as On-line Games and Movies and/or Music do not seem to carry significant explanatory power as the majority of the respondents deem the entertainment factors the least relevant ones. Table 9 shows the corresponding distribution.

Downloading of music or films was an interesting question and one that we wanted to explore using interviews. *"Do you download music or movies?" was the question that we asked the participants.* One of the respondents, a male, 66, retired, living in Australia and a very keen musician said *"I will look for a site where I can buy music or stay without, but I will not download anything free. I do not want to be arrested for downloading any music or films or bring in viruses into my computer."* This was also confirmed by the retired, keen England based musician female: *"I buy sheet music from sites like play.com or just a trusted site. I will not just buy anything from anywhere. Some of these sites offer cheaper prices if we download and then I will, but only after paying."*

When another respondent who also used the Internet (but more for online banking purposes or communication purposes) was asked this question, the reply was: *"I would not know where to begin. My children will get what I want in terms of music. I do not want to get any viruses and also get anything that I do not really want. The Internet is alright for finding good natural medicines, online banking or e-mail. I do not want to go any far than that. The Internet is not always a good place."**An 80 years old female also affirmed this point during an interview.**

Table 9: Entertainment Factors that Led to Broadband-*Percent*

	On-Line Games	Movies & Music
1 Least Relevant	20.93	12.79
2	1.16	3.49

3	1.16	4.65
4		1.16
5 Most Relevant		2.33
No Answer	76.74	75.58

5.1 5.2 *Usage of Broadband*

This section attempts to identify how Broadband is being used by the "silver surfers" on a daily basis. To prevent confusion the usage patterns were divided into the following types: Note: When considering the usage of broadband, issues regarding speed and accessibility were not considered. For example, where do you undertake work or online matters regarding households. Do you undertake them at work?

1. Work-related (job) usage (Table 13).

2. Household usage (Table 14).

3. Entertainment usage (Table 15)

4. Personal usage (Table 16)[8].

Table 13 is directly related to <u>Table 7</u>. Recall that the latter Table outlined some possible factors that led to Broadband adoption by this particular age group. The "Silver Surfers" seem to use Broadband for research and the latter was cited as the most relevant reason that led to Broadband installation at home. Work related reasons were very important and this particular age group uses Broadband for this type of service. It was also mentioned as one of the most important factors that led to the group embracing Broadband (see Table 7). "Silver Surfers" do not seem to use Broadband extensively for Government services and/or home businesses. Besides which, they were not cited as the most crucial factors (see Table 7).

Table 13: Types of Broadband Usage (Work-Related)-*Percent*

	Work Related	Research	Home Business	Government Services
1 Least Relevant	2.33	1.16	8.14	4.65
2	1.16		4.65	4.65
3		3.49	1.16	1.16

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[8] Health and security

4	4.65	1.16	4.65	8.14
5 Most Relevant	15.12	18.60	4.65	4.65
No Answer	76.74	75.58	76.74	76.74

Table 14 is directly related to <u>Table 8.</u> A striking difference is that the "Silver Surfers" appear to use Broadband more extensively for childrens' homework than initially thought (see Table 8). Likewise household activities appear quite appealing for daily usage compared to what the "Silver Surfers" initially had in their mind (see Table 8).

Table 14: Types of Broadband Usage (Household)-*Percent*

	Household Activities	Children' Homework
1 Least Relevant	1.16	13.95
2	2.33	1.16
3	5.81	
4	5.81	1.16
5 Most Relevant	9.30	6.98
No Answer	75.58	76.74

Table 15 is directly related to <u>Table 9</u>. The former and the latter are highly correlated. It appears that (with few exceptions) that entertainment is neither a factor that will lead to Broadband adoption nor will it be a factor that will have "Silver Surfers" spending most of their time on.

Table 15: Types of Broadband Usages (Entertainment)-*Percent*

	On-Line Games	Movies & Music	Watch TV
1 Least Relevant	13.95	3.49	16.28
2	2.33	5.81	4.65
3	1.16	4.65	
4	3.49	8.14	1.16
5 Most Relevant	1.16	2.33	
No Answer	77.91	75.58	77.91

Finally there are some personal reasons that this particular age group might find useful. The respondents were asked to cite whether they used Broadband for security or health purposes.

Table 16 details their answers. As shown in Table 16the usage of such types of services does not appear to be very popular.

Table 16: Types of Broadband Usages (Personal)-*Percent*

	Security	Health
1 Least Relevant	17.44	11.63
2	1.16	2.33
3	1.16	1.16
4	1.16	5.81
5 Most Relevant	3.49	3.49
No Answer	75.58	75.58

IMPORTANT NOTE: All the tables and diagrams contain a significant proportion of "No Answers". The reason for this is to illustrate that although there are 86 people who have Broadband at home, with only one quarter of them making use of Broadband for daily activities. Within the remaining respondents it was found that although they have Broadband at home they do not appear to use it all. Some other members of the household are likely to use the services offered by the Broadband. This is an important and significant finding with implications for this research as it suggests that despite all the efforts of the government to provide training and education regarding broadband; it is not being adopted by the silver surfers. However, on a more positive note it suggests that technology is allowing families to spend more time with one another as was also suggested by a recent study (Kennedy et al, 2008). This suggests that there is a gap that offers a large incentive for governments and Internet Service Providers to fill.

5 CONCLUSIONS

This research is a continuum of previous research that was undertaken on the usage and adoption of broadband in the UK. The previous research did not emphasise the demographics and emphasise aspects of the digital divide. The prior research was based on Rogers Diffusion of Innovations Theory (1995), the Model of Adoption of Technology in the Household, Theory of Planned Behaviour and the Decomposed Theory of Planned Behaviour (Choudrie and Dwivedi, 2006; Choudrie and Dwivedi, 2004). However, what was learnt at the time was that the findings were not rich and quantitative in nature.

This research also used the previous theories but went further and provides an important qualitative and quantitative analysis of the degree of change with respect to the digital divide for the silver surfer category of internet use following various initiatives in respect of improving social inclusion. The implication of this research is that there is the offering of a new theory to the IS area that examines the digital divide issue with both a qualitative and quantitative aspect. However, this research had an emphasis on the UK context but is also applicable in developing countries provided that the survey instrument is translated into indigenous languages and a large sample population that is willing to co-operate is obtained, which is something that we are currently undertaking in a leading developing country.

From this initial small sample study we found that there is a certain amount of digital inclusion amongst people aged over 50, in this case those who are educated and middle to high income levels individuals. However, amongst these users there are some who are using broadband, although they are paying customers but with little take-up. Therefore, the digital divide remains a challenging, but nonetheless important issue. Some initial recommendations based on the current context are offered.

To overcome the 'digital divide' gap, there are ways being used to entice users and these were identified by refining and employing an evaluation method from the Information Systems arena. This led us to categorise our findings into technical and non-technical factors.

From the interviews with Citizens Online it was found that technical factors are not of much importance when first introducing and familiarizing silver surfer users to the internet and broadband. However, from the undertaken online survey, this research found that if users have an interest in technology then technical factors, such as speed and accessibility can be matters of consideration and as a starting point, the types of and speed of broadband can be considered. For an organization considering implementing technology, such a finding is particularly useful as it identifies that providing too much technical detail to a silver surfer at the outset is a risky proposition, which could lead to very few future customers.

The other category that we had was non-technical factors. These are fundamental and clearly need to be taken into consideration when encouraging silver surfers to be come online interactive. However, again, a factor that is most important is that of *interest* and this is something that not only our research has found but can be confirmed from previous research. The interest that we found in the instance of non-OECD and OECD countries foremost is that of researching for general information. This was followed by more specific work related activities, household activities as well as children's homework as determinant factors. A factor that was cited as very important is **communication**. Retired silver surfers and spending more time at home stated this as a crucial factor. Factors that are not of significant influence for silver surfers were viewed to be entertainment-downloading of music or films, the influence of peers (a close circle of friends and family), advertising and the availability and quality of service.

We would also like to state that although our findings are essentially based on an initial small scale sample and selected cases, they have demonstrated consistency with previous research and with findings from prior official published archival documents. This then lends weight to the overall trend of findings with regard to the digital inclusion related to silver surfers. For instance, it was identified by this research and also found by the Office of National Statistics (UK) that a large number of educated, middle to high income annual income level silver surfers appear to subscribe to broadband. More broadly, the multifaceted nature of this non-homogenous group and the non deterministic nature of the technology itself have been borne out. Future directions for this research include adopting a longitudinal study that describes how the silver surfers are adopting and using ICTs. Also, it was learnt that if such a study is better understood in a single context, rather than in multiple cases. Therefore, future efforts will involve employing a single, in-depth case study method.

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