

**Adoption, Use and Diffusion of Online Social  
Networks in the Older Population: a UK  
Perspective**

**A Thesis Submitted to the University of Hertfordshire in  
Partial Fullfilment of the Requirements for the Degree of  
Doctor of Philosophy**

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# Abstract

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Since households and businesses alike obtained the high-speed Internet service of broadband, the Internet has become integral to daily life in the 21st century. Advancements in information and Internet technology has led to the conception of novel internet-enabled applications such as, Online Social Networks (OSNs). Since the turn of the twenty first century fast-developing OSNs such as, Twitter and Facebook have become essential communication channels that people are using to develop their online personal and professional networks online. A recent phenomenon that is worrying countries around the globe is an ageing population. Due to recent improvements in the quality of life and advances in medicine, individuals are achieving longer life spans. Given the fact that older adults are also experiencing loneliness and depression, a recent solution to reduce this problem is the use of OSNs. Using these reasons as motivation, the aim of this research is to **identify and understand the factors driving or inhibiting the adoption, use and diffusion of OSNs within the older population (50+) in UK households**. In order to achieve this aim the Model of Online Social Networking (MOSN) was conceptually developed. Drawing upon the attitudinal, normative and control constructs from the leading Information Systems (IS) theories of the Diffusion of Innovations theory (DOI), Theory of Planned Behavior (TPB), Model of Adoption of Technology in Households (MATH) and the E-Services Adoption Model selected constructs were identified and formed. To achieve the aim, the conceptual framework (MOSN – Model of Online Social Networking) was initially empirically validated using primary data. A quantitative approach involving a small-scale online pilot survey (n=252) and a wide-scale online survey (n=1080) were used for this purpose. Findings revealed that that older individuals will adopt Internet technologies if technology-facilitating conditions such as ‘anytime access’ to Internet capable devices and a fast reliable Internet connection had significant positive effects on OSN intention. In terms of influences of peers, it was revealed that older individuals do consider and act upon the views of members in one’s social circle. Most significantly, the consequences of older adults efforts to preserve their own privacy enforces a vast majority of non-adopters from not taking part in the OSN uptake. In terms of diffusion it was found that messages about OSNs conveyed through media channels: TV, newspapers and magazines are having a negative impact on older adults intention to adopt OSNs. As little is known of the underlying factors effecting older individuals adoption or non-adoption and diffusion of OSNs this research contributes to an emerging body of knowledge through the identification of empirically supported factors found to be significantly influencing UK older adults decision making regarding OSN technology adoption. For those participants currently using OSNs an in-depth understanding of usage behavior is presented. Importantly this research addresses a gap in research relating to the household adoption of OSNs in older adults in the UK. Due to the limitations of time, finance and manpower research findings could not be nationally representative of the UK are only representative of a single group of society residing in an affluent area of the UK.

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**Keywords: Online Social Networks, Older Adults, Household Adoption, Diffusion, Usage, UK.**

## Dedication

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I Dedicate This Thesis To My Dearest Parents...

Mum and Dad.

Without you this accomplishment would have  
remained a dream.

Thank You.

# Acknowledgements

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Foremost, I would like to convey my deepest and infinite thanks and gratitude to my principle supervisor, Dr. J Choudrie, to whom I will ever remain grateful for her consistent and sincere support, expertise, advice and direction. She has given me the strength to overcome all obstacles and barriers a doctoral student faces. Your generosity and dedication to go beyond the call of duty will never be forgotten. I certainly know that I was blessed to have you as my principle supervisor. In truth your support and contribution cannot be expressed in a few words. I also acknowledge and deeply respect your vast and continued contribution to the field of IS research.

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## List of Abbreviations

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<b>DOI</b>	Diffusion of Innovation
<b>DTPB</b>	Decomposed Theory of Planned Behavior
<b>ICT</b>	Information Communication Technology
<b>IM</b>	Instant Messaging
<b>IS</b>	Information Systems
<b>IT</b>	Information Technology
<b>MATH</b>	Model of Adoption of Technology in the Household
<b>NRD</b>	Nationally Representative Dataset
<b>OSN</b>	Online Social Network
<b>PLS</b>	Partial Least Squares
<b>SEM</b>	Structural Equation Modeling
<b>TPB</b>	Theory of Planned Behavior
<b>TRA</b>	Theory of Reasoned Action
<b>WOM</b>	Word of Mouth

## Publications

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- **Vyas.A & Choudrie.C** (2013) "Online Social Networking in Older Individuals: A Study of Hertfordshire" *European Conference of Information Systems - ECIS 2013 Proceedings*
- **Choudrie.C, Vyas.A, Viros.T and Tsitsianis.N** (2013) "Comparing the Adopters and Non-Adopters of Online Social Networks: A UK perspective". *Hawaii International Conference of System Sciences - HICSS 2013 Proceeding*
- **Vyas.A and Choudrie.C** (2012) "Online Social Networking and Older Internet Users: A UK Perspective". *International Conference on Information Resource Management - Conf-IRM 2012 Proceedings*. Paper 46.

# Chapter 1

## Introduction

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### 1.1 Introduction

Every research study has a background to its origins and its purpose. This chapter fulfils that aim by initially identifying the research problem. This is then followed by section 1.3 that defines the research aims and objectives of this study. Section 1.4 outlines the scope of this research. Section 1.5 outlines a brief description of the research approach that was undertaken to achieve the aims of objectives of this research. Section 1.6 identifies and delineates research literature currently and recently in progress, which shares similar aims to the research undertaken within this dissertation. Every research study has to provide a contribution to several areas (academia, industry/practice & policymakers) that are described and explained in Section 1.7. Section 1.8 then provides a description of the structure of this dissertation. Section 1.10 provides a summary of the material covered within chapter 1.

### 1.2 Research Problem

Popularity and use of the Internet has and continues to increase worldwide. As a result various web innovations have emerged, established and are widely used on a daily basis (Moradabadi et al, 2012). These web innovations include innovative communication platforms such as, Electronic (e)-mail and Instant Messaging (IM). This ability to use the Internet and associated technologies not only for information seeking, but also communication, has massively increased the value of the Internet in peoples' daily lives.

With these web innovations the internet has become a means of conducting numerous everyday activities such as, seeking information, shopping, banking and paying domestic utilities, all of which can now be done effectively and often more cheaply on the Web (Zajicek, 2007). This success, has paved the way for a second generation of 'open-source, interactive and user controlled online applications', known as Online Social Networks (OSNs) (Constantinides & Fountain, 2008 p.232). An OSN is an online platform that provides services for a user to build a public profile, enables a user to share information and content with the chosen users or public, and supports the development and usage of social applications with which the user can interact and collaborate with chosen users (Datta et al, 2010). Popular current examples of OSNs include Twitter, Facebook, MySpace and LinkedIn. OSNs dynamic updating, creating and uploading of content and interaction with other user's

permits usage of the web, which has led to a new age of Web interaction (Zajicek, 2007). As such, socially, the Internet is rapidly becoming an increasingly significant means by which friends and family members can maintain contact with each other (Saunders, 2004). This has resulted in unprecedented OSN adoption numbers and popularity across the globe.

Using the example of the most famous OSN of current times. In October 2012, Facebook, the worlds dominating OSN reached more than one billion active monthly users with over 600 million users accessing Facebook via a mobile device (BBC, 2012). As a result one in every seven individuals in the world now uses OSNs (TNW, 2012). With OSNs popularity apparent within only the last five years an illustration of the OSN adoption phenomenon is proffered. Although the United States of America (U.S.A) holds the largest number of Facebook users, proportionally more of the population of Facebook users are located in the UK (53%) (Rose, 2013). This explains how the United Kingdom (UK) as a nation has embraced the OSN adoption phenomenon more profoundly than others around the globe. While UK OSN users span from ages 13 and above, it is also suggested that those aged 50+ hold the minority of all UK Facebook users (Yeates, 2013). This is not only in the case of Facebook. When investigating UK's age distribution of the 15 most popular OSNs the older population consistently held the proportional minority of OSN users (Pingdom, 2010).

Whilst UKs penetration and adoption rates of OSNs reveal diverse age related differences and may be slight of concern if placed within the 'larger picture' of society, technology adoption research of the older population is pertinent for the following reasons.

Firstly, the population of the UK is ageing in terms of both the increase in the average (median) age of the population and the increase in the number and proportion of older people. (ONS, 2012e). Population ageing is a result of improvements in mortality rates at all ages and continuing improvements in mortality rates at the oldest ages. This, combined with overall past declines in fertility rates is leading to an ageing population. As an example, it was found that although the fertility rate has been increasing in the UK since 2001, it is still below replacement level (ONS, 2012e). The UK population is ageing and is projected to continue ageing over the next few decades with the fastest population increases in the numbers of those aged 85 and over (ONS, 2012e). Ageing of the UK population is projected to continue. By 2035, it is projected that the median age will have risen to 42.2 years, an increase of 2.5 years in the quarter century after 2010 (ONS, 2012e). The older population are wealth holders and likely to be the decision makers in important industries around the globe. Therefore, as ageing population's increase, their adoption behaviour and trends are of importance.

Secondly, this investigation appreciates the value Internet use can bring to UK's ageing population. Digital technologies are viewed as important to facilitate daily tasks; thereby

enabling disadvantaged demographic group users, such as older adults, to remain independent for longer. By doing so, information, such as advanced and updated medical advances and technologies information, can be obtained and implemented such that their quality of life can be increased (Mitzner et al, 2010). Use of computers and OSNs also emphasise the biological and psychological perspectives of aging where declining physical and cognitive abilities impact computer use (Eilers, 1989). Internet use has been proven to contribute to the mental well-being of retired older adults (Cotton et al, 2012). This then suggests that research into the use and adoption of the internet within the older population is important and will lead to strong contribution to understanding older adults technology behaviour.

### **1.3 Research Aim, Objectives and Research Questions**

By considering the aforementioned reasoning and determining little awareness of the adoption and use of OSNs, more specifically within the older population, this research was motivated to seek further insight into these areas.

#### **Aim of this Research Study**

***The aim of this research was formed to be: To identify and understand the factors driving or inhibiting the adoption, use and diffusion of OSNs within the older population (50+) in UK households.***

As a rejoinder for readers, for the purposes of this research the term ‘older population’ and/or ‘older adults’ is defined as individuals aged 50 years old or above. Although the reference to the older population referring to individuals from the age of 50 and above is unusual, this has been derived from a recent and emerging theme of research examining older individuals technology use and adoption investigating participants of the 50+ age band (Cotton et al, 2012; Maier et al , 2011; Lee et al, 2011; Pan & Jordan-Marsh, 2010).

To achieve the previously defined research aims five objectives were formed, these are as follows:

1. A research approach using a theoretical and conceptual framework will be developed. This will be developed based upon the identification of and application of the theoretical factors that have been previously utilised in IS, household technology adoption and diffusion research. This will be achieved using a comprehensive literature review that will explain and understand a review of the theories and models that focus upon adoption, usage and diffusion of technologies. Then relevant

constructs from appropriate theories and models will be related in order to formulate a set of research hypotheses. A construct is an attribute or characteristic of behaviour that can be observed and measured, for example the construct intelligence can be measured using an IQ test (Gravetter & Wallnau, 2009). Constructs operated within this research will be elements of human behaviour and consideration that can be observed and measured in order to determine if they significantly explain older adults' behaviour towards OSN adoption, use or non-use.

2. In order to operationalise, test hypotheses and validate the conceptual and theoretical framework quantitative data will be analysed using Structural Equation Modelling (SEM), these results will determine accuracy of theorised research hypotheses. A quantitative approach will allow for analysis of research instrument 'quality control' in the form of verification and validation methods such as construct validation and measurement reliability.
3. In order to produce reliable research findings the research instruments developed will undergo a number of validation phases including; content validation, pre-testing, pilot testing, measurement, reliability and construct validation. Development of research instruments will be guided by an exploratory phase of research: a set of focus group interviews.
4. An online pilot survey questionnaire will be developed. Participants will include all age groups from 18+. This is necessary in order to confirm diverse OSN adoption, use and diffusion behaviour between young and old in addition to providing preliminary findings from the older population.
5. The outcomes of the pilot phase will be used to design the final online survey questionnaire containing the finalised construct measurements. The survey questionnaire will be randomly sampled households throughout Hertfordshire, in order to produce a large primary dataset of survey responses, which the research findings of this dissertation will be based upon. Findings will be calculated using Structural Equation Modelling (SEM).
6. A summative evaluation using secondary analysis from Nationally Representative Datasets (NRDs) will be undertaken to provide verification and validation of the final findings. Findings, discussions, and evaluation will assist in placing this research in terms of the overall past adoption, use and diffusion studies. This will then lead to the final chapter.

7. The final objective involves drawing conclusions based on the outcomes of the final research phase. As a result implications and contributions to practice, policy and academia will be provided, followed by limitations, recommendations and future directions.

## **Research Questions**

In order to retain focus and to address the research aim and objectives a set of research questions were also formed for this study, which are as follows:

*Research Question 1: What attitudinal, normative and control factors significantly influence an older individual to adopt or not adopt OSN?*

*Research Question 2: For those members of the older population who have partaken in OSN use, what purposes are OSNs being used for?*

*Research Questions 3 and 4: Are mass media channels influencing the diffusion of OSNs within the older population? If so, what is the effect they have on the older populations OSN adoption decision?*

## **1.4 Research Scope**

To inform the reader of the boundaries that this research extends to, the following descriptions are provided.

As this study is examining the adoption, use and diffusion of Facebook within the older population, a socio-technological approach was employed. Therefore, this research investigates both social and technical factors that effect adoption, diffusion and use of OSNs, but will not be developing a product of a technical nature. A further note made at this point is that, since the older population is of immense interest, much emphasis will be placed on the theoretical aspects surrounding age related digital divide.

The context in which behaviour will be examined is that of a household perspective. This research will not investigate OSNs in terms of business of commercial application and use. To ensure that a deep understanding is formed, a specific area of England was selected for this research. Therefore, specifically, the participants of the final phase of the study are limited to residents of the Hertfordshire area of the UK. By doing so, findings can be extrapolated to a given population e.g. adults aged 50 years or above living in an affluent area of a developed country.

Finally it must be stated the widely used terms ‘web 2.0’ and ‘social media’ encompass a group of technologies including blogs, OSNs, content communities, forums and content aggregators (Constantinedes & Fountain, 2008). However this research will be restricted to the investigation of OSNs only. More specifically as Facebook has been the most widely

adopted OSN in the UK and the first choice for those ‘ready to adopt’. Facebook will be the OSN of greatest interest.

## **1.5 Research Contributions**

Although previous research endeavours have examined the adoption and use of OSNs by the overall population and in a few cases the older population, this research offers a number of independent and unique contributions to policy makers, academia and practice. These contributions are offered in the following sections.

### **Academic Contributions**

Minimal studies are available examining OSN adoption specific to the older population in the UK; therefore this research contributes a unique perspective by producing findings to the adoption, use and diffusion from the perspective of a country which has proportionally adopted OSNs on a more substantial scale than countries from which leading OSNs were conceived and launched. This means that, in terms of older population, technology usage research the UK is particularly significant due to its ageing population and it being a leading country of Internet use in Europe.

This research then proffers significant and valuable theoretical contributions to academia in terms of older populations and internet use in UK. It also offers a rigorous review of literature pertinent to older individuals from a standpoint of OSN and technology adoption. The thesis is a central point from such research drawn from a wide-range of disciplines over the last decade.

This research also empirically and statistically validated novel constructs, which unarguably provide a deeper and clearer understanding of the reasons that the older population of the UK is adopting or rejecting OSNs. These novel constructs assemble to contribute towards theoretical development in the IS field and amalgamate to proffer the MOSN – Model of Online Social Networking and a set of appropriate new construct measurements to operationalise this theoretical conceptual model. There is of immense interest and research published within this area; but this research retains novelty due to the investigation of *household* OSN adoption in the UK, an area not previously examined on this scale.

### **Practical Contributions**

For practice, this research offers a contribution of an identification and understanding of the factors and issues that have led to *slow* adoption, use and diffusion of OSNs within the older population. In addition factors that have *driven* the adoption and use of OSNs. These identified drivers will be of immense value to current and future OSN developers such as

Facebook, Twitter and LinkedIn looking to penetrate the consumer market of the older UK population.

### **Contributions to Policy makers**

Government policymakers are also pursuing the development and implementation of OSNs for governmental purposes including G2C (Government to Citizen), G2B (Government to Business), G2G (Government to Government). Therefore, this research's findings can assist policymakers to identify and understand factors that can lead to success or failure of OSNs for such applications.

## **1.6 Research Approach**

Following a description of the research problem, research scope and benefits of this research outlined earlier on, this section discusses and explains the research approach pursued in this research study.

According to Miles and Huberman (1994) "A conceptual framework explains, either graphically or in narrative form diagrams are much preferred, the main things to be studied the key factors, constructs or variables and the presumed relationships among them". (p.18). Within this research factors, constructs and variables will include those applied from leading IS theories, which have empirically demonstrated within existing research their ability and value in assisting the explanation of individuals behaviour and technology adoption, diffusion and usage. Reichel & Ramey (1987) describe a conceptual framework as a 'set of broad ideas and principles taken from relevant fields of enquiry and used to structure a subsequent presentation'.

In order to operationalise the conceptualised theoretical framework, quantitative research methods will be used. With regards to the quantitative element of the methodology survey questionnaires were employed in both online and paper formats. A survey approach was deemed most suitable for this research study due to OSN research being still in its infancy. A quantitative approach will provide scientifically concrete findings opposed to a qualitative approach that involves subjective interpretation of only a relatively smaller sample of older adults. Justifications for the selection of the survey method include issues such as convenience, cost, time and accessibility (Gilbert, 2001). Also by employing the survey questionnaire method the research instrument and included measurements can be supported by statistical validation in addition to statistical tools such as Predictive Analytics Software (PASW) Statistics version 18 and Smart PLS being used to analyse collected data and test the framework.

## 1.7 Dissertation Outline

Having outlined the introductory parts of this research, this section provides a textual overview of this research study. This dissertation comprises seven chapters. A brief description of each chapter is provided below (table.1). The structure of this dissertation is illustrated in flow diagram Figure 1.1.

<b>Table.1.1 Thesis Chapter Descriptions</b>	
<b>Chapter 1</b>	Chapter one introduces the research problem of this research study. The research aims and questions are then defined. This is followed by the research scope describing the boundaries of this research. A description of the undertaken research approach employed in order to address defined research questions and aims is then presented. An overview and diagrammatic illustration of the entire thesis research process is then provided for a reader's perusal.
<b>Chapter 2</b>	Begins with the identification and review of older adults, OSN, technology adoption and digital divide literature which is viewed to be pertinent to this research. This includes, reviews and assessments of previous technology adoption models and theories and constructs that have been previously used to investigate Technology adoption, use and diffusion. The final part of chapter 2 pertains to the development of a conceptual theoretical framework that was developed using selected theories and assembled according to developed hypotheses.
<b>Chapter 3</b>	Chapter 3 addresses all aspects of development and consideration that were necessary for the applied research methodology of this research study. The reasoning for the selection of exploratory, pilot and final phases is also provided. Further, this chapter describes the selection of data analysis and validations techniques employed in this research.
<b>Chapter 4</b>	Describes the analysis and findings of a qualitative phase of exploratory research involving focus group interviews. The analysis and findings of this quantitative pilot phase are then provided. Having undertaken these two phases the development of a set of construct measurements for empirically validating MOSN is then provided.
<b>Chapter 5</b>	This chapter presents the main research findings that result from a wide scale survey questionnaire that was conducted in Hertfordshire in terms of the adoption, diffusion and usage of OSNs. The final empirically validated MOSN model is then presented in terms of this large study. The research hypotheses are also tested and discussed followed by the key research findings in this chapter.
<b>Chapter 6</b>	Provides detailed discussion of the research findings from a standpoint of existing findings identified within the literature review (chapter 2). Chapter 6 also presents the outcomes of a summative evaluation of the research conducted using a comparative analysis of research findings against analysis of findings derived using nationally representative datasets.
<b>Chapter 7</b>	Summarises the research findings and provides research contributions and implications of this research in terms of the theory, policy and practice. This chapter also discusses research limitations, recommendations and presents future directions in the area of older adults' technology adoption and OSN research.

### 1.8 Thesis Structure Flow Diagram

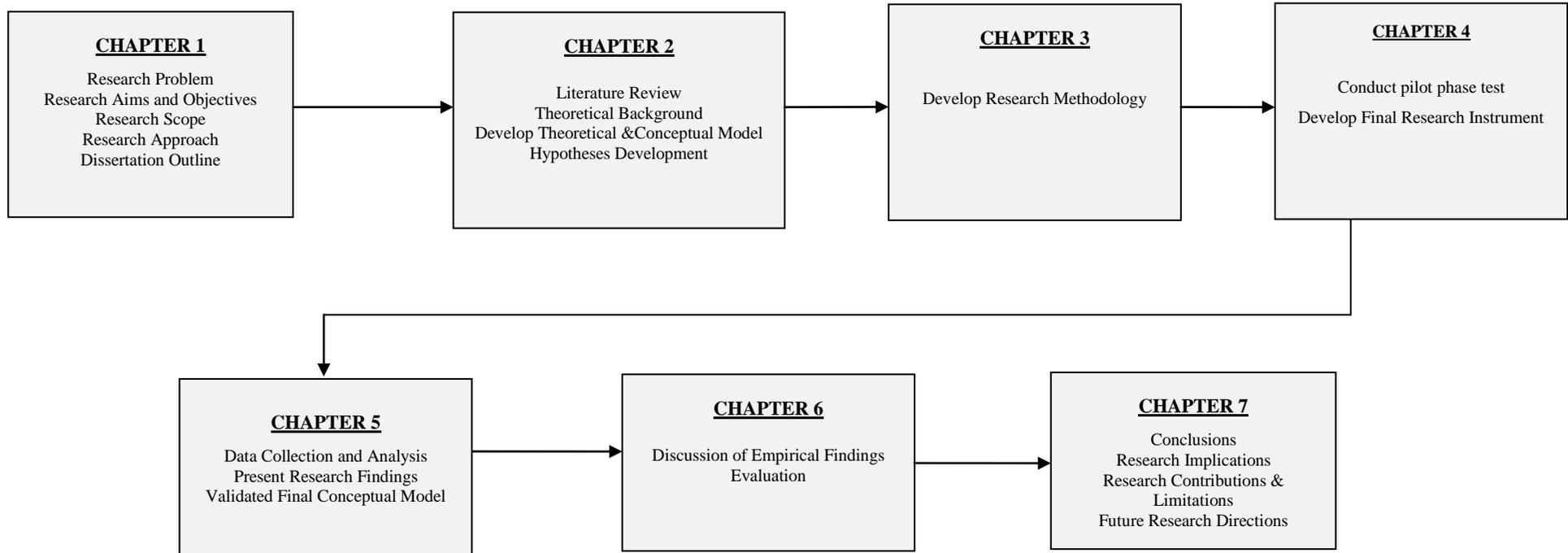


Figure 1.1 Thesis Structure Flow Diagram

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## **1.9 Chapter 1 Summary**

This chapter provided an introduction to this research with a clear explanation of the identified research problem. This is followed by the aims, objectives, scope and definitions of this research. These steps were essential to identify adoption and non-adoption factors, usage behaviour and examine diffusion of OSNs within UKs older population (UK residents over the age of 50 years old). The research approach was then summarised that will be undertaken to achieve the research aims. Finally, a brief description and outline of the entire dissertation is offered in order for the reader to understand the structure of this doctoral dissertation.

Having introduced the research problem and main emphasis of this study, the next chapter will review literature that is anticipated to be in close proximity to that of the research undertaken within this dissertation. A review of existing theories and models that have been selected for the construction of a theoretical conceptual framework is then provided. An illustration, description and development of the theoretical conceptual framework is then presented in addition to hypotheses development.

# Chapter 2

## Literature Review & Conceptual Theoretical Development

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### 2.1 Introduction

Having provided the introduction and defined the aims objectives and scope of this research, chapter 2 will provide definitions, origin and background for the key elements combined in this thesis. A review of existing literature that focuses on technology adoption, usage and diffusion issues namely those involving OSNs, household technology adoption, the digital divide and older adults will be reviewed. Having undertaken this literature review perspectives regarding approaches, theories and models that have been successfully applied for such research will be revealed. This information will guide the selection of technology adoption theories and models that will be used to formulate and design a conceptual and theoretical framework that will lead this research.

Development and description of the conceived conceptual and theoretical framework will be provided along with definitions and hypotheses development. In order to conduct a rigorous review of existing literature the review was separated into categories therefore the structure of the chapter is as follows. Section 2.2 provides background and definitions of key terms used in this research. Section 2.3 reviews appropriate literature concerned with the examination of OSN usage and adoption. Section 2.4 reviews existing literature that examining context specific interactions of ICTs and older adults. Section 2.5 reviews literature that examines the adoption of technologies specifically within the household setting. Having obtained the views and perspectives of existing research, section 2.6 identifies and details the theories and models that have been chosen to form the proposed conceptual and theoretical framework. With the theoretical models and factors chosen section 2.7 develops these factors into the theoretical and conceptual framework, which will be used to examine the research aims and objectives. Section 2.8 summarizes the outcomes of chapter 2.

### 2.2 Research Definitions

The following section will define the terminology of this research dissertation. As defined within chapter 1, the scope of this research was strictly focused to investigating the adoption and use of OSNs, with a small focus also placed on the diffusion of OSNs in the older population of the UK. Particularly, the context of this research is limited to the consumer household level. These terms collectively outline this research and are defined and explained in the following sections.

## Technology

The term ‘technology’ is a very broad term, varying in each discipline. Betz (1998) defines technology as “the knowledge of the manipulation of nature for human purposes” (p.9). Within the realm of digital and electrical technologies Joerges (1988) best describes technology as “artificial things, and more practically modern machines: artificial things that require engineering knowledge for their design and production and perform large amount of operations by themselves”. However OSNs belong the technology group of Web 2.0, which in turn are described as ICTs. Therefore the definition of ICTs is most appropriate in this case; ‘In general ICT refers to the permanent accessibility, availability, reliability, and efficiency of computers, phones and the various networks that link them’ (Detschew, 2008 p.28). ‘ICT is general term that describes any technology that helps produce, manipulate, store, communicate, and/or disseminate information’ (Dixit & Gupta, 2010 p.3).

## Online Social Networks (OSNs)

Having explained the term technology, the technology of focus in this research is Online Social Networks, which is referred to as OSNs from this point forward. OSNs are one of five Internet web-based technologies known as Web 2.0 technologies (blogs, OSNs, content communities, forums and content aggregators). This definition is viewed to be important as it defines the underpinning principles of OSNs. *‘Web 2.0 is a collection of open-source, interactive and user- controlled online applications expanding the experiences, knowledge and market power of the users as participants in business and social processes. Web 2.0 applications support the creation of informal users’ networks facilitating the flow of ideas and knowledge by allowing the efficient generation, dissemination, sharing and editing/refining of informational content’* (Constantinedes & Fountain, 2008 p.232).

OSNs are of interest to this research due to their rapid dissemination and widespread application around the world. For instance, the Social media platform Facebook, lets people stay in touch with each other more easily, as well as reconnect with people they may have once known but have lost contact with. These sites also make it easy to connect with people who share interests with you, even if you are not located very near each other physically. OSNs can also be used to organize events quickly and easily and on very short notice.

Social networking is also becoming increasingly important in business. As more and more people are on these networks, businesses are discovering that they provide a very powerful marketing platform that can spread news about their products or promotions through word of mouth, without as much expense.

For this research, it was important to define or describe OSNs. That is, because OSNs are of interest to this research, and yet there is variation as to the description and definition of OSNs. Of the various definitions the most widely employed and accepted are as follows: ‘When a computer network connects

people or organizations, it is a social network. Just as a computer network is a set of machines connected by a set of cables, a social network is a set of people (or organizations or other social entities) connected by a set of social relationships, such as friendship, co-working or information exchange' (Garton et al, 1997 p.1). According to Wellman (1996) 'When a computer networks link people as well as machines they become social networks' (p.1). An OSN is 'an online platform that (1) provides services for a user to build a public profile and to *explicitly* declare the connection between his or her profile with those of the other users; (2) enables a user to share information and content with the chosen users or public; and (3) supports the development and usage of social applications with which the user can interact and collaborate with both friends and strangers' (Datta et al, 2010 p.349). Constantinides & Fountain (2008) describe OSNs as 'Applications allowing users to build personal websites accessible to other users for exchange of personal content and communication' (p.233). Agosto & Abbas (2011) state that 'an online social network is a digital space that enables users to register, create personal profiles, select who to "friend" within the community, and communicate with and share content with online friends' (p. xvii).

Of all Web 2.0 online applications OSNs have undoubtedly experienced the most rapid and extensive rates and numbers of global adoption and usage. The most popular OSNs in the UK are MySpace, LinkedIn, Twitter, Bebo, Badoo and Facebook, although it is Facebook that has emerged to be the globally the most widely adopted and use OSN. Therefore it is Datta et al (2010) definition of OSNs that is most applicable as it accurately describes these popular platforms.

### **Understanding Households**

Technology adoption, diffusion and usage research has been undertaken in a number of contexts namely: Organisations and workplaces (Harindranath et al, 2008; Forman, 2005; Thanaporn, 2009), educational environments (Fabry & Higgs, 1997; Salaberry, 2001; Collis & Moonen, 2001) and the household setting (Venkatesh et al, 1985; Venkatesh & Brown, 2001; Venkatesh, 2008; Brown et al, 2008). Households have become an important venue for technology adoption research, with limited existing research understanding technology adoption in the household (Brown & Venkatesh, 2005). The identified OSN adoption phenomena has occurred in the household for personal use as confirmed by Ofcom who revealed that half of UK households use OSNs (Ofcom, 2012). It is therefore adoption, use and diffusion in the *household* which will be investigated in this research.

In the UK there were 26.4 million households in 2012: 29% consisted of only one person and almost 20% consisted of four or more people (ONS, 2012c). Further, 21 million households in Great Britain (80%) have Internet access (ONS, 2012d). This allows for the potential of widespread household use of OSNs in the UK.

Household concepts and definitions are seldom neutral and may be distorted by the inherent bias in researchers and planners. For this reason it is very important to determine a locally appropriate household definition. Before determining criteria for household participation in this research, a number of household definitions were sought.

Ohls & Beebout (1993) provide the following dated description of a household; 'a typical household consists of a group of related individuals who eat most of their meals together' (p.23). Kirby (2000) posits 'a household is therefore a *physical entity* which might contain a number of different social arrangements – some of which might be considered to be families while others might not' (p.45). Narayan-Parker (2005) defines that 'the basic characteristic of the household is that its members co-reside under one roof. The formal definition (which varies from household to household) lists these members and specifies how they are connected – by blood, marriage, adoption, employment (for example, a servant), social ties (such as friends living together), or mere acquaintance (such a fellow residents of a lodging household).' (p.104). Haviland et al (2010) defines a household as 'the basic residential unit where economic production, consumption, inheritance, child rearing and shelter are organised and carried out' (p.240).

From these available definitions the Haviland et al (2010) definition is viewed to be most applicable as it describes the criteria of residential households in the UK, which were selected to participate in this research.

### **Older Population & Older Adults**

*“Older people are those individuals aged 50 years and older who, by virtue of their unique position in and experience of historical time, did not experience the Internet during their formative adult life”* (Hill et al, 2008 p.249).

In the United Kingdom the population of the UK aged 65 and over was 10.4 million (16 per cent of the UK population) in 2011, 9.4 million in 2001 (16 per cent) and 2.2 million in 1911 (5 per cent) (ONS, 2012a). In terms of households, in the UK on census day was 26.4 million with the number of people living in households in the UK on census day being 62.1 million (ONS, 2012b). In terms of household size, in the UK there were 2.3 people per household, compared to 2.4 in 2001. The General Household survey (GHS) that examined the trend of housing from 1971 to 2011 found that the proportion of older people, aged 75 and over, living alone has remained similar at approximately 50% (ONS, 2013).

Further examination of older adults and internet accessibility provided interesting insights (refer to Table below). Of the category adults aged 65 and above, only 36 per cent had an internet connection. Comparatively, households that had adults ranging between the ages of 16 and 64, 76 per cent had an internet connection.

<b>Table 2.1 Household Internet Access by Household Composition, 2012.</b>				
<b>Categories</b>	<b>Have Internet Access</b>		<b>No internet access</b>	
	<b>Percentage</b>	<b>Millions</b>	<b>Percentage</b>	<b>Millions</b>
1 adult aged 16 to 64	76	3.7	24	1.1
1 adult aged 65 +	36	1.2	64	2.2
2 adults aged 16 to 64	93	4.6	7	0.3
2 adults, 1 at least aged 65 or more	69	2.3	31	0.1
3 adults all ages	95	2.8	5	0.1
Households with children	95	6.4	5	0.3
All Households	80	21.0	20	5.2

Source: ONS (2012).

Whilst the previous information relates to the factual data on older adults and the UK, research on older adults and internet use reveals a wide variation in topics, including; behaviors of senior adults in information search, attitude towards the internet, internet use for personal and health issues and cognitive constraints of seniors in internet use (Zheng et al, 2012).

Participation of the ‘older population’ is required in order to investigate the identified OSN phenomenon. However, to outline the scope of this research, the older population must be defined and clear age parameters must be determined. Therefore existing research investigating ‘older adults’ was consulted. When investigating older adults’ previous literature on older adults and internet use, Cotton et al (2012) examined Internet use and depression, it was found there was a positive contribution of internet use and older adults (50+) mental well- being. Maier et al (2011) also examined the adopters and non-adopters of OSNs using MATH (*see* p.53) (Venkatesh and Brown, 2001) and found the MATH model being suitable for examining elderly people. Further, hedonic outcomes (fun) had no impact on intentions towards OSN use (Maier et al, 2011). Lee et al (2011) examined computers and Internet use by older adults finding that such users might face diverse barriers to technology at different age stages. These findings form part of the platform which motivated this research as this confirms there are behavioral changes in technology use according to age. Pan & Jordan-Marsh (2010) investigated Internet adoption using an extension of TAM. Perceived Ease of Use (PEU) on internet intention was found to be stronger on older seniors compared to younger seniors. These older adults’ studies were viewed to be most similar to the scope of

the proposed research. From those studies the selected sample population of participants ranged from the age of 50 years or above.

Using this as reasoning the older population being investigated will be '*individuals aged 50 years old or above*'. Added reasons for selecting the older adult population is that this group of society are also wealth creators and holders; hence suggesting that it is thus supporting their importance as a group to investigate. Previously discussed research provides platform of knowledge which confirms there are variations and differences in older adults' use of technology which required further exploratory and confirmatory research such as that offered within this thesis.

### **The Digital Divide**

This study also emphasizes various groups of society, which also implies that the digital divide also needs to be considered. A variety of ways have been used to define and characterise the divisions between individuals, societal groups and nations in terms of their associations with ICTs and digital technologies, such characterisation is widely referred to as 'the digital divide' (Berleur et al, 2010). The following definitions are of those widely agreed to capture the criteria of the digital divide.

Curwen & Whalley (2010) describe the digital divide as the divide between 'those who have access to a particular technology and those who do not' (p.210). Hwang (2006) posits that "the digital divide (or the global digital divide) is generally referred to as the 'uneven diffusion' or 'gap' or 'disparities' between different socio-economic levels or across countries or between developed and developing nations in terms of 'access' and 'use (usage)' in ICTs" (P.19). Anheier & Toepler (2010) adds that 'typically this means Internet access, but the term has been broadened to include other information and communications technologies (ICTs) (p.605).

The digital divide often referred to as the "information gap" or "information inequality" has generated a great amount of policy and academic discussion, various researchers and policymakers often consider the digital divide in variety of contexts, including socio-economic status, gender, age, race, region or geography (Leigh, 2011).

One significant component of the digital divide is age (Klotz, 2004). Having lived many years in world without the internet older adults tend to perceive the internet as a 'non-essential'. In addition age related problems such as declining eyesight and arthritis offer challenges to viewing monitors and coordinating mouse interaction – such issues result in a significant age-based divide between young and old with internet use declining with every advancing age group (Klotz, 2004).

This intriguing age-related notion associated with the digital divide is also described as ‘digital natives’ Vs ‘digital immigrants’ (Sofka et al, 2012). Digital natives refer to those born after 1980 when social digital technologies emerged online, digital natives have access to networked digital technologies and possess the skills to use them (Palfrey & Gasser, 2008). Contrastingly a digital immigrant is a person brought up before the widespread use of digital technologies (Palfrey & Gasser, 2008).

As explained earlier, this research is focused on UK, but for this research, reference is more upon England. Also, there is reference to older adults and currently there is also immense research upon health related aspects of the internet, advancements in technology and its impact on older adults. This research will not be examining that. The scope of this research is limited to providing a social sciences perspective to adoption, use and diffusion related research. Further, technical issues such as, webpage usability and mobile products and devices are excluded from this research.

So far, the main terminologies surrounding this research is provided. There is also a theoretical conceptual framework applied to this research that encompassed several classic Information Systems theories. The first of the theories is Diffusion. The next section provides more of an understanding of diffusion employed by this research. This is then followed by a description and understanding of technology adoption and usage research.

### **Technology Diffusion:**

The first of the three aforementioned IS research streams applied within this research dissertation is that of technology diffusion. Information technology has advanced so rapidly and its impacts have become so pervasive that it is necessary to investigate issues and challenges arising from its diffusion (Tan et al, 1999).

When considering technology diffusion, there is a wide variation to the definitions. Stoneman (1976) describes technology diffusion as ‘the process from the start to the completion of the change in technique process’ (p.6). Hall & Khan (2002) describe diffusion as ‘the process by which something new spreads throughout a population’ (p.1). Employing an organisational perspective, Stair & Renolds (2010) define technology diffusion as a measure of how widely technology is spread throughout an organisation’ (p.57). Robertson & Jacobson (2011) define technology diffusion as ‘the spread of knowledge from an original source or sources to one or more recipients (p.1). A more widely and more commonly applied definition of diffusion is drawn from Everett Rogers (2003). Rogers (2003) defines diffusion as “the process during which an innovation is communicated among members of social system over time” (Rogers, 1995).

Diffusion of technology research has been conducted since the late 1950s. Griliches (1957) conducted cross-country or cross-industry studies of technology diffusion with the aim to assess how diffusion speed or timing of a particular technology co-varies with independent factors. Investigations of factors of determining how rapidly the use of a new technique spreads from one organisation to another were conducted by Mansfield (1961). More recently Hargittai (1999) argued that there might exist factors that influence Internet diffusion; including economic indicators, human capital, the legal environment, and existing technologies within a country. Beilock & Dimitrova (2003) developed an exploratory model in order to assess inter-country Internet diffusion where income and infrastructure were found to have significant differences across European nations. A more applicable research study to this one is by Choudrie & Dwivedi (2004) and Choudrie et al (2007) who investigated Internet and e-services diffusion employing principles of diffusion theory. What were their conclusions about this?

Due to the previous successful application in the realm of Internet and e-service technology diffusion research it was concluded that Rogers (2003) Diffusion of Innovations Theory (DOI) best describes technology diffusion for the purposes of this research. Rogers (2003) explains that the process of diffusion typically consists of four main elements: an innovation, communication & communication channels, time, and a social system (Rogers, 1983). The innovation can be defined as “an idea, practice, or object that is perceived as new by an individual” (Rogers, 1995) within this research the innovation are OSNs.

Communication ‘is the process by which participants create and share information within one another, diffusion is a more specific form of communication whereby the message content is exchanged is concerned with a new idea’ (Rogers, 2003). Communication channels are the means by which messages get transmitted from one individual to another. Rogers (2003) suggests ‘mass media channels’ such as radio, television and newspapers are communication channels that usually provide the most rapid and efficient means of informing potential adopters about the existence of an innovation, in this case OSNs. Consequently to examine the identified OSN phenomena using DOI mass media channels of TV, newspaper, Internet, radio Word of Mouth (W.O.M) and magazines were examined.

Time is a significant element of the diffusion process. Much of other behavioral science research is timeless in the sense that the time dimension is not accounted for (Rogers, 2003). Time will be investigated within this research with interest for the time between when a participant obtains knowledge of OSNs to the point in time when a participant makes the decision to adopt or reject the use of OSNs.

The social system is defined by Rogers (2003, p37) as “a set of interrelated parts that are engaged in joint problem solving to achieve a common goal”. Of most importance it is the social and communication structure of system which facilitates or impedes the diffusion of innovations in the system (Rogers, 2003).

Interpreting and applying these definitions with respect to the aims and objectives of this research focus will be placed upon mass communication channels. How is information about OSNs being communicated through social systems of over 50s in the UK?

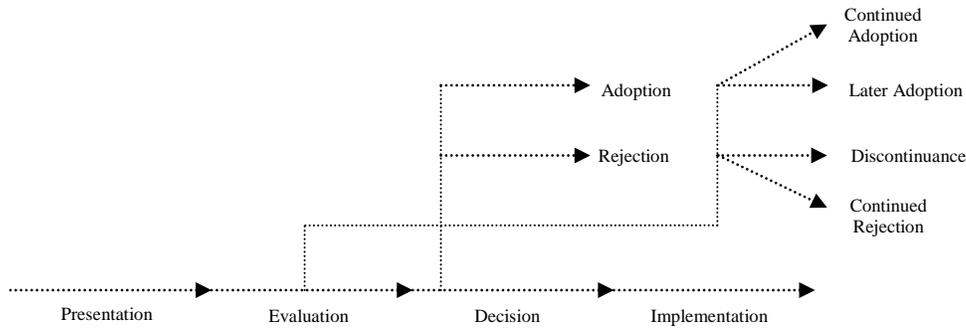
Interpreting and applying these definitions with respect to the aims and objectives of this research focus will be placed upon mass communication channels. Therefore the diffusion element of this research will relate to the influence (if any) of information or messages conveyed about OSNs through mass media channels on older adults OSN adoption decision.

### **Technology adoption:**

Whilst diffusion considers the spread of technology, acceptance of a technology by individuals is also important. This is aptly covered by adoption theories. Within IS, the adoption of new information technologies by their intended users persists an important issue for research and practitioners of information systems (Agarwal & Prasad, 1998; Dillon & Morris, 1996). Understanding technology adoption is critical in order that methods for designing, evaluating, and predicting how users will respond to new technology can be developed (Dillon & Morris, 1996). Therefore in addition to understanding technology diffusion, technology adoption will also be investigated.

There are many definitions of technology adoption available including “the process through which organisations or individuals decide to make full use of an innovation in their daily businesses” (Rogers, 1983). Hall & Khan (2002) define technology adoption as ‘the choice to acquire and use a new invention or innovation’ (p.1). Dillon & Morris (1996) describe technology acceptance as an outcome variable in a psychological process a user will go through when making decisions about a technology. Hultman (2004) defines technology adoption as ‘as a collective term of the process in which a firm makes a decision to adopt or to not adopt a specific technology’ (p.2). Morris (1996) describes technology acceptance as the extent to which individual users will use a given system when its usage is voluntary or discretionary.

From these definitions it can be understood that technology adoption refers to an individual’s decision making to adopt and use a technology with some degree of regularity, or reject, and decide not use a technology. This research employs Rogers (1983) definition as it best describes technology adoption from the viewpoint of existing research in the research in the field. Figure 2.1 provides an illustration of the key elements within the decision making process of technology adoption.



**Figure 2.1. Adoption Process (Hultman, 2004 p.3)**

Hultman (2004) states that ‘the phenomenon of technology adoption as a subject of scholarly interest seems to be more relevant if it also included non-adoption’ (p.2). This is considered to be a valid point, as non-adoption of OSNs by older adults is the underlying research phenomena. Therefore, factors explaining both adoption and non-adoption will be investigated. These factors will relate to the characteristics of OSNs, perceived functionality of OSNs and factors within the household, which are required to facilitate the access and use of OSNs.

### **Technology Usage**

With the emergence of new technologies, new behavior towards these technologies is brought about. In addition or exclusion to technology adoption and diffusion existing studies have also examined adopters/users behaviour regarding the use of the Information Technologies (ITs) and Information Communication Technologies (ICTs) (White et al , 2002; Selwyn, 2004; Carpenter, 2007; Haridranath, 2008). This scope of individual’s usage behaviour is also prevalent within OSN research, furthering an understanding OSN adopters behaviour (Subrahmanyam et al, 2008, Christofides et al, 2009; Kapidou et al, 2011; Hew, 2011; Bicen & Cavus, 2012). Such existing studies have demonstrated the value of understanding users behaviour, as this understanding allows a deeper understanding of purposes an individual has become an adopter of an a given technology. Once an understanding of OSN diffusion and identification of factors influencing OSN adoption is determined, technology usage will then be examined. Technology usage will focus on those participants who at the time of this study had already adopted OSNs. Enquiries will be made as to the frequency of use, length of membership, the period time OSNs are used for, which activities are undertaken when using OSNs and the devices used to access OSNs.

## 2.3 Literature Review

A literature review is ‘the selection of available documents (both published and unpublished) on the topic, which information, ideas, data and evidence written from a particular standpoint to fulfill certain aims or express certain views on the nature of the topic and how it is to be investigated, and the effective evaluation of these documents in relation to research being proposed’. (Hart, 1998 p13). A literature review should aim to address the following questions. What are the key theories concepts and ideas? What are the main questions and problems that have been addressed to date? What are the origins and definitions of the topic? These questions will be addressed within this literature review.

Using rigorous searches of pertinent articles in academic journals, conferences publications and books a literature review was undertaken. This process led to over 250 articles (see appendix 2-1) being identified. Of these articles a number were used to guide and inform the direction and conceptualization of this research. The literature review was then compiled and organized into four elements, which are: The technology of interest (OSNs), the demographics of interest (50+), the context (households) and the motivation for this research (digital divide). A summary then follows providing discussion of the literature reviewed.

### 2.3.1 Online Social Networks (OSNs)

Literature regarding social media and web 2.0 began to emerge in early in 2005 with studies both theoretical and empirical (*see* Herring et al, 2005; Du & Wagner, 2006). Proceeding articles examined where current and future research issues within social computing and technology may lie, providing value to research communities (Parameswaran & Whinston, 2007a; 2007b).

As OSNs widespread use became rapid and researchers identified implications of this new technological phenomena. Articles surrounding topics of interest specific to OSNs began to emerge within the research domain, with motivations to understand individual’s behavior and attitudes towards OSNs pursued through hypotheses of trust and privacy (Dwyer et al, 2007; Krishnamurthey & Willis, 2008; Fogel & Nehmed, 2009).

As younger age groups, particularly university students were those responsible for the massive and rapid adoption of OSNs, students became and have remained to be the main type of sample population that is of immense interest to researchers. Dogruer et al (2011) identified that for participating university students, factors relating to passing time, information seeking, personal status and entertainment were found to be the motivations for Facebook use. Using both American and Korean students were Kim et al (2011) who found that the factors of seeking friends, social support, entertainment, information, and convenience tended to be drivers of OSN adoption. Moradabadi et al (2012) found information sharing, freedom of

communication, free flow of information, control of information, principles of equality and the requirement for information and entertainment, were identified as the motivations for Facebook use by Iranian students. Tosun (2012) determined that the primary motive for university students Facebook use was to maintain long-distance relationships. This was followed by game- playing/entertainment, active forms of photo-related activities, organizing social activities, passive observations, establishing new friendships, and initiating and/or terminating romantic relationships. A diverse perspective by taking into account the demographic factors but in terms of gender was adopted by Muscanell & Guadagno (2012). In their gender-specific study using 238 undergraduate students; males reported using OSNs for forming new relationships while women reported using them more for relationship maintenance.

Studies using students have also been important to understand the usage behavior in terms of adoption and duration spent on OSNs. Pempek et al (2009) found that college students as part of their daily routine used Facebook for approximately 30 minutes throughout the day; hence confirming that for the younger population Facebook has really become a routine part of daily life. Findings also emerged that the Internet, especially OSNs, were being used to connect and reconnect with friends and family members (Subrahmanyam et al, 2008). Kalpidou et al (2011) identified that the average undergraduate OSN user spent 60–120 minutes on Facebook every day and the existence of a relationship between Facebook variables and psychological well- being. Christofides et al (2009) found that students perceived that they disclosed more information about themselves on Facebook, than in general circumstances; therefore, information control and privacy were also found to be important considerations of OSN use. Bicen & Cavus (2012) investigated undergraduate behavior regarding information exchange and categories on the OSN Twitter. From their research it was found that quotes, photos, videos, music, news, IT news and magazine news are the more commonly shared media types.

A number of recent studies of OSNs have been undertaken with research aims addressing issues of privacy, user satisfaction, educational application of OSNs and online advertising. For instance, Brady et al (2010) showed that education based OSNs can be used most effectively in distance education courses. In this case, it was used as a tool for communication for students in higher education. Mohamed & Ahmed (2012) revealed that undergraduates perceived severity, self-efficacy, perceived vulnerability, and gender are antecedents of information privacy concerns with social networking sites. Research into the relationship between college students Facebook use and academic performance, showed that time spent on Facebook was significantly, negatively related to overall GPA of participating students (Junco, 2012). Speacial & Li-Barbar (2012) found that undergraduate student's satisfaction with Facebook is to an extent related to levels of self-disclosure and time spent on maintaining one's personal Facebook page. In terms of undergraduate students and OSN advertising it was found that undergraduates do not dislike online

advertising. Instead they simply do not notice advertising promotions (Hadija et al, 2012). Brand recognition in OSNs was also found to be much lower than recognition that is formed through media channels (Hadija et al, 2012). A research study similar to this one is Chakraborty et al (2013) who examined older adults (55+) behavior and social media, specifically, Facebook. In their research, Chakraborty et al (2013) explored the privacy-preserving actions and attempted to determine if information-sharing practices are influenced by their friends in their Facebook networks. Using 134 participants (aged 55+) it was found that male older adults are more likely than their female counterparts to be influenced by their Facebook contacts in sharing employer related information (Chakraborty et al, 2013).

### **2.3.2 Technology Adoption (Household Context)**

As mentioned earlier, the context of this research is the household. Therefore it is of importance to determine whether households accept novel technologies, in this case OSNs and accounts for the reason that adoption and household related studies were of importance. Further, literature pertaining to technology adoption in the workplace has been extensively published, but, drivers of adoption in the household homes has been largely overlooked (Venkatesh & Brown, 2001). Research on household technology adoption and use within the IS research field is considered an important area of inquiry, as the household becomes the venue whereby much technology adoption and use takes place (Brown, 2008). Therefore due to the limiting numbers of studies situated within the household and the importance of them, it was decided that research examining OSN adoption in the household context is vital. The following sections review existing literature, which are viewed to hold similarities and relevance with this research.

Within the IS research field the origin of efforts to theoretically conceptualize factors influencing household technology adoption can be traced to the Model of Adoption of Technology in Households (MATH) (Venkatesh & Brown, 2001). MATH was developed in order to investigate the adoption of Personal Computers (PCs) in American households. MATH presented and empirically validated theoretical factors influencing household adoption of Personal Computers (PCs) and guided by the Theory of Planned Behavior. This research found that factors salient to those who had adopted and those who intended to adopt were different from those who did not intend to adopt. It was also found that attitudinal beliefs, namely utilitarian outcomes (household applications), hedonic outcomes (fun and enjoyment), and social outcomes, were determinants of purchase behavior in current PC users.

Brown & Venkatesh (2005) furthered their research into technology adoption in the household using a baseline extension of MATH. MATH was theoretically extended using the 'household life cycle' and

income as key factors to improve the current understanding of household technology adoption. The household lifecycle suggests a number of methodical stages that individuals evolve through when living in a household e.g. bachelor > newlywed > parents > older couple. The extension was based on a body of research, spanning several decades, and studies household lifecycles and their impact on household purchase decisions, specifically technology purchasing (adoption). The integration of household lifecycle variables (marital status, child's age, income) improved the explanatory power of the original MATH. It was also observed that age and the numbers of adults in the household moderated the effect of normative beliefs on intention.

Brown et al (2006) employed MATH to guide further investigations of PC adoption examining American households that owned at least one PC. Results indicated that attitudinal beliefs, application of personal use, utility for children and work-related uses are extremely important in determining the use of a PC in the household. Contrastingly, normative and control beliefs constructs were not found to be significant in predicting PC use. Brown (2008) went on to conduct a theoretical literature review of three streams of research examining the adoption, use and impacts of technology within the household setting. Brown (2008) concludes, that due to the suggested literature: 'The most fruitful area for future research is in understanding the intended and unintended outcomes associated with home technology use' (Brown, 2008: p.401). Brown (2008) also suggests researchers to rethink existing theories and methods in order to explore a variety of future research phenomena.

Having explored the adoption of PCs within the household context, another avenue of research was identified through this literature review, which is the adoption of broadband Internet within UK households. Broadband is an essential form of technology in current times. It is also the platform providing OSNs; hence considered important for this research to consider. Choudrie & Dwivedi (2004; 2005) and Choudrie & Dwivedi (2006) conceptualized and validated a model for the adoption of Broadband internet in the household through the empirical validation and theoretical extension of MATH, TPB and DOI. Empirical testing found that the adoption of broadband in households could be predicted from the attitudinal factors; of advantages, enjoyment, entertainment and utilitarian benefits. In addition perceived behavioral control factors of cost, lack of knowledge, lack of needs and lack of skill were found to be significant predictors of the household adoption of broadband.

Venkatesh (2008) produced further research into household technology adoption by examining the effects novel digital technologies on households and contemporary home life in the USA. Venkatesh (2008) identified a number of key problems that impede the adoption of use of digital home technologies. These included the technology being complex for most household users; a lack of incentive for internet

providers to push networking technology and potential privacy and interface issues. Venkatesh (2008) also observed a number of trends to household technology adoption:

- Computer orientation of the household in the form of achieving higher levels of expertise and literacy and putting technology to continuous use.
- Households are accepting the computer as any other home-based technologies and appliances.
- A greater use of computers by female heads of household for home management and financial management.
- Computer integration in the form of computer use as part of daily routine.

In terms of the application of MATH, Zhang & Maruping (2008) with the aim of understanding the adoption of any technology adopted within the household context extended MATH by integrating espoused cultural values (individualism/collectivism, masculinity/ femininity, power distance, uncertainty avoidance, and long-term orientation). This research was in response to the growing global market for household technologies. The theoretical model of espoused culture and household technology adoption was not empirically tested but the literature highlighted the importance of incorporating culture into the understanding of technology adoption in work and non-work settings.

In terms of novel technologies and the household and empirical, applied research, which is the area that this research is categorized in, Karaca-Mandic (2011) examined the household factors that influence a consumer's decision on when to adopt a DVD player, with particular emphasis on the role of complementarities. Empirical findings suggested that socio-economic and demographic backgrounds are pertinent in adoption of this new technology. Specifically, Asian and white households, households where the head of the household is either working, retired, or a student and those with at least \$50,000 annual income were more likely to adopt the DVD player. Understanding that smart home technologies support the health, safety and independence older adults. Coughlin et al (2007) undertake technology adoption research in context of households using a focus group approach. Findings showed that participants expressed support of technological advance along with a variety of concerns towards technology adoption that included usability, reliability, trust, privacy, stigma, accessibility and affordability.

### **2.3.3 Older Adults and Technology**

The third category examined existing literature focused upon older adults within society. As existing research on older adults is broad, a note on the considered studies is provided. For this research study,

current theories, models and findings that exist within the realm of older adults' attitudes, views and behavior with ICTs, Internet and OSNs were selected.

Very early examples of research examining older individuals and technology included Ogozalek (1991) who assessed the social impacts of computing among the elderly. Ogozalek (1991) found that in supportive environments, elders found that learning how to use a computer increased the senior adults' self-confidence, ability to learn, and memory retention. White et al (2002) found that autonomy within the older adult population was due to their use of computers for communication, exploration of interests and hobbies, or to obtain consumer information and access to community resources. Wood (2003) added that contrary to stereotypes of older people being unable to cope with the rapid technological advancements that have occurred over the last 25 years, many seniors have welcomed and got involved with the Internet revolution. Wood (2003) also identified a gap in literature pertaining to Internet use and older adults. More recently the aforementioned points were supported by Wagner et al (2010) suggestion that older adults' technology research should be a topic of future research.

As this older adults' research gap became apparent to the wider research community, literature and research on older adults and their interaction, use and attitudes towards computer and Internet technology began to proliferate.

Selwyn (2004) conducted research directed towards identifying underlying causes for older adults' adoption or non- adoption of ICTs. Selwyn (2004) discovered that older adults were using computers mainly for specific purposes including, word processing, keeping in contact with others and generally teaching themselves about using the computer. It was not apparent at the time that non-adoption and using within older adults are in existence due to being alienated from technology or being incapable of using the novel technologies. Acknowledging the ageing population, and the increased reliance on computers, Saunders (2004) determined that older people obtain most of their information regarding the value of computers from family members. Further, participants felt overwhelmed with regards to learning use of computers. The older population believed that when learning how to use computers, rather than relying on instruction manuals, more benefits would be accrued from personal instruction. Lam & Lee (2006) examined digital inclusiveness of older adults (55+) and Internet adoption, with a special focus on Internet self-efficacy and usage intention where it was demonstrated that internet self-efficacy was significantly related to usage intention. These results imply that a measure of one's own ability to use the internet significantly influences the intention to adopt and use the internet. Therefore consideration should be placed on investigating older adults' perception of their own ability to use OSNs and their decision to actually do so or not.

Grimes et al (2007) examined individual's behavior towards e-mail use and the effect of junk email (spam) on older adults e-mail use. Findings showed that older respondents (60+) were more likely than younger ones (<23) to report making a purchase as a result of a spam email and received the same amount of spam as other age groups. This was despite a lower overall use of the computer. Carpenter & Buday (2007) found that older adults' computer use is relatively low compared to other age groups. In their research patterns barriers to computer use included, cost, complexity, ergonomic impediments, and a lack of interest. Hill et al (2008) investigated older adults and Internet adoption, Internet access and Internet engagement where these factors were found to rapidly decrease with age. Their results illustrated that levels of adoption acceptance are higher compared to the results of other research into older peoples' Internet access and use in Wales.

In 2009 a diverse perspective to older adults research emerged where the classic IS theories were used to identify constructs pertaining to the ageing process in the older population. Ryu et al (2009) investigated 50+ individuals adoption of Video User-Created Content (video UCC). This study introduced the concept of elderly-specific constructs, which are: perceived physical condition (physical age), life course events (psycho-social age), perceived user resources, prior similar experience, and computer anxiety. These constructs were, each seen to reflect the complex ageing process. The underlying research model was guided by TAM, DOI and Motivation Theory constructs. The outcomes showed that participating older adults 'intention to participate' was significantly predicted by the constructs Perceived Benefits (PB), Perceived Ease of Participation (PEP) and Perceived Enjoyment (PE). Pan & Jordan-Marsh (2010) examined Internet adoption and use of older Chinese adults aged 50-81 years. In their research, a TAM extension was theoretically constructed and empirically tested revealing that Perceived Usefulness (PU), Perceived Ease Use (PEU), and Subjective Norm (SN) were significant predictors of Internet adoption among Chinese older participants, and PU, SN, and Facilitating Conditions (FCs) were significant predictors of Internet use intention. Mitzner et al (2010) investigated older adults use and attitudes about technology in context of home, work and healthcare. They concluded that positive attitudes were most frequently related to how the technology supported activities, enhanced convenience, and contained useful features. Addressing the rapidly ageing population and older adults exclusion from the benefits of IT-enabled service delivery, Niehaves & Plattfaut (2011) found MATH explained 81% ( $r^2 = .81$ ) of the variance of the 60+ participants behavioral intention to use the Internet. This was far higher than that of the younger ( $r^2 = .46$ ) and middle aged participants ( $r^2 = .42$ ). Workplace referents influence was found to have a significant effect on older participants BI to use the Internet. In health care and wellbeing terms, Cotton et al (2012) examined the link between depression and Internet use of Americans aged 50+. Their results indicated a positive correlation between Internet use and mental wellbeing of retired older adults

where Internet uses were found to reduce the probability of a depression categorization for older participants by about 20–28%.

To summarize, the aforementioned articles of technology research pertaining to older individuals are Internet centric. When scrutinized carefully, research addressing older adults' viewpoints, attitudes and behavior adoption and use of social media and OSNs are rare. Within the few OSNs and older adults' studies, Maier et al (2011) examined the impact of attitudinal, normative and belief factors on the intention to use OSNs by adults aged over 50 years. Once again, guided by the MATH model, fear-of-technology was found to be a significant impediment of OSN adoption. Examining behavioral differences of OSN use according to age, Pfeil et al (2009) identified behavioral differences between samples of teenage and older OSN users. Their research showed that teenage boys, like teenage girls were found to use more self-references than older men. Also, teenage girls include a greater number of words referring to one's self in an emotional way (often including words referring to negative emotions). Comparatively, older women tended to represent themselves in more formal writing (including a greater number of articles and larger vocabulary) than teenage girls.

Another avenue of older individuals research that was identified is that of comparing behavioral differences in technology use and adoption *between* younger adults and older adults, which also pertains to the digital divide issue; hence being of importance. Lee et al (2011) examined the perceived barriers of older adults' computer and Internet usage where an analysis in terms of pre-senior, young-old and older-old members of society was conducted. Results confirmed that senior computer and Internet users may face diverse barriers at different age stages. For this research it suggested that behavioral differences in older adults should be examined at different stages of later life such as, within the age ranges of 50-60s, 61-70 and 70+.

A diverse OSN to this one, MySpace was used by Pfeil et al (2009) to identify age differences and similarities when using OSNs. Comparing users of the 13 - 19 years age range and users aged 60+ it was found that the majority of teenage users' friends were of their own age range (age  $\pm$  2 years). Comparatively, older adults' networks of friends tended to have a more diverse age distribution. A novel device allowing OSNs accessibility are Personal Desktop Assistant (PDA) Arning & Ziefle (2007) addressed attitudes and behavior regarding computer simulated PDA devices within participants aged 18-27 and 50-59. As expected strong associations between subjective technical confidences, ease of use, usefulness and PDA performance were identified. Arning & Ziefle (2007) also confirmed that age has a major role in the interaction with technology; thereby, lending support to the view that future technology research should examine age effects. Age comparison research was furthered by Grimes et al (2007)

where research was conducted on individual's attitudes towards and experience with spam with focus of gender and age. Traditional college age (<23), working age (24–60), and retirement age (>60) were compared with the outcome that the oldest male participants were lower in self-reported expertise than the working age men.

In efforts to understand why older adults are reluctant to adopt new technologies Charness & Boot (2009) examine attitudinal barriers, privacy concerns and cognitive barriers to technology use. It was concluded that as Internet usage would diminish over time as current young users age. However, it is reasonable to assume that technology will continue to advance rapidly and therefore continuous efforts must be made to ensure the older age groups are driven to use the latest technologies.

Nagle & Schmidt (2012) investigated computer acceptance among older adults (50+) using UTAUT as the guiding theoretical framework. Next to performance expectancy, facilitating conditions showed the strongest correlation with use as well as with intention. Effort expectancy showed no significant correlation with the intention of older adults to use a computer. Slegers et al (2012) aimed to determine predictors of computer use for older adults (50+) and also to understand the relationship between computer use and changes and cognitive abilities. 1823 normal aging adults participated over a 9-year period. This research found that older participants' computer use was also predicted by age, sex and feelings of loneliness. Changes in cognitive ability were small, which suggests that promotion of computer activities in older adults to prevent cognitive decline may not be an efficient approach.

Thackeray et al (2013) aimed to understand online health related activities and how social media facilitated adults to conduct such activities. A telephone survey using 1745 participants was conducted. Findings revealed that people are using social media for seeking health information. However, individuals are more likely to consume information than they are to contribute to the dialog of information online. This research therefore demonstrates that social media is assisting adults in terms of health-related issues. Identifying a trend of disinterest in new technologies by older adults Hanson (2010). To examine this issue experiments testing online searching capability were carried out using groups of both older and younger adults. The older adults were found to sometimes take longer to complete tasks. However they did not necessarily view more pages to arrive at the solution. Older adults (ages 50–69) spent more time viewing nearly all Web pages than did the younger participants (ages 20–39). With the aim of understanding factors that encourage and discourage OSN use among older adults (60-90). Braun (2013) empirically tested TAM using the data collected from 124 internet-using older adults. The tested framework revealed significant predictors of OSN adoption include perceived usefulness; trust in SNS, and frequency of Internet use.

There has been observed growth in social media interventions/tools has led to e-patient communication tools that enable older adults to (1) locate and share disease management information and (2) receive interactive healthcare advice. Also, no review articles have examined the planning, implementation, and evaluation of Web 2.0 chronic disease self-management interventions for older adults. Therefore Stollefson et al (2013) conducted a systematic literature of pertinent articles. Reviewed literature indicated that Web 2.0 participants felt greater self-efficacy for managing their disease(s) and benefitted from communicating with health care providers and/or website moderators to receive feedback and social support. This research demonstrates that social media such as OSNs are finding their place as online platforms that assist older adults in terms of health and quality of life, reinforcing the necessity to focus on older adults' adoption of OSNs and consequently methods in which to drive OSN adoption among older adults.

### **2.3.4 Digital Divide**

The fourth category of reviewed literature was that of the digital divide. What has been noted about the digital divide is that despite all efforts is prevalent in most societies, including the research and practice ones (Niehaves et al, 2008). A number of articles were found pertaining to age related behavioral differences between young and old with a standpoint of the digital divide. Detail of these efforts to investigate issues of digital divide feature in the following sections.

Initial work surrounding the digital divide with regards to the internet and associated technologies include Wareham et al (2004) who investigated digital inclusion within the American economy. This research was from a standpoint of 2G voice centric mobile telecommunications where it was apparent that mobile telephone adoption is positively correlated with income and metropolitan area size, as well as strongly correlated with occupation especially with sales and executive professionals. Gullien & Suarez (2005) in their efforts of explaining reasons for an identified global digital divide revealed that the worldwide growth of the Internet is driven, not just by socio-economic status, cost or accessibility, but also by regulatory political and sociological variables.

Using diffusion theory to examine the digital divide in UK e-services adoption, Choudrie et al (2006) suggested that by offering free access to the Internet and other facilities, the government is ensuring that citizens who will not be able to use the technology and devices due to affordability are not excluded. This was viewed to be a means of reducing the digital divide in the UK. To identify the importance of the digital divide Dijk (2006) completed an independent literature review of digital divide literature covering a five-year period (2000-2005). The review determined gaps in the current digital divide literature with future direction also being identified. Findings revealed that future focus of the digital divide literature

should be conducted with recommendations towards development of theory and conceptual ideas. As stated there is a 'lack of theory' and a lack of 'conceptual elaboration and definition' of digital divide (Dijk,2006). More recently Goldfarb & Prince (2008) aimed to understand Internet adoption and use, and the effect these phenomena have on the digital divide. By 2001 it was found that high-income and educated individuals were found to be more likely to have adopted the Internet; however, these were conditional factors in low-income, less-educated people as the time spent online determined adoption. Employing an IS perspective evaluation framework Choudrie et al (2010) determined factors leading to older adults toward online interaction. Their research showed that communication is a vital motivational benefit for broadband Internet by participating older adults. Choudrie et al (2010) literature review also identified a stream of research examining the digital divide on a European wide scale.

Measuring the digital divide across the regions of the 27 Member States, Vicente & Lopez (2011) showed that the regional digital divide reflects to an extent the income gap and the role of cultural and institutional factors in ICT adoption. With the aim of determining the level of the digital divide between European countries and to forecast the durations of digital convergence, Kyriakidou et al (2011) concluded that full digital convergence among European countries is expected by 2018. Brandtzeag et al (2011) approached the investigations of digital divide by identifying a variety of ways that people in Europe use the Internet. With regards to Internet usage, the countries of Norway, Sweden, Austria, UK, and Spain, showed that on a cross-national level age and Internet access are the most salient predictors (Brandtzeag et al, 2011). At an EU level, Cilan et al (2009) determined whether a digital divide exists among EU members, new members and candidate countries where findings revealed that there has been a digital divide between the EU15 countries and the countries that are candidates of EU since 2004 (Romania, Bulgaria, and Turkey).

With regards to literature addressing the digital divide in terms of social media or OSNs it was found that there is minimal existing literature. Of the few studies, McMurtrey et al (2011) examined the interaction between senior citizens, IT and the digital divide between the young and the old, where findings suggested that the young and old digital divide is diminishing and that over 90% of the users do not use a computer for any social networking. In response to the massive growth of web 2.0 applications Schradie (2011) addressed the digital inequality that could arise from such growth. The results emphasized the importance of income, as income provides the ability to buy and access Web 2.0 tools, such as computers and Internet access, along with other hardware and software.

The digital divide has also been examined in terms of digital literacy and OSN use where the instructors in the classroom environment were found to be slightly behind the younger students in the use of technology (Vie, 2008). Recommendations were made that the instructors need to keep up with young

individuals in order to incorporate such technologies within classroom teaching and utilise them as tools to assist teaching. From their findings a prevalent digital divide between instructors and students was identified. Due to the emergence of Web 2.0 technologies, Chadwick-Dias et al (2007) theoretically examined web 2.0 technologies potential to close a digital divide between older and younger users; thereby ensuring that the Web is universally usable for people of all ages. Their findings showed that a digital divide between older and younger users is in existence, noting that older users use the Web less than younger users, and more commonly experience significant usability issues when they do.

### **2.3.5 Literature Review Summary**

Having obtained literature and knowledge pertinent to the scope of the proposed research, the arguments, perspectives and findings were then considered. The OSN literature review revealed a number of previous studies, which have also examined motivational and impeding factors of OSN use. However, it was identified that a majority of these studies were contributing findings applicable to the OSN adoption (Dogruer et al , 2011; Kim et al , 2011; Moradabadi et al, 2012; Tonsun, 2012) and OSN usage behavior (Pempek et al, 2009; Kalpidou et al, 2011; Christofides et al, 2009; Bicen & Cavus, 2012) of undergraduates. These studies were therefore considered to be representative of the views of educated individuals typically aged below 25 years. From the literature review a clear oversight of OSN adoption studies in the household context was also apparent since no identified OSN research was focused to investigating only household OSN use. Additionally the few studies that were viewed to be similar to this study (Maier et al, 2011), were not representative of individuals from the UK. This research will therefore address these research gaps.

In terms of decision making regarding the theoretical framework that could be used as the underpinning for the development of a conceptual theoretical framework MATH was identified to be suitable in terms of internet technology adoption (Dwivedi & Choudrie, 2006), household technology adoption (Choudrie & Dwivedi 2004; 2005) investigating older adults (Maier et al, 2011; Niehaves & Plattfaut, 2011) and OSN adoption (Maier et al, 2011). As MATH has been used to examine the adoption of various diverse and innovative technologies, but not OSNs, it indicated to this research team that MATH should be employed as the guiding framework for research of this nature.

Another gap that was identified by this research is that of the household context and technologies adoption, use and diffusion research. Previous technologies investigated within the household included PCs, high-speed broadband internet and e-commerce, e-banking, internet, mobile, mobile internet, m-commerce, online shopping and personal computers, with e-commerce being the most investigated technology. There appears to be a gap in the investigation of adoption and use of social media in the

household context, as no existing examples were found focusing specifically on social media in the household; hence leading this research to consider this technology.

With regards to the ‘silver surfer’ older adult population (50 years and above) several research articles were found. It was apparent that issues regarding older adults’ technology usage is a topic of great interest and of immense value to a range of research communities. However, this attention has been focused towards understanding behavior towards computers (Saunders, 2004; Carpenter & Buday, 2007), internet adoption (Lam & Lee, 2006; Pan & Jordan-Marsh, 2010; Niehaves & Plattfaut, 2011) and e-mail (Grimes et al, 2007). Pfeil et al (2009) has previously addressed older adults and OSN use but this was a comparative study between young and old. Maier et al (2011) investigation into older adults OSN use using MATH was identified as currently being the most closely aligned to this research. However, differentiations resulted in terms of the country that the research study was conducted of OSN users in Germany. Also diverse is the sample size as a small sample size of only 168 participants was used and the age range of participants being limited to just 50-64 years old.

Articles pertinent to digital divide and social media technologies were initiated by Chadwick-Dias et al (2007) who suggested that the boom of social media could potentially aid in reducing the digital divide between young and old. Maier et al (2011) also put forward a view that OSN use by older adults could reduce the digital divide. Schradie (2011) also concluded that the growth social media could contribute to digital exclusion. Further digital divide research unspecific to OSNs was identified where education and high-income were considered to be significant with regards to Internet technology and older adults (Dijk, 2006; Choudrie et al , 2006; Golfarb & Prince, 2008).

Having considered the main research topics, the next section suggests the theoretical conceptual framework to be used in this research study.

## **2.4 Theoretical Background**

In order to investigate the identified OSN adoption phenomena this research integrated constructs from mature IS theories and theoretical models to produce a bespoke theoretical framework, which is used to guide this research. Before making such a selection all leading theories from IS and surrounding disciplines were considered. The following table illustrates all those studies considered important for this research.

<b>Table.2.2 Available Theories &amp; Theoretical Frameworks for Selection</b>	
<b>Theory</b>	<b>Description</b>
<b>Theory of Reasoned Action (TRA)</b>	An influential psychology theory of human behavior, Davis (1989) adapted TRA to understand acceptance and use of technology. Resulting in its emergence within the IS field.
<b>Theory of Planned Behavior (TPB)</b>	Developed by Ajzen (1991) A framework theoretically extending TRA with the inclusion of the construct; perceived behavioral control.
<b>Decomposed Theory of Planned Behavior (DTPB)</b>	Further extending the work of Ajzen (1991) and TPB, Taylor & Todd (1995a) design a theoretical decomposition of TPB. TPB constructs attitude, subjective norm and behavioral control were extended with another level of explanatory constructs of which some were provided by DOI.
<b>Technology Acceptance Model (TAM)</b>	A theoretical framework designed to explain how individuals accept and use technology, highlighting constructs Perceived Ease of Use (PEU) and Perceived Usefulness (PU) (Davis, 1989)
<b>Technology Acceptance Model (TAM2)</b>	Venkatesh & Davis (2000) create a theoretical extension of the original TAM with newly introduced explanations of Intention to Use (IU) included subjective norm, experience and voluntariness.
<b>Technology Acceptance Model (TAM3)</b>	Drawing on the work of TAM and TAM2, Venkatesh & Bala (2008) develop a comprehensive integrated model of the determinants of individual level (IT) adoption and use. This new model included explanatory constructs of Perceived Ease of Use (PEU).
<b>Hierarchical Model of Intrinsic and Extrinsic Motivation (HMIEM)</b>	Vallerand (1997) outline a general model examining constructs of extrinsic /intrinsic motivation and psychological mechanisms underlying motivation change in individuals.
<b>Unified Theory of Acceptance and Use of Technology (UTAUT)</b>	The UTAUT explains user intentions to use an IS and subsequent usage behavior. UTAUT posits four key constructs (performance expectancy, effort expectancy, social influence, and facilitating conditions) as direct determinants of usage intention and behavior (Venkatesh et. al., 2003).
<b>Model of Adoption in the Household (MATH)</b>	Drawing from established theoretical bases from IS, marketing and psychology research literature, Venkatesh & Brown (2001) focused on the adoption of Personal Computers (PC) within the household. A MATH explains individual's behavior towards household adoption of PCs in terms of attitudinal, control and behavioral constructs.
<b>Model of PC Utilisation (MPCU)</b>	Thompson et al (1991) posit a theoretical framework offering a competing perspective from that offered by TPB and TRA. MPCU was used to predict behavior towards PC utilization using an organizational perspective.
<b>Diffusion of Innovation Theory (DOI)</b>	Grounded in sociology, Rogers (2003) develops the DOI, which provides theoretical assistances towards an understanding of how, why and at what rate innovations are diffused throughout various systems of individuals.

The following sections identify and provide reasoning for the selection of five IS theories and research models to be applied in this research study that have been explained in Table 2.1.

### 2.4.1 Theory of Planned Behavior (TPB)

The theory of planned behavior (TPB) (Ajzen, 1991) has been successfully used to examine and understand factors that cause a person to adopt or reject the use of technology. This research is also considering the reasons for older adults adopting or rejecting OSN adoption and use; therefore viewed to be suitable for this research.

TPB was developed as an extension of the Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975) the intention was to address the limitation of TRA using this new model. The theory of planned behavior assumes that rational considerations govern the choices and behaviors of individuals (Ajzen, 1985; Ajzen, 1991; Ajzen & Fishbein, 2005). The theory of planned behavior has

been extended, adapted and validated within much technology adoption research (Venkatesh & Brown, 2001; Davis 1989).

As with its predecessor TRA the central factor for TPB is an individual's intention to perform a certain behavior. TPB offers a number of constructs that are useful to consider for this research: *Behavioral control* refers to variables both internal and external can impair (or facilitate) performance of a given behavior; that is, the extent to which an individual possesses the knowledge required, mental and physical skills to perform the behavior in question. In essence those individuals who have high control over a given behavioral action should be most likely to actually commit to performing this behavior (Lange et al , 2012). *Perceived Behavioral Control* is less evident in that actual control pertains to the extent to which people believe that they can perform a given behavior if they were inclined to actually do so (Lange et al, 2012). *Subjective norm* is defined as an individual's perception of whether people important them such as friends, family and co-workers think the behavior in question should be performed. The contribution of the opinion of any given referent (word or expression) is weighted by the motivation that an individual has to comply with the wishes of that referent (Egaly & Chaiken, 1993). *Attitude toward the behavior* refers to the individual's positive or negative feelings about performing a certain behavior. An individual's attitude towards a behavior can be determined through an assessment of their beliefs regarding the consequences arising from a behavior and an evaluation of the desirability of these consequences (Egaly & Chaiken, 1993). *Behavioral intention* is the indication of an individual readiness or willingness to actually perform the given behavior. *Behavior* is the individual's observed response to the given behavior and context in question. By investigating if there is a significant relationship between an older adults' intention or willingness to use OSNs and their observed behavior (adoption/rejection). An understanding can be made as to why willingness or intention to use OSNs, if at all, is not manifesting into actual use.

### **Limitations of TPB**

Although TPB addresses key variables that may be of consideration within an individual's decision process toward a particular behavior, it overlooks emotional facets such as apprehension, worry and risk. This implies that reasons such as worry and risk will not be considered, and yet could emerge as an important factor of consideration. Further TPB focuses only on behavior towards a particular behavior and no focus is placed on tangibles involved with the behavioral process. For example, in the context of this research if a behavior involves the use of a digital technology, characteristics of the technology may also impact or influence the behavioral outcome.

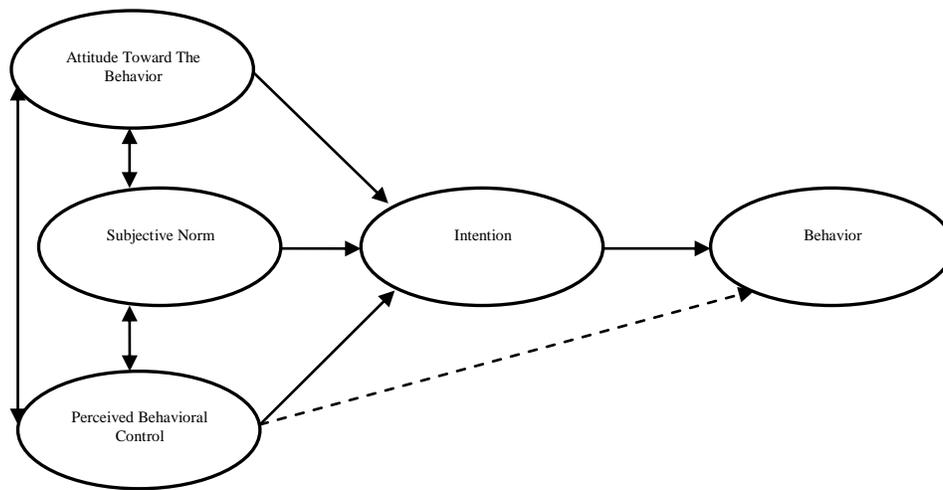


Figure.2.2 Theory of planned behavior (Ajzen, 1991 pp 182)

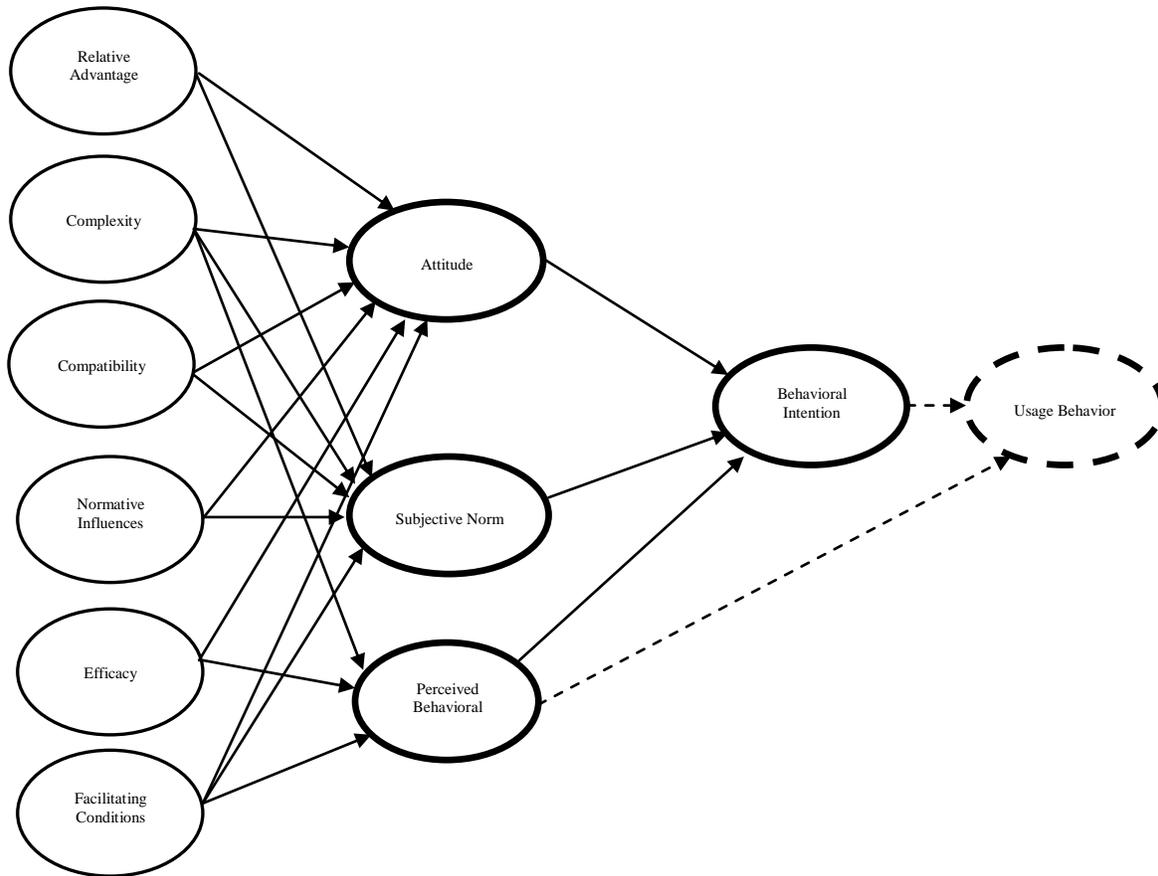
#### 2.4.2 Decomposed Theory of Planned Behavior (DTPB)

Further extending the work of Ajzen (1991) and TPB, Taylor & Todd (1995a) proposed the Decomposed Theory of Planned Behavior (DTPB). DTPB was developed by the decomposition of TPB constructs and integrating crossover paths in order to provide a stable set of beliefs that may be applied across a wider range of research settings that resulted in an increase in predictive power (Taylor & Todd, 1995a).

To decompose attitudinal beliefs three attributes from the Diffusion of Innovations Theory (DOI) were used (Rogers, 2003) (figure 2). Attributes drawn from DIT include relative advantage: "Is the degree to which an innovation is perceived as better than the idea it supersedes." (Rogers, 2003); Complexity: "Is the degree to which an innovation is difficult to understand and use" (Rogers, 2003); and compatibility: "Is the degree to which an innovation is perceived to be with the existing values, past experiences, and needs of potential adopters" (Rogers, 2003). Subjective norm, drawn from TPB was decomposed using normative influences of friends and family. Behavioral control, drawn from TPB was decomposed with facilitating conditions and self-efficacy (Ajzen, 1985). Facilitating conditions are described as "money, time and technology that are needed to make use of an innovation: (Taylor & Todd, 1995a pp 144). Having decomposed TPB, hypothesized crossover effects were then included allowing decomposed belief structures to be examined with respect to all relevant TPB constructs.

This research tested DTPB using the innovation 'VCR-plus' aspect which at the time was a state of art household consumer innovation. The VCR plus research applied a quantitative survey research method

that led to collated data from over seven days from patrons of a shopping center in July 1992 and resulted in 790 responses.



**Figure 2.3 Decomposed TPB and Crossover Effects (Taylor & Todd, 1995a pp 143)**

Relative to the original TPB model improvements were made to the novel model fit due to decomposing the belief structures. This led to a relation between perceived behavioral control and attitude. Contrary to expected results a positive path existed between complexity and attitude; thereby implying that the more difficult the VCR –plus was perceived to be to learn and use the more positive a person’s attitude was towards it (Taylor & Todd, 1995a). Further, it was found that the decomposition of the control beliefs into facility conditions and efficacy showed that each of these constructs were positively related to perceived behavioral control, reinforcing the suggestion that control structure is multi-dimensional and should pertain not just to a personal belief and efficacy but also to resource constraints (Taylor & Todd, 1995a).

## Limitations of DTPB

While DTPB was amongst the first to provide a full test of constructs toward behavioral intention in the context of TPB limitations were apparent. Foremost DTPB requires that individuals are motivated to perform a given behavior and additionally DTPB provides a linear approach to intention formation; therefore, these limitations limit the generalizability of results (Taylor & Todd, 1995a). In terms of methodology although it was intended, DTPB does not integrate a measure of participants' behavior due to the low adoption of VCR-plus such analysis could not be undertaken. The model was further weakened by the low reliabilities demonstrated for complexity measures.

### 2.4.3 MATH

Drawing from established theoretical bases from IS, marketing and psychology research literature, Venkatesh & Brown (2001) focused on the adoption of Personal Computers (PC) within the household. This was initiated and motivated by an existence or lack of household research. The aims of this research were (1) to identify factors that determine household adoption of PCs, (2) to determine the factors influencing household PC adoption among adopters and non-adopters, and (3) to examine the nature of the relationship between the intent to adopt and subsequent purchase behavior in the context of household adoption of PCs.

Niehaves & Plattfaut (2011) utilized MATH theory to comparatively analyse *internet* adoption within three different age groups (39 and below, 40 – 59 and 60+). Results proved that MATH is of great value when predicting usage intention among all age groups, especially among the elderly (60 years and older). Maier et al (2011) also examined the adopters and non-adopters of OSNs using MATH (Venkatesh and Brown, 2001) and found the MATH model being suitable for examining elderly people.

This research study has been conducted using the Model of Adoption of Technology in Households (MATH). TPB was viewed to be particularly suitable to guide the construction of MATH due to its previous successful applications within the IS research domain and was viewed to be useful towards understanding and explaining volitional behaviors such as PC adoption in the household setting. Consistent with the approach employed by Taylor & Todd (1995a) MATH was developed by decomposing the TPB constructs.

Attitudinal belief structures was decomposed with the addition of 'utilitarian outcomes' defined "as the extent to which using a PC enhances the effectiveness of household activities" (Venkatesh & Brown, 2001 pp 74), 'hedonic outcomes' described by consumer behavior research to be the pleasure derived from consumption or use of a product (Babin et al. 1994; Hirshman & Holbrook, 1982; Holbrook & Hirshman, 1982) and 'social outcomes' described as the "public" recognition which would be a result

through the adoption of an innovation (Fisher and Price, 1992).

Normative belief structures were decomposed through the inclusion of 'social influence' the extent to which members of a social network influence one another's behavior (Rice et al, 1990). Social influence were further decomposed in terms of the social influences which exist in the workplace, social influences by friends and family and the influence of secondary sources such TV and newspapers, which are viewed to be influential in early adopters decisions to adopt an innovation (Rogers, 1995). Consequently it was envisaged that household PC adoption decisions would be influenced by information carried through mass media (Venkatesh & Brown, 2001).

Control belief structures were decomposed through the identification that previous IS research has identified a person's knowledge and resources as barriers to the intention to adopt a technology (Mathieson, 1991; Taylor & Todd, 1995). Three specific barriers were selected to relevant to PC adoption; knowledge, difficulty of use and cost.

Having designed the research framework MATH was empirically tested using a longitudinal two phase qualitative approach: Phase 1- a pilot study was conducted through the random selection of 60 households to participate with a telephone interview. Following the pilot study the research instrument was modified to reduce the completion time and therefore refusal rate. Nearly 1000 households were contacted in phase 2 and the primary household decision maker was invited to participate in the voluntary telephone survey over a three week period.

With regards the factors affecting current PC purchases decisions results revealed attitudinal beliefs; utilitarian outcomes, hedonic outcomes, and social outcomes, were determinants of purchase behavior in current users. Comparatively, results suggested that social influences were also significant determinants of PC purchasing behavior. The association of status outcomes from possessing current technology was viewed as most important, followed by a PC's applications for fun, the influence of friends and family members, and applications for personal use. In terms of factors affecting future purchase intentions utilitarian outcomes were found to be the key drivers of for participants who intended to use. It was also apparent that non-adopters of VCR-plus were constrained by adoption barriers.

Having identified that MATH is appropriately aligned to the intentions of this research in terms of the household setting and IT as the innovation of investigation, MATH has been selected as the fundamental guiding theory for the development of the proposed conceptual framework. Therefore a number of constructs from MATH have been integrated within the proposed conceptual framework.

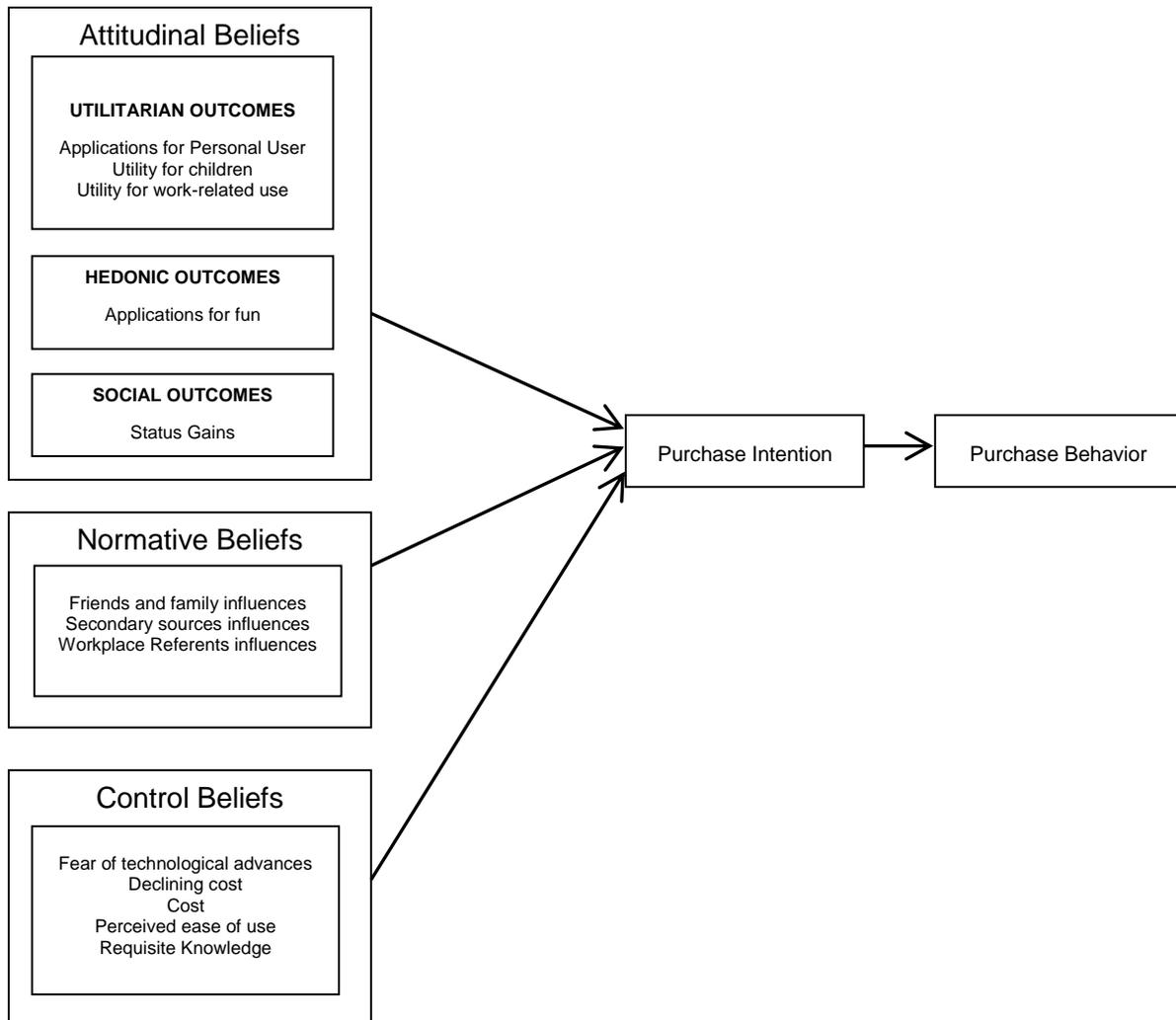
<b>Table 2.3 MATH Attitudinal Beliefs - Construct Definitions</b>	
<b>Core Construct</b>	<b>Definitions</b>
Applications for personal use	"The extent to which using a PC enhances the effectiveness of household activities" (Venkatesh & Brown, 2001, p. 82).
Utility for children	The extent to which using a PC enhances the children's effectiveness in completing homework and other activities (Venkatesh & Brown, 2001).
Utility for work-related use	The extent to which using a PC enhances the effectiveness of performing work-related activities (Venkatesh & Brown, 2001).
Applications for fun	"The pleasure derived from PC use" (Venkatesh & Brown, 2001, p. 82). These are specific to PC use, rather than general traits (see Webster & Martocchio, 1992).
Status gains	The increase in prestige that coincides with a purchase of the PC for home use (Venkatesh & Brown, 2001).

<b>Table 2.4 MATH Normative Beliefs - Construct Definitions</b>	
<b>Core Construct</b>	<b>Definitions</b>
Friends and family influences	"The extent to which members of a social network influence one another's behaviour" (Venkatesh & Brown, 2001, p. 82). In this case, the members are friends and family.
Secondary sources' influences	The extent to which information from TV, newspaper, and other secondary sources influences behaviour (Venkatesh & Brown, 2001).
Workplace referents' influences	The extent to which co-workers influence behaviour (see Taylor&Todd, 1995)

<b>Table 2.5 MATH Control Beliefs - Construct Definitions</b>	
<b>Core Construct</b>	<b>Definitions</b>
Fear of technological advances	The extent to which rapidly changing technology is associated with fear of obsolescence or apprehension regarding a PC purchase (Venkatesh & Brown, 2001).
Declining cost	The extent to which cost of a PC is decreasing in such a way that it inhibits adoption (Venkatesh & Brown, 2001).
Cost	The extent to which the current cost of a PC is too high (Venkatesh & Brown, 2001).
Perceived ease of use	The degree to which using the PC is free from effort (Davis, 1989; see also Venkatesh & Brown, 2001).
Requisite knowledge	The individual's belief that he/she has the knowledge necessary to use a PC. This is very closely tied to the concept of computer self-efficacy (Compeau & Higgins, 1995; see also Venkatesh & Brown, 2001).

## Limitations of MATH

The fundamental limitations of the MATH research model lay within the qualitative methodology that was undertaken Venkatesh & Brown (2001) in order to empirically validate it. Namely, limitations existed within the differences in the questions that were asked of participants. It was stated by Venkatesh & Brown (2001) that the wording of questions could have been improved to encompass adopters and non-adopters and the length of interviews could have been longer as short interviews took place based on research resource constraints.



**Figure 2.4 Model of adoption of technology in households (MATH)  
(Brown et al, 2006 pp 206)**

#### 2.4.4 Diffusion of innovations

The Diffusion of Innovations Theory (DOI) (Rogers, 1983) is a theory developed to explain how, why, and at what rate new innovations (ideas or technologies) are diffused. DOI describes the patterns of adoption, illustrates the process and assists in understanding whether and how a new invention will be successful (Rogers, 1995). The theory describes the process of diffusion as the process by which an innovation is communicated through certain channels over time among the members of a social system (Rogers, 1995). In Rogers (1995) research an *innovation* is described as an idea, practice or object perceived as new by an individual; a *communication channel* is the means by which messages about new ideas are communicated from one individual to another and a *social system* is a set of interrelated units such as individuals (Rogers, 1995).

DOI also suggests that demographic factors such as age, education and income, are significantly correlated to innovativeness, which in turn determine the adoption rate of an innovation (Rogers, 1995). Therefore, when investigating forms of innovations and their impacts upon various groups of society, the classic Diffusion of Innovations theory (Rogers, 2003) appeared to offer a viable solution.

When identifying particular aspects that may be drawn for DOI the perceived attributes (characteristics) of an innovation (OSN) were of interest. This was due to the characteristics of innovations as perceived by individuals helping in explaining different rates of adoption. As the fundamental aim of this research is to explain the different rates of OSN adoption these attributes (table 2.5) were assessed and considered important for this research.

<b>Innovation Attribute</b>	<b>Definition</b>
<b>Relative Advantage</b>	“Is the degree to which an innovation is perceived as better than the idea it supersedes.” (Rogers, 2003 pp15)
<b>Compatibility</b>	“Is the degree to which an innovation is perceived to be with the existing values, past experiences, and needs of potential adopters” (Rogers, 2003 pp15).
<b>Complexity</b>	“Is the degree to which an innovation is difficult to understand and use” (Rogers, 2003 pp 16)
<b>Trialability</b>	“Is the degree to which an innovation will be experimented with on a limited basis” (Rogers, 2003 pp 16).
<b>Observability</b>	“Is the degree to which the results of an innovation are visible to others” (Rogers, 2003 pp 16).

Of DOI's attributes 'Relative Advantage' (RA) was selected for this research for two fundamental reasons. First, RA was successfully integrated within the DTPB (Taylor & Todd, 1995a), which presents itself as an underlying theory for this research. Second, telephone (landline) and postal services were the fundamental methods of communication until the 1990s. As the internet emerged Electronic Mail (E-Mail) then became an established communication method. Presently, with the advent of social internet services such as OSNs it is important to understand OSN adoption to determine if older adults are considering the benefits of OSN use compared to the classic form of communications-the telephone, newspapers or the postal service.

#### **2.4.5 E-Services Adoption Model**

E-services are defined as “interactive services that are delivered on the Internet using advanced telecommunications, information, and multimedia technologies” (Boyer et al, 2002 p175). OSNs are therefore, currently, the most widely adopted e-services as they conform to this defined criteria and consequently their adoption is of utmost importance. The e-services adoption model was viewed to be

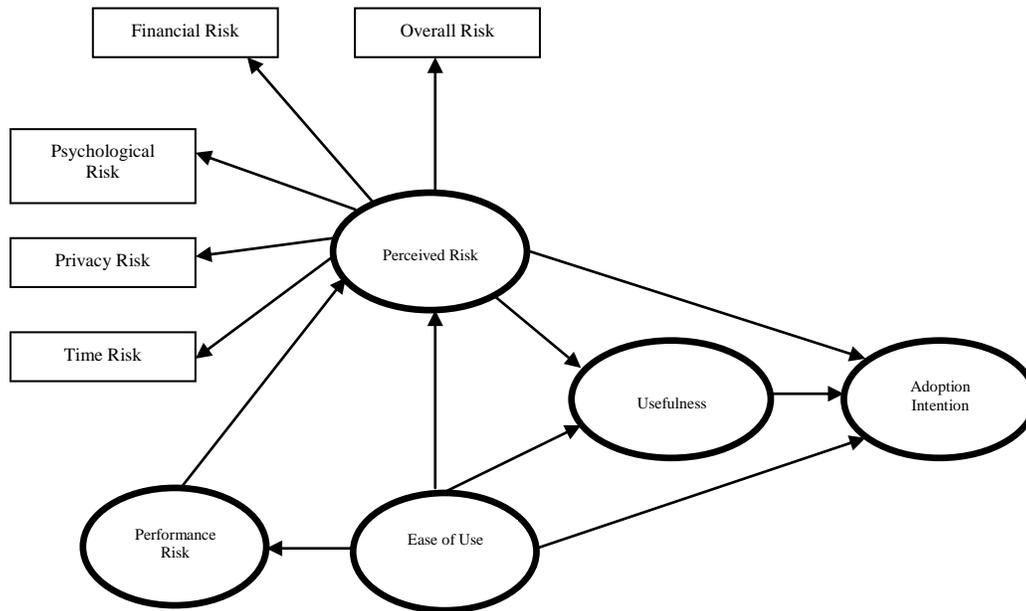
applicable to this research due to its focus of perceived risk due to a consideration of electronic services adoption (such as OSNs). Over the last three decades the construct 'perceived risk' has been included in a large number of empirical studies due to its significance (Stone & Gronhaug, 1993). Perceived Risk refers to 'felt uncertainty regarding possible negative consequences of using a product or service' (Featherman & Pavlou, 2003 p 453). More specifically of interest was a sub-category of perceived risk; Privacy Risk, which enters the information systems adoption decision within circumstances when decision-making creates (a) feelings of uncertainty, (b) discomfort and/or anxiety (Dowling and Staelin, 1994). Existing examples of the consideration of risk in the adoption decision include, Balanger & Carter (2008) who investigated perceived risk as factor of e-government adoption results from a citizen-based survey. Their research revealed a highly significant effect of perceived risk on the intention to use e-government services. Perceived Risk has also been utilised as a barrier of e-commerce and internet use, where findings revealed perceived risks have a crucial effect on both current and future internet users (Lieberman & Stashevsky, 2002).

As mentioned, risk and OSN adoption are co-related. To understand this relation, emphasis was placed on an e-services adoption model developed by Featherman and Pavlou (2003). Featherman and Pavlou (2003) developed the e-services adoption model to understand how risk factors affect or influence the adoption behavior of e-services. The e-services adoption model examines seven determinants of perceived risk as explanatory theoretical constructs of an individual's intention to adopt e-services. The seven determinants are: performance risk, financial risk, time risk, psychological risk, social risk, privacy risk and overall risk. These risk facets were conjoined with the original Technology Acceptance Model (Davis, 1989) in order to operationalize and test this theory. Experimentation indicated that e-services adoption is adversely affected primarily by performance-based risk perceptions, and perceived ease of use of the e-service reduced these risk concerns.

Previous studies on OSNs and privacy concerns have identified the role of privacy concerns as influential factors of OSN adoption and used for decision-making in context of younger adults (Dwyer et al, 2007). Shin (2010) proposes the Social Networking Site (SNS) acceptance model using quantitative analysis where privacy was found to have significant effects on security, trust and attitude towards OSN use. Snoj et al (2004) states that research in the field of perceived risks has not been dealt with properly in the past and suggest future work should focus on theoretical and empirical research within the field of risks.

In order to fully utilize the benefits and functionality of an OSN it is required that personal information and media is uploaded to an individual's personal profile. With consideration of the aforementioned literature it was hypothesized that feelings of uncertainty and/or anxiety may be experienced by older adults with regards to personal privacy during the decision making process of OSN adoption or rejection.

This hypothesis will therefore be examined and operationalized within the proposed conceptual framework using the construct ‘Privacy Risk’. Privacy risk is defined as ‘Potential loss of control over personal information, such as when information about you is used without your knowledge or permission. The extreme case is where a consumer is “spoofed” meaning a criminal uses their identity to perform fraudulent transactions’ (Featherman & Pavlou, 2003 p 451 – 474). This construct will be applied as an explanatory variable of Behavioral Intention (BI).



**Figure 2.5 E-services Adoption Model (Featherman & Pavlou, 2003 pp 467)**

## 2.5 Theoretical and Conceptual Framework: MOSN

Having described and discussed the existing theories models used to inform this research, the following sections presents diagrammatic representation of the conceptual framework followed by construct definitions, development of the conceptual framework, hypotheses development and the demographic characteristics moderating hypotheses. Figure 2.6 illustrates the proposed conceptual framework.

### 2.5.1 MOSN Construct Definitions

To accompany the previous illustration of the overall constructs applied in this research the following tables provides the belief structure, the original theory from which the constructs were drawn and the construct definitions. This is then followed by a section that describes and explains the differences between the three constructs.

<b>Table 2.7 MOSN Attitudinal Belief Constructs</b>		
<b>Attitudinal Belief Structures - The individual's positive or negative feelings about performing a behavior (Eagly &amp; Chaiken, 1993)</b>		
<b>Attitudinal Construct</b>	<b>Original Theory</b>	<b>Definition</b>
<b>Hedonic Outcomes</b>	Personal Computers in Homes; MATH (Venkatesh & Brown, 2001)	“The pleasure derived from PC use” (Venkatesh & Brown, 2001, p. 82).
<b>Utilitarian Outcomes</b>	Personal Computers in Homes; MATH (Venkatesh & Brown, 2001)	“The extent to which using a PC enhances the effectiveness of household activities” (Venkatesh & Brown, 2001, p.82). Budget, homework and work.
<b>Relative Advantage</b>	Diffusion of Innovations (Rogers, 2003)	‘The degree to which an innovation is perceived as better than the idea it supersedes’ (Rogers, 2003 pp 15)
<b>Social Outcomes</b>	Personal Computers in Homes; MATH (Venkatesh & Brown, 2001)	“‘Public’ recognition that would be achieved as a result of adopting an innovation’. (Fisher and Price 1992) <i>see</i> Venkatesh & Brown (2001) p.74
<b>Privacy Risk</b>	E-Services Adoption Model (Featherman & Pavlou, 2003)	‘Potential loss of control over personal information, such as when information about you is used without your knowledge or permission. The extreme case is where a consumer is “spoofed” meaning a criminal uses their identity to perform fraudulent transactions’. (Featherman & Pavlou, 2003 p 451 – 474).

<b>Table 2.8 MOSN Normative Belief Constructs</b>		
<b>Normative Belief Structures - The normative beliefs structures (or subjective norms) – peer influences and superior influences – are used to identify and explain the influence of different referent groups on perceptions of whether the use a technology (Macredie &amp; Mijinyawa, 2011).</b>		
<b>Normative Construct</b>	<b>Original Theory</b>	<b>Definition</b>
<b>Primary Influence</b>	Personal Computers in Homes; MATH (Venkatesh & Brown, 2001)	“The extent to which members of a social network influence one another’s behavior” (Venkatesh & Brown, 2001, p. 82).
<b>Secondary Influence</b>	Personal Computers in Homes; MATH (Venkatesh & Brown, 2001)	The extent to which messages conveyed by the mass media influence adoption, such TV & newspapers (Venkatesh & Brown, 2001).

<b>Table 2.9 MOSN Control Belief Constructs</b>		
<b>Control Belief Structures - ‘One's perception of the difficulty of performing a behavior’ (Eagly &amp; Chaiken, 1993)</b>		
<b>Control Construct</b>	<b>Original Theory</b>	<b>Definition</b>
<b>Requisite Knowledge</b>	Personal Computers in Homes; MATH (Venkatesh & Brown, 2001)	‘The individual's belief that he/she has the knowledge necessary to use a technology’ (Brown & Venkatesh, 2005 p 401) <i>see</i> Venkatesh & Brown (2001)
<b>Resource F.C</b>	Decomposed Theory of Planned Behavior (Taylor & Todd, 1995a)	‘Facilitating conditions are the money, time or technology that are needed to make use of the innovation’ (Taylor & Todd, 1995a p 144).
<b>Technology F.C</b>		Consistent with Macredie & Mijinyawa (2011) ‘Facilitating conditions’ have been further deconstructed into two constructs; Technology F.C and Resource F.C.

### 2.5.2 Development of MOSN Conceptual Framework

Having identified ten theoretical constructs drawn from a range of well- established IS, social science and psychology theories, a conceptual framework was constructed.

According to Miles and Huberman (1994), “A conceptual framework explains, either graphically or in narrative form (diagrams are much preferred), the main things to be studied - the key factors, constructs or variables - and the presumed relationships among them” (p. 18). A conceptual framework has potential usefulness as a tool to scaffold research in order to assist a researcher in make meaning of subsequent findings. Benefits include providing links between the literature and research goals and questions, informing research design and providing reference points for the discussion of literature, methodology and analysis of research data. (Smyth, 2004). In quantitative research where well developed research questions are typical the conceptual framework is frequently utilized, usually in a diagrammatic form depicting, variables, their conceptual status in relation to each other and the hypothesized relationships between them (Punch, 2005). The conceptual framework approach was employed to this research and a conceptual framework was developed based on and guided by the theories of TPB, DTPB, MATH & e-services adoption model (figure 2.6).

### **Attitudinal Beliefs**

Consistent with DTPB and MATH the ten constructs selected for MOSN were categorized into three groups: attitudinal belief structures, normative belief structures and control belief structures. According to their application in MATH (Venkatesh & Brown. 2001), hedonic outcomes, utilitarian outcomes and social outcomes have been assigned to the group of attitudinal belief structures. Attitudinal beliefs refer to an individual's positive or negative feelings about performing a behavior (Eagly, & Chaiken, 1993). The innovation characteristics relative advantage drawn from DOI reflects feelings towards an innovation (OSNs) in relation to the innovations that it supersedes (Rogers, 2003). The superseded innovations were recognized to be land line telecoms, mobile telecoms, e-mail & SMS and viewed to form part of the attitudinal belief structure. The final attitudinal construct applied to the model is Privacy Risk defined as ‘Potential loss of control over personal information, such as when information about you is used without your knowledge or permission’ (Featherman & Pavlou, 2003 p 451 – 474). These feelings of loss of control or a perceived prospect of identity theft will result in negative feelings towards OSN adoption and use; therefore privacy risk is categorized as an attitudinal construct. This rationale was confirmed as it has been previously cited that privacy elements a significant factor in the decision to use OSNs (Fogel & Nehmed, 2009).

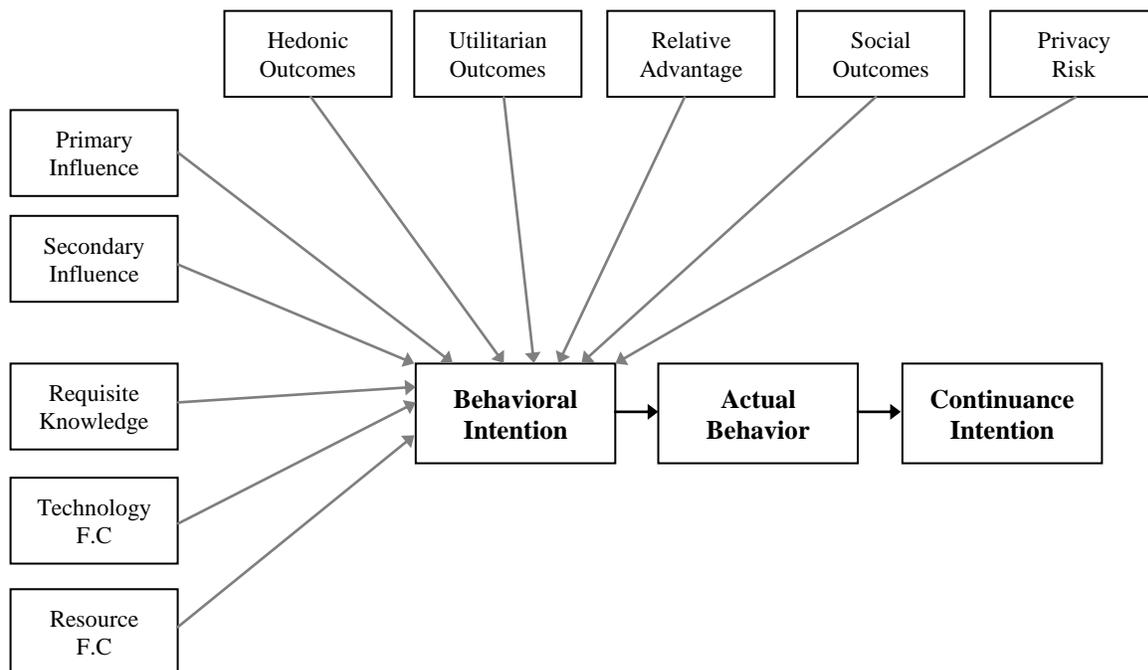
### **Normative Beliefs**

The normative beliefs structure pertains to subjective normality's such as peer influences and superior influences (Venkatesh & Brown, 2001). Such constructs can be used to identify and explain the influence of different referent groups on perceptions of use suitability in terms of a technology (Macredie & Mijinyawa, 2011). MATH suggests that normative beliefs include three sub groups of normative

influence that are: (1) friends and family (2) secondary sources such as TV or newspapers (media) (3) workplace influences. As this research focuses on household use of OSN and not the workplace, workplace influences were viewed to be inappropriate for this research; therefore the normative belief categories consist of primary normative influence (primary influence) and secondary source normative influence (secondary influence).

### Control Beliefs

Control belief structures refer to an individual's perception of the difficulty of performing a behavior (Eagly & Chaiken, 1993). Drawn from DTPB, Facilitating Conditions (F.C) are described as "money, time and technology that are needed to make use of an innovation": (Taylor & Todd, 1995a; p144). Consistent with the decomposition of F.Cs in Macredie & Mijinyawa (2011), facilitating conditions is divided into two constructs; 'technology F.C' and 'resource F.C'. First, technology F.C refers to technologies required to operate OSNs such as, internet access (broadband) and access or ownership of internet 'able' devices such as laptops, computers, smart phone and PDAs. Second, resource F.C pertains to time resources available to an individual to use OSNs and monetary expenses required for internet access and devices. This is on the basis that previous technology adoption research identified not possessing requisite knowledge to use a computer significantly inhibits adoption (Venkatesh & Brown, 2001). This led to the construct 'requisite knowledge' that was applied as the third construct to be included in the control belief category.



**Figure 2.6 - MOSN Conceptual Theoretical Framework**

## Key Dependent Variables

Also included within the conceptual framework are three dependent variables: behavioral intention, actual behavior and continuance intention. These variables are included to obtain the broadest insight into the influence and effect of the selected explanatory theoretical constructs. These dependent variables allow several understandings important for this research. These are: (a) an understanding of the intention to use OSNs; (b) the actual behavior in relation to the intention; and (c) the continuance intention in relation to the actual behavior. These dependent variables are described in the following sections.

### Behavioral Intention

TPB is an extension of the Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975) and forms the primary theoretical foundation on which the proposed conceptual framework is built upon. TPB's original development was made necessary by TRA's limitations in dealing with behaviors over which people have incomplete volitional control.

A central construct of TPB is the individual's *intention* to perform a given behavior. Intentions are assumed to capture the motivational factors that influence a given behavior; they are representations of willingness and effort they are planning to exert, in order to perform a given behavior (Ajzen, 1991). As a general rule, the stronger the intention to engage in a behavior, the more likely should be its performance (Ajzen, 1991). Conforming to this theoretical rationale the construct behavioral intention is the key dependent for all ten of the explanatory theoretical constructed. Warshaw & Davis (1985) define Behavioral Intention (BI) as 'the degree to which a person has formulated conscious plans to perform or perform some specified future behavior' (p.215). By including BI the extent to which the chosen theoretical constructs can explain the behavioral intention of a user to use OSNs can then be examined. Behavioral intention is a reoccurring dependent variable in all models (TPB, DTPB, MATH & E-Services adoption Model) that form the theoretical grounding of the MOSN framework.

### Actual Behavior

'According to Fishbein & Ajzen (1975) a behavioral intention measure will predict the performance of any voluntary act, unless intent changes prior to performance' (Shepperd, 1988 p 325). This is interpreted as a circumstance that can occur between the point of behavioral intention to perform an act and actually performing the act; hence, resulting in a behavioral intention never materializing into actually performing the intended behavior (adopting OSNs). Making provisions for this theory the construct 'Actual Behavior (AU)' will be the dependent variable for behavioral intention. This will allow the conceptual framework to test if there is a significant relationship between an older adult's intention to adopt and use OSNs (if it exists) and their actual behavior (actually adopting and using OSNs).

## **Continuance Intention**

‘While initial acceptance of IS is an important first step toward realizing IS success, long-term viability of an IS and its eventual success depend on its *continued* use rather than *first-time* use’ (Bhattacharjee, 2001 p351-352). This point raised the importance of examining the continuance intention as the dependent variable for actual behavior. Continuance intention is defined as an individual’s intention to continue using a service in the post-acceptance stage (Bhattacharjee, 2001 cited: Hu et al, 2009).

In terms of this research, when a user initially uses OSNs it is measured using ‘actual behavior’. Continued use of an OSN is then examined using the continuance intention construct. Continuance intention within the proposed conceptual framework acts as a confirmatory measure for successful adoption of OSNs. This assists in eliminating doubt from those participants currently using OSN. These users are not trialing, one off users, but actually intend to use OSNs on a long term basis that leads to successful adoption.

Continuance intention has been utilized in a number of studies modeling the IS adoption decision process (Chen, 2006; Bhattacharjee, 2001; Hu et al, 2009; Ifinedo, 2006) and within the MOSN framework is used a mechanism to support the predictive validity of the model.

### **2.5.3 MOSN Hypotheses Development**

All thirteen explanatory and dependent theoretical constructs are interlinked with linear one-way causal paths. These paths represent the research hypotheses. “A hypothesis is a specific statement of predication” (Trochim & Donnelly, 2006 pp 9). A hypothesis describes the expected outcomes of the relationship between pairs of variables within the MOSN framework. For this research, thirteen explanatory and dependent theoretical constructs are interlinked with linear one-way causal paths where these paths represent the research hypotheses. Twelve hypotheses were then developed within the MOSN framework. In the following sections, the theoretical development of these hypotheses is explained.

### **Hedonic Outcomes**

The majority of OSN adoption has been experienced by OSN providers who focus fundamentally on the OSN experiences satisfying individual’s needs for online entertainment, recreation and communication such as Facebook, MySpace and Twitter. Hedonic Outcomes in context of this relates to the perception of pleasure and fun OSNs will provide through adoption and use. Existing literature has found enjoyment and playfulness to have to have mediating or direct effect on the intention to use a technology (Sledgianowski & Kulviwat, 2009. Sledgianowski & Kulviwat (2009) investigated hedonistic factors as

predictors of OSN adoption, they were found to have a strong significant direct effect on OSN use intention.

Therefore Hedonic Outcomes is considered to be a motivational construct to OSN use that renders a positive effect on the decision to adopt OSNs.

**H1: Hedonic outcomes will have a significant positive influence on an older adults' behavioral intention to adopt use OSNs.**

### **Utilitarian Outcomes**

Utilitarian Outcomes pertains to the “the degree to which using a PC enhances the effectiveness of household activities” (Venkatesh & Brown, 2001, p.74). As OSNs can serve in assisting household and non-recreational activities such as an intermediary for government subsidiary communication or as a communication method for those who conduct paid or unpaid work from the household, Utilitarian Outcomes is hypothesized to have a significant effect on the behavioral intention to use OSNs. Investigating PC adoption in the household, Brown et al (2006) found PC utilities for work related use to be a significant predictor of use. Conci et al (2009) when investigating the adoption of mobiles phone by older adults found utilitarian motives play a role within the adoption decision making process.

Application of this construct will assist exploration in understanding if older adults view or use OSNs in order to enhance or improve household activities by testing the following hypotheses.

**H2: Utilitarian outcomes will have a positive significant influence on an older adults' behavioral intention to adopt and use OSNs.**

### **Relative Advantage**

Rogers (2003) considered the perceived attributes of an innovation to be Relative advantage, compatibility, complexity, trialability and observability. These attributes are of particular interest to this research (Definition of these attributes are provided in Figure 2.5) due to the reasoning that ‘it should not be assumed, as it sometimes has in the past, that all innovations are equivalent units of analysis’ (Rogers, 2003 pp.15). Relative advantage not only focuses on the perceived advantage that OSN use may hold for older adults, but focuses on the advantage relative to technologies that an older adult may be currently experiencing or when previously used. The application of this construct within this research will provide an understanding of whether OSN adoption is motivated by advantages OSNs achieve with respect to technologies being currently utilized by older adults such land telecoms, mobile telecoms, e-mail and SMS. Thackeray et al (2013) determined that older adults are benefitting from OSN use through access to health information, awareness of such benefits is likely to increased perceived Relative Advantage. Braun

(2013) found the perceived usefulness and benefits to be a significant predictor of OSN use in older adults. Kolodinsky et al (2004) found relative advantage are associated with the adoption of electronic banking technologies.

Therefore Relative Advantage has been identified and integrated within the proposed conceptual framework using the following hypotheses.

**H3: Relative advantage will have a positive significant influence on an older adults' behavioral intention to adopt and use OSNs.**

### **Social Outcomes**

'Research on the impact of social influence on the individual Information Systems (IS) user represents one of the major challenges of technology adoption research since the introduction TAM' (Eckhardt et al, 2010 p.1). As several IS researchers still strive both theoretically and empirically to determine how social influence can be explained and measured (Eckhardt et al, 2010), this research aims to contribute to this research issue by understanding the influence of social outcomes in context of OSNs.

Previous efforts to understand social influence in context of OSN technology adoption were made by Vannoy & Plavia (2010) who contributed to the area by forming a theoretically grounded model examining social influence as an explanatory construct of OSN adoption. Using a quantitative approach Glass & Li (2010) also empirically investigated the effect of social influence and demographic factors on Instant Messaging (IM) adoption in the context of the workplace. They found that social influence has a positive significant influence on IM adoption. Integrating the construct social influence within TAM (Davis ,1989), Sajad et al (2009) found that social influence has a positive significant effect on the behavioral intention to use computers. In terms of older adults computer adoption Nagle & Schmidt (2012) found social outcomes to be a strong significant predictors.

Noting the theoretical value of social influence in the field of technology adoption and acknowledging the significant findings of social elements on the intention to adopt digital technologies, the following hypothesis was formed.

**H4: Social outcomes will have a positive significant influence on an older adults' behavioral intention to adopt and use OSNs.**

### **Privacy Risk**

Uploading personal information such as name, e-mail address, residential location, age and photos are typically required to fully utilize the benefits and functionality of OSNs. Therefore, it was viewed that such requirements may cause anxiety or uncertainty regarding the consequences of having this personal

information available on the internet. When seeking existing literature regarding the effect of personal privacy concerns in the technology adoption decision it was confirmed by Fogel & Nehmed (2009) that privacy concerns are potentially relevant and important concerns before at the sign-up period before individuals are allowed to create a OSN profile. It was found that perceived risk and/or privacy in other contexts are influential in terms of technology adoption (Shin, 2010; Balanger & Carter, 2008; Lieberman & Stashevsky, 2002). Courtney (2008) found privacy concerns to be a barrier to older adults' adoption of technologies in context of the household.

Consequently Privacy Risk is hypothesized to be an impediment to OSN adoption and use, and will be tested using the following hypotheses.

**H5: Privacy Risk will have a significant negative influence on an older adults behavioral intention to adopt and use OSNs.**

### **Primary Influence**

The construct primary influence is applied from MATH where 'Friends & Family' influences are defined as "The extent to which members of a social network influence one another's behavior" (Venkatesh & Brown, 2001, p. 82). Ultimately the purpose of social networks is to provide a medium for socially orientated media and communication exchange between its users, inherently social exchange occurs between and across friends and family; therefore it is likely if an Internet consumer's friends/family use or encourage the use of online social networking, the adoption of social networks is more likely to take place. Venkatesh (2000) found social influences to significantly influence user technology acceptance.

Using this reasoning the following hypothesis has been formed:

**H6: Primary influence will have a positive significant influence on an older adults behavioral intention to adopt and use OSNs.**

### **Secondary Influence**

The construct secondary influence is applied from MATH that is defined as 'the extent to which information from TV, newspaper, and other secondary sources influences behavior'. (Venkatesh & Brown, 2001). In recent years OSNs such as Facebook and Twitter have been at the forefront of media coverage; however much of this media coverage reports on the negative impacts social networking is having on society e.g. Internet grooming and identity fraud. In light of this fact the following hypotheses has been developed in order to determine if negative media coverage is impeding the adoption of online social networks by 50+ Internet consumers:

**H7: Secondary Influence will have a negative significant influence on an older adults behavioral intention to adopt and use OSNs.**

### **Requisite Knowledge**

The construct requisite knowledge applied from MATH is defined as ‘The individual belief that he/she has the knowledge necessary to use a technology’ (Venkatesh & Brown, 2001). In order to use or adopt an OSN some computer literacy is required on how to sign up, use or learn how to use social networks is required. It is possible that if this requisite knowledge is not possessed by a 50+ Internet consumer this may discourage them from exploring the use of social networks; therefore the following hypotheses has been developed:

**H8: Requisite knowledge will have a negative significant influence on an older adults behavioral intention to adopt and use OSNs.**

### **Technology F.Cs**

Within the household two technological resources must be available to facilitate an individual’s adoption of OSNs. The first technology resource requisite is internet access, which is dependent on the availability of internet service at the location of an individual’s household in either wireless (wi-fi or 3G) or physical access via broadband internet (fibre optic & ISDN). The second required technology resource is at least one ‘internet- able device’. The internet accessible device we associated with electronic devices such as, a smartphone, PDA, laptop or a desktop PC that is capable of utilizing an internet connection to view and interact with internet services through a web browser, which is compatible with the chosen OSN provider. Using this reasoning, the premise that if either or both of technology facilitating conditions are not available to an older adult’s intention to use OSNs can never progress to actual use.

**H9: Technology F.Cs will have a significant positive influence on an older adults behavioral intention to adopt and use OSNs.**

### **Resource F.Cs**

As rationalized in the nine hypothesis certain resources such as, internet availability and internet able devices are necessary to facilitate OSN use. However, further consideration of resources must also be made. As suggested by Taylor & Todd (1995a) time and money are key resources that must be considered when examining behavioral intention. Internet access is typically acquired through a monthly subscription by an Internet Service Provider (ISP), which typically ranges from £10- 40 a month. Internet devices capable of OSN use are at least £300 or more. Individuals may not want to accrue this additional expenditure or may not have the money to do so. Therefore, indirectly it is suggested that money may be

an impediment toward OSN use. Further, as the majority of OSN use is for social and recreational purposes as opposed for work or professional purposes older adults may consider OSN use as an activity that may infringe upon the time they have available for other activities in their daily lives. Therefore, time and money must be available for OSN users and if in the cases where these resources are not available, this may indirectly be an impediment of OSN adoption and use. Nagle & Schmidt (2012) found facilitating conditions to be significant predictors of computer use and intention within the older population.

**H10: Resource F.C will have a significant positive influence on an older adults behavioral intention to adopt and use OSNs.**

### **Behavioral Intention**

Behavioral intention acts at the key dependent construct for the selected explanatory theoretical constructs and is the theoretical explanatory construct for Actual Use (AU) of OSNs. When examining technology adoption Kijasanayotin et al (2009) found a significant relationship with behavioral Intention and Actual Use. Contrastingly Tao (2009) found no significant relationship between behavioral intention and actual behavior.

“Although there is not a perfect relationship between behavioral intention and actual behavior, intention can be used as a proximal measure of behavior. This observation was one of the most important contributions of the TPB model in comparison with previous models of the attitude-behavior relationship” (Francis et al, 2004: p8); thus, the following hypotheses was developed.

**H11: Behavioral Intention will have significant positive effect on Actual behavior**

### **Continuance Intention**

Examining the continuance usage intention in context of the OSN Twitter Haider (2009) found that 45.5% variation of an individual’s continuance intention to use OSNs could be significantly explained by habit, perceived usefulness and satisfaction. After a thorough literature review previous studies examining the relationship between actual use and continuance intention could not be found. This research therefore aims to contribute some understanding towards a configuration of these theoretical constructs. As OSNs typically require access with some regularity to fully obtain the anticipated benefits it is expected that the majority of those participants currently using OSNs at the time of being surveyed will have the intention to continue using OSNs; therefore the following hypotheses has been formulated.

**H12: Actual behavior will have a positive significant effect on continuance intention**

NOTE: The conceptual framework with hypotheses is illustrated in figure 4.3 page 147.

## 2.6 Demographic Variables

Key socio-economic variables when examining the demographics in social investigations include, factors such as age, gender, race, education, occupation and health (Burgess, 1986). These factors are viewed as important to provide information regarding the characteristics of the populations of interest. Household income, age, education and occupational class location remain to be viewed as key demographic variables of differential Internet use (Willis & Tranter, 2006). Acknowledging that including the demographic variable within research analysis allows for a broader more insightful understanding demographics will be tested within the path analysis in the final phase of research. The following sections provide the parameters and measures of demographics included.

### Age

Age is an elusive variable in social science research, and almost always collected but very often not utilized. As an explanatory variable, age can be used (implicitly or explicitly) as a factor, which is said to explain a particular social grouping, social process or piece of individual or collective behavior (Burgess, 1986). Venkatesh et al (2003) found age to be a significant variable in the context of technology acceptance. Morris & Venkatesh (2000) investigated age in technology adoption and concluded that for technology adoption decisions age does in fact influence outcomes.

Grimes et al (2007) also found age to be a significant predictor when investigating e-mail spam within end users. The particular behavior in question is the propensity to adopt and use OSNs. Usage statistics suggest that age is a significantly diverse variable in adoption and use. Due to age orientated phenomena, within the proposed research age is applied as an explanatory variable of Actual Behavior (AB). Age bands were incremental in bands of 5 years; 50-55, 56-60, 61-65, 66-70, 71-75, 76-80 and 81+.

### Gender

Several studies have examined gender issues in computer anxiety and attitudes, and their results can to some extent be extended in the context of the Internet (Teo, 2001). Venkatesh et al (2000) conducted a longitudinal field investigation of gender differences that occur in the technology adoption decision process. Findings confirmed that gender did reveal diversity within decision making, as men were more strongly influenced in their attitude toward using the new technology. Contrastingly women were more strongly influenced by subjective norm and perceived behavioral control.

Morris et al (2005) examined age and gender in employee technology adoption decision-making using the TPB. Results showed that gender differences were more pronounced with increasing age, with men placing a greater emphasis on attitude toward use compared with women. In addition to these studies a

strong body of research can be found in relation to gender in technology adoption, OSN research and internet and computer technology usage (Fedorowicz, 2010; Grimes et al, 2007; Schumacher & Morahan-Martin, 2001; Best & Maier, 2007; Ono & Zavodny, 2005; Muscanell & Guadagno, 2012). For these reasons the demographic gender variable will be examined in this research.

## **Race**

‘The classification of populations into discrete categories on phenotypic or genotypic criteria is an accepted practice in the physical and social sciences’ (Wilkinson & King, 1987 p 56). Such classifications refer to an individual’s race. In this research race or ethnicity classifications utilized in this research are: White British, other white background, mixed white and black African, Mix white and Asian, other mixed background, Asian/British Indian, Asian/British Pakistani, other Asian background and Black/British African.

## **Health**

‘Today and in the future, more people than ever before are coming face-to-face with diseases, disability and a variety of complex health issues associated with growing older’ (Wetle, 2002; p 3 cited – Morrell, 2002). Cook et al (2005) examined the attitudes and behaviors of internet use and individuals with psychiatric disabilities where their findings showed that given certain psychiatric attributes, some participants were significantly less likely to hold negative attitudes about Internet use.

As this research is focused specifically on older adults special consideration must be taken of this fact. Determining the state of health requires special staff and individual examination of each participant, made more complicated by the controversy of what constitutes ‘good’ or ‘poor’ health. To address the issue of health within this research participants were administered a self-assessed evaluation survey item that measured their current state of health using the categories: poor, good and excellent. This provides some, perhaps not a concrete insight into the correlation of state of health and OSN/Internet use.

## **Education**

There is a limited amount of research that examines the relationship between educational level and computer usage (Teo, 2001). The demographic variable age refers to the highest academic qualification currently held by a participant at the point of time when participating in this research. Previous research has found a relationship between education level and technology use. For example Teo et al (1999) found education level appeared to negatively affect daily Internet usage but positively affected the diversity of Internet usage. This implied that the higher the education level of Internet users. The less time is spent daily on the Internet, but the diversity of tasks performed is greater compared to less educated Internet users. It was also found that education had a significant positive effect on the construct perceived

usefulness. However, a plausible counter argument is that the internet use, with its easy to use browsers makes differences in education level to be an unimportant issue of consideration (Teo, 2001).

It is therefore important to consider and examine the relationship between education level and OSN use and adoption in the older population. Education levels were segmented into the following options; higher degree/ postgraduate degree (MBA, PhD, MD, MA, MSc), 1<sup>st</sup> degree (BSc/BA), HND/HNC/Teaching, A-level, BTEC/Collage diploma & GCSE/O-Level.

### **Occupation**

As previously mentioned utilitarian outcomes covets aspects of work (unpaid & paid) related applications for OSNs. However, such use of OSNs maybe specific to certain occupational sectors. With this reasoning in mind and with minimal research available to make any robust theoretical postulation, occupation will be tested. This is necessary in order to provide a contribution to knowledge toward the relationship between OSN adoption and an individual's occupational status. Occupational status categories used were student, legislator/ manage/ professional, academic/teacher, craft/ trade, clerk, service/ sales, agriculture/ forestry/ fishery, plant/machine operators and freelance.

## **2.7 Chapter Summary and Conclusions**

Chapter two began with clear definitions and backgrounds of all the core terminology used within this research study. This was important to fine-tune the boundaries and application of this work. This chapter then conducted a thorough review of existing literature pertaining to adoption, diffusion, usage, OSNs and older adults, that led to an informed selection of four leading IS technology adoption and diffusion theories and models. These formed the theoretical foundations of the proposed research conceptual framework applied in this research study. These included TPB, DTPB, MATH, DOI & the e-service adoption model. Using theoretical principles and selected constructs from these theories a conceptual framework was developed. Within MOSN reside twelve hypotheses and a section explained the development of these hypotheses. The outcomes of this chapter prepare this research to progress onto an appropriate and robust set of research methods that will be described.

In the following chapters, the proposed conceptual model will be validated as a basis for investigation. Chapter 3 begins with a discussion of the chosen research methodology. Following that, chapter 4 will undertake the pilot phase of research.

# Chapter 3

## Research Methodology

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### 3.1 Introduction

The previous chapter provided a theoretical aspect to this research study by identifying and discussing a selection of IS, social science and psychology theories that have been employed within previous Information Systems (IS) research and applied to this research. Selected constructs from these theories were used to form a theoretical conceptual framework. The formation of the conceptual framework then led to identifying and explaining an appropriate research methodology for completing this research study and an empirical validation of the theoretical conceptual framework. Therefore this chapter provides the methods and approaches that have been considered appropriate for this research study.

### 3.2 Research Methodology

‘Research is an intensive and purposeful search for knowledge and understanding and social and physical phenomena’ (Kumar, 2008 p.1). In order to conduct research, research methods and methodology are required.

At this juncture it is appropriate to define the difference between research methods and research methodology: Research methods refer to the methods or techniques the researcher employs in performing research operations e.g. field research: questionnaires, surveys and interviews (Kothari, 2004).

The scope of research methodology is wider than that of research methods. Research methodology is a way to systematically solve the research problem, therefore research methodology pertains not only to the research methods but also considers the logic and reasoning behind those methods used or not used (Kothari, 2004). Shkedi (2005) states that methodology “deals with methods, systems, and rules for the conduct of inquiry” (P.6). In other words methodology is the identification, study and justification of research methods employed (Johnson & Christensen, 2012).

Therefore the following sections of this chapter consider all appropriate research methods available to this investigation, the reasoning behind the choices made and order by which they will be conducted.

### 3.3 Epistemology

Epistemology is the study of knowledge and how it is judged to be ‘true’ (Taylor et al, 2006). Epistemology is therefore the branch of philosophy dealing with knowledge and its justification (Johnson

& Christensen, 2012). In other words epistemology examines the theory of knowledge, including the nature, scope and limitations of it (Collins, 2010).

Before developing a research methodology one of the critical decisions when designing a research study is the paradigm (or paradigms) within which the research investigation is situated (Maxwell, 2005). A paradigm is 'the beliefs members of scientific community share' (Gliner & Morgan, 2009 p.7). A paradigm is way of thinking and conducting research, not strictly a methodology, rather a philosophy that guides how the research might be conducted (Gliner & Morgan, 2009).

Therefore the following sections will describe the available research paradigms for researchers and those chosen for this research.

### **Positivism**

As a philosophy, positivism is aligned with the empiricist view that knowledge stems from human experience. Positivism holds that all phenomena should be understood through the utilisation of a scientific method (Collins, 2010). A positivist study generally attempts to test theory, in efforts to increase the predictive understanding of phenomena (Myers, 1997).

Orlikowski & Baroudi, (1991) adopted the following criteria for classifying positivist studies; (1) Formal propositions, (2) Quantifiable measures of variables, (3) hypotheses testing, (4) drawing of inferences about a phenomenon from the sample to a stated population.

### **Interpretivism**

Interpretive research begins with the assumption that access to reality (given or socially constructed) is only through social constructions such as language, consciousness and shared meanings (Myers, 1997).

According to interpretivism, the study of social phenomena requires an understanding of the social world that people have constructed and which they replicate through their continuing activities (Blaikie, 2007).

The interpretivist position may be broadly described in terms of the importance of meaning in the understanding of humans and society, interpretivism also emphasizes that there is no single view of the world and that individuals and groups can interpret the word in widely different ways (Sheppard, 2006).

### **Constructivism**

The constructivist paradigm rejects the idea that focus of inquiry is to seek one 'real' way of viewing the world, constructivism holds that it is more useful to accept and explore all individuals reality in the search of a more informed view (Dills & Romiszowski, 1997) Constructivism rejects means through a 'scientific method' such as statistically-based inferences which are no longer considered 'truth finding' tools (Dills & Romiszowski, 1997).

Chen & Hirschheim (2004) conducted an empirical study evaluating 1893 papers from eight major IS publications, between 1991 and 2001. At the paradigmatic level, the vast majority (89%) of the US publications are characterized by a positivist paradigm. Although European journals also mainly publish research based on positivist principles (66%), they tend to be much more receptive to interpretivist research (34%) than US journals.

After consideration of the underlying research philosophies available in IS research and those used in previous IS research, this research study will examine OSN adoption in the UK using a positivist standpoint. This is on the basis of Orlikowski & Baroudi (1991) criteria of their interpretation of positivist research, which is as follows: (1) Formal propositions, (2) Quantifiable measures of variables, (3) hypotheses testing, (4) drawing of inferences about a phenomenon from the sample to a stated population. Using Orlikowski and Baroudi's classification it was found that this research has quantifiable measures that arose in the form of the survey items emerging from variables that are in the form of theoretical constructs. This research also formed hypotheses in chapter 2 and then tested in the subsequent chapters. This then allowed the study to draw inferences from an older adult population first drawn from across Facebook and then a hard copy and online questionnaire disseminated in Hertfordshire. This allowed this research to then draw inferences regarding the adoption and use of Facebook within the older adult population. This also aligns with the view that 'quantitative data, analysis and methods are usually used with the positivist paradigm' (Morgan et al, 2008: p.12).

### **3.4 Inductive & Deductive Research**

Having ascertained that there is a scientific element to this research study, the next step involved exploring and identifying the reasoning used in this research. This research is scientific in nature and such research can be undertaken using either through *inductive* or *deductive* reasoning or through a combination of the two (Lockstrom, 2007), these reasoning methods were considered. The relationship between theory and research is viewed differently depending on whether inductive or deductive research is undertaken.

'In the Inductive research strategy, theory consists of generalisations derived by induction from the data' (Blaikie, 2010 p.154). 'Inductive research begins with specific data, which are then used to develop (induce) a general explanation (a theory) to account for the data' (Engel & Schutt, 2005 p.45). 'Deductive research is more generally associated with positivist and quantitative research. It involves the development of an idea, or hypothesis, from existing theory which can then be tested through the collection of data' (Gratton & Jones, 2010 p.36).

As this research study involves developing a hypothesis from existing IS theories, it is deemed that a deductive research methodology will be undertaken within this study. Further support for a deductive

approach is the development of a conceptual framework that contained constructs from existing theory and then forming hypotheses derived from existing theory and research findings. This conceptual theory is then empirically tested using quantitative data in order to produce, through scientific methods, evidence to prove or disprove hypotheses.

### **3.5 Primary and Secondary Data**

The next step for a research study is to ascertain the types of research to be applied to a study. There exist two broad categories of research, quantitative and qualitative research. There is also the type of primary and secondary research. In general terms, primary research is the generation of new data in order to address a specific research question. When primary research is conducted data is collected specifically for the study at hand, and has not previously been interpreted by a source other than the research (Jupp, 2006). Comparatively, secondary research, is further analysis of an existing data set with the aim of addressing a research question distinct from that for which the data set was originally collected, and generating novel interpretations and conclusions (Jupp, 2006).

Depending on which of the aforementioned approaches has been utilised the resulting data is classified as either primary data or secondary data. Primary data is data collected for the first time by the researcher for the specific research project in hand, whereas, secondary data is data originally gathered for some other purpose (Stevens et al, 2006).

For this research both primary and secondary research will be utilised. Primary data will be used to produce data specifically for the aims of this research, and would have not previously been interpreted by any other researchers. Secondary data for this research will be utilised in applying source documents in the forms of archival documents, such as reports, journal articles, datasets or web sites in order to fulfil the research aims and objectives.

The following sections provide further details of these data types, sources and applications within this research study.

#### **Primary Data**

As mentioned earlier, primary data generates new data in order to address a specific research question. This is achieved using either direct methods such as interviews, focus groups and surveys, or either indirect methods such as observation (Jupp, 2006). A diverse interpretation of primary research is provided by Stevens et al (2006) who specify that primary data is generated in a research project for specific purpose in a specific format or collected from a specific population sample (Stevens et al , 2006).

For this research primary data was employed in the following way. As this research focuses specifically on older individuals and there was a need to identify whether this group of society does use Facebook, primary data was utilised for the majority of the conducted research. Primary data collection emerged in many forms within this research: During the content validation phase primary data was procured in order to obtain feedback about survey items. The following pre-test phase also procured primary data from a set of experts to give feedback of final phase survey items. The pilot and final phase survey data collection procedures also resulted in two primary quantitative datasets.

### Secondary Data

This research also utilised secondary data. Secondary data (information) consists of sources of data and other information collected by others and archived in some form. These include government reports, industry studies, and syndicated information services as well as traditional books and journals found in libraries (Stewart, 1984).

When selecting and evaluating secondary sources of data considerations include: what was the purpose of the study, who was responsible for collecting the data, what information was actually collected and when was the information collected (Stewart, 1984).

Even though the research design might require the collection of primary data, secondary data has many important uses. These are: low-cost, speed of access, availability and flexibility. However, disadvantages of secondary data utilisation include: unknown information quality, age of data and poor 'fit' or relevance to the research objectives (Stevens et al, 2006).

<b>Research Phase</b>	<b>Secondary Data Used</b>
Problem Definition	Books/Journals/Conference Publications/ Statistics
Literature Review	Journal/ Conference Publications
Conceptual Development	Journal/ Conference Publications
Research Method Development	Books/Journals/Conference Publications
Discussion	Journals/Conference Publications
Evaluation	Secondary Quantitative Data Sets

Using data that has been collected by a specialist team of experts maximises data quality, but also improves efficiency in terms of time and cost (Jupp, 2006). Secondary data emerged in several ways. Initially, literature was used to form the conceptual framework. Thereafter, it appeared in the evaluation

phase of this research. This was in the form of using Nationally Representative Datasets (NRDs). The manner that secondary data was used is illustrated in Table 3.1 below.

### **3.6 Quantitative and Qualitative Data**

Before proceeding onto explanations and decisions of which quantitative and qualitative research methods were employed for this investigation, definitions of quantitative and qualitative data are provided.

Quantitative data is based on the key concept of quantity, where numbers are used to express (Punch, 2005). Therefore, quantitative data are numerical and is information about the world in the form of numbers. As information about the world does not naturally occur in the form of numbers it is the researchers who convert data (counting or scaling) into numbers. (Punch, 2005).

Comparatively, 'Qualitative data often consist of notes prepared by the researcher or tape recordings of interviews or conversations with subjects' (Bamberger, 2000, p.38). Trochim & Donnelly (2008) define qualitative data as 'data in which the variables are not in a numerical form, but are in the form of text, photographs, sound bytes and so on (p.142).

From these definitions the extent of the distinction between quantitative and qualitative data is provided. This research applied quantitative research in the form of numbers that were interpreted using statistical measures to form an understanding of the world. The following sections describe a range of research methods utilized for quantitative data collection.

### **3.7 Quantitative Research Methods**

Quantitative research involves the collection of data in numerical form for quantitative analysis; numerical data can be collected in scores, ratings or scales (Jupp, 2006). Quantitative research methods possess certain strengths and weaknesses as a methodology, and are mostly associated with positivist tradition (Jupp, 2006). Quantitative research provides results that can be generalized to a specific population as it based on statistical sampling of the target population (Edmunds, 1999 p.2).

#### **Quantitative research methods**

Quantitative research methods were originally developed in the natural sciences to study natural phenomena. However, as the social sciences also involve data in numbers format, quantitative research methods are well accepted in the social sciences (Myers, 1997). As with qualitative research methods, there are various techniques for acquiring quantitative data, including laboratory experiments, which are identified and explained as follows.

**Laboratory experiments:** Laboratory experiments in social sciences emerged in the 1900s. Laboratory experiments offer strong advantages for testing predictions as they offer control on theoretically relevant factors and apply the power of random assignment to eliminate unwanted variables (Webster and Sell, 2007). Laboratory experiments are undertaken in both the physical and social sciences where attempts are made to create closed and controlled conditions in which research hypotheses can be tested (Jupp, 2006).

**Survey Methods:** Survey research methods are methods, which involve posing questions that obtain information directly from the participants. The questions may be presented orally, on paper or electronically; but the response comes from the person to whom the question is addressed at the time the question is asked (Dane, 1990). Survey research methods employed within this research are defined and described below.

**Paper-based surveys:** A social survey is a method of social research with three defining characteristics: first, the content is social. Then, the form of data is systematic, structured and based around variables, and finally, the method of analysis relies on comparisons across groups (Jupp, 2006). A paper based survey is a survey in which paper is the medium by which questionnaires are administered to participants. With a paper based self-completion questionnaire respondents have time to consider their answers, where they can spend time to think about the issue and answer the questions fully without any pressure (Brace, 2008).

**Online surveys:** The internet opens up new possibilities for primary research in the social and behavioral sciences, with respect to both adapting existing methodologies and tools to a new medium; therefore creating methodological possibilities (Hewson et al, 2003). There are many ways that surveys can be sent conducted and received using the internet, these include e-mail surveys, downloading surveys and online communication tools (voice or text) to conduct administered surveys over the internet (Marsden & Wright, 2010).

The online survey method holds all the attributes and principles of any survey; however the survey is in digital format, platformed on the World Wide Web (WWW) and the digital mechanism by which the survey responses are administered and collected is the internet.

**Exploratory surveys:** An exploratory survey collects survey data, which can increase the researcher's familiarity with the phenomena in questions. This is achieved through the clarification of concepts of focus and to establish priorities for future research. Types of exploratory survey include literature surveys and experience surveys (Connaway & Powell, 2010). Exploratory survey research allows for a broader range of questions to be administered in order for further research that can be focused on aspects that will lead to a more direct understanding of the research phenomena.

**Pilot survey:** A pilot survey is one that is operated within the pilot study phase of a research program. A pilot study is an abbreviated version of a research project in which the researcher practices or tests the processes that will be used in the subsequent full-scale project (Dane, 1990). Piloting a survey is essential in order to decrease the likelihood of research project failure as result of unforeseen floors in the research design when conducted in a 'real world' situation.

### 3.7.1 Quantitative Research Method Selection

Based also on the previous review of quantitative research approaches employed within existing literature pertaining to OSN and technology adoption research (chapter 2) and the previous explanations, it is apparent that the survey questionnaire approach provides the best research method for obtaining primary quantitative data. That is, a literature review allowed the formation of a conceptual framework, but testing its application in practice is essential. For this, data in the form of numbers obtained from the survey questionnaire is verified and validated in real life. This is achieved using statistical analysis that will empirically test the theoretical conceptual framework and formed hypothesis. Quantitative survey approach also allows for the representation of a group of society residing in a defined geographic parameter, and it was this attribute of a quantitative survey approach, which made it essential to undertake. Therefore the survey questionnaire research method will be selected for this research.

Further reasoning for using survey instruments are due to them being amongst the more popular research methods which are employed in Information Systems research. This is because they are easy to administer, provide responses that can be generalized to other members of the population and can be used to predict behavior (Newsted et al, 1998).

When selecting a research method, in particular a type of survey research method, the researcher must keep in mind the research problem, the sources of desired information, the nature of the data to be collected and the primary purpose of the research (Connaway & Powell, 2010). It is also important to decide the medium by which the survey questionnaire is distributed. Available methods include: the traditional paper based method, oral administration and internet based (WWW). Paper based surveys allow for a majority of individuals to participate as many people are familiar with the concept and no technical knowledge is required. Oral administration ensures that equal time, concentration and understanding has been factored into the responses but requires massive finance to employ and train a team of research staff. When conducting an internet/electronic survey the researcher automatically eliminates potential participants that do not have access to a computer or the internet (Lazar et al, 2010).

The greatest influence on which method (or combination) is used is how the researcher will have best access to the population of interest (Lazar et al, 2010). The population of interest for this research study

is internet users 50 years old or above. Therefore, for this research, the population of interest should have access to the internet and associated Information Technologies (IT). However also observing the merits of paper based surveys and in efforts to ensure this research does not exclude those with computers and internet access, a range of survey research methods data collection methods will be undertaken.

First a paper-based exploratory survey will be used to grasp a quantitative perspective of the views and attitudes regarding the OSN adoption phenomena. After deriving exploratory research findings an online pilot questionnaire was developed with the intention to determine the final methods of testing the conceptual framework. After determining failures and discrepancies in the online pilot questionnaire modifications will be made to eliminate these errors, this process will produce the final online questionnaire which will be used to test the MOSN framework.

A tabulation of acknowledged research approaches and sample sizes used within OSN and older adult's research can be found in appendix 3.2.

### **3.7.2 Quantitative Analysis Methods**

In order to achieve the aims of this research some methods for hypotheses testing to validate the conceptual theoretical framework were required. The following sections provide a background and explanation of chosen methods.

The proposed conceptual framework hosts twelve hypotheses (predicted effects of theoretical constructs on the intention to use OSNs). A hypothesis is a statement logically derived from a theory that states what is expected to be found in the real world if the theory is correct (De Vaus, 1996). In order to empirically test if these predicted outcomes are

in reality true it must be determined whether theoretical constructs have a positive & negative causal effect on older individual's intention to use OSNs. For example, does a hedonic outcome influence the adoption of OSNs (positive effect), or does hedonic outcomes deter the adoption OSNs (negative effect). One such technique that allows the identification of this causal effect using quantitative data is regression analysis.

#### **Regression Analysis**

Regression is the method for describing the relationship between two or more interval level variables. Regression estimates the impact of one variable on another (De vaus, 1996).

Regression analysis involves finding the best straight-line relationship in order to explain how the variation in an outcome (or dependent/endogenous) variable, Y, depends on the variation in a predictor (or independent/ explanatory/exogenous) variable, X (Vinsnes et al, 2001). Regression aims to answer;

how much does the dependent variable change, for each unit change in the independent variable? (De Vaus, 1996).

The Y variable in the MOSN conceptual framework is 'intention to use' as this variable captures the outcome of the adoption process, an older persons decision to use or not use OSNs. The X variables are the theoretical constructs drawn from selected theories, as these constructs are hypothesized to be predictors of an older person's decision to adopt OSNs.

Through regression analysis probability (significance) that X will influence Y can be determined through interpretation of the p-value. The outcomes of a regression test will also identify the positive or negative effect the X variables will have on Y. For example if the theoretical construct 'primary influence' (X) has positive effect on the intention to use OSNs (Y) it can be understood that based on the tested sample of data; as primary influence placed upon an older individual increases the probability of using OSNs increases.

Many types of statistical regression analysis techniques are available such as simple regression, linear regression and multiple regression. Selection of an appropriate technique is dependent on the nature and relationship between variables within a formulated conceptual framework. Referring to the MOSN conceptual framework the dependent variable is predicted by nine theoretical constructs, of which data will be gathered for each theoretical construct using two or three survey items. With this model identified the most suited form of regression analysis is multiple regression.

### **Multiple Regression**

'Multiple regression is the appropriate method of analysis when the research problem involves a single metric dependent variable presumed to be related to two or more metric independent variables' (Hair et al, 1998 p 14), further supporting selection for this research. Multiple regression involves the analysis in which there is one dependent variable and two or more independent variables (De Vaus, 1996).

As data is collected for each independent variable using multiple survey items (variables) this results in the requirement to calculate one single regression path based on multiple survey items (variables) simultaneously order to test hypotheses, such analysis requires a multivariate approach to perform multiple regression.

### **Multi-variate Analysis**

Multivariate techniques differ from univariate or bivariate analysis as their focus moves from the analysis of the mean and variance of a single variable, or from the pairwise relationship between two variables, to the analysis of covariance's or correlations which reflect the relationship among three or more variables

(Dillon & Goldstein, 1984). Further multivariate analysis involves the analysis in which the *simultaneous* relationships of three or more variables are examined (De Vaus, 1996).

In terms of this research, the MOSN framework totals 25 variables that require simultaneous analysis to test hypotheses of the entire MOSN framework; thus a multivariate approach is best suited for this research. Multivariate data analysis techniques also have wider acceptance and use in almost all fields of scientific enquiry. There are many reasons for this development, with one important reason being attributed to the realization that in many research inquiries it is necessary to analyze the simultaneous relationships among three or more variables (Dillon & Goldstein, 1984). One such statistical method offering this multivariate capability is Structural Equation Modeling (SEM).

### **Method: Structural Equation Modeling (SEM)**

The development of electronic computing has led to significant advances in survey analysis (Moser & Kalton, 1971). In the latter part of the 20<sup>th</sup> century a convergence of computing power and statistical methods produced new techniques for testing complex models, of which a new technique included structural equation modeling (SEM). SEM is statistical methodology that applies a confirmatory hypotheses testing approach to the analysis of structural theory focused on a specific phenomena (Trochim & Donnelly, 2008). Specifically ‘Structural equation modeling provides the appropriate and most efficient estimation technique for a series of separate multiple regression equations estimated simultaneously’ (Hair et al, 1998 p17).

Second generation data analysis techniques such as SEM are important as they provide powerful ways to address key IS research problems (Chin & Todd, 1995). Empirical studies utilizing the SEM approach for data analysis are widespread in information systems research (Urbach & Ahlemann, 2010). In SEM each construct is represented by multiple measured variables that serve as indicators of the construct (MacCallum & Austin, 2000) supporting application within this research.

When considering SEM as an approach for quantitative data analysis for MOSN hypothesis testing, technology usage, adoption and OSN research was consulted. In terms of technology usage in universities (Shittu et al, 2011) and higher education (Usluel, 2008) SEM has been utilized to test conceptual frameworks, which included social science theories such as DIT. Focusing on technology adoption of e-business services (Luqman & Abdullah, 2011), internet banking services (Al-Majali & Mat, 2011) e-government (Ozkan & Kanat, 2011) and internet acceptance (Kim et al, 2007) SEMs were used to test causal relationships between theoretical constructs applied from theories such as TPB. With regards to application of SEM to examine OSNs, SEM hypotheses testing and confirmatory factor analysis was

conducted to analyze online survey data for the social network site adoption model (Sledgianowski & Kulviwat, 2009). Examining the influence of OSNs on viral marketing SEM (Abedniya & Mahmoudi (2010) employed SEM to examine the patterns of inter-correlations among the research model constructions and to empirically test hypotheses. With the research agenda of predicting usage of OSNs through application of DIT Peslak et al (2010) used SEM to test hypotheses and survey data. Using SEM, a small sample (n=129) led to the understanding that the satisfaction of the needs for belongingness and the esteem needs through self-presentation were the main drivers of OSN participation (Krasnova et al, 2008). It can be interpreted from the aforementioned research that SEM is suitable for survey research of OSNs that are guided by social science and psychology theories such as TPB and DIT.

Benefits of a SEM approach include the abilities to model latent variables, correct for measurement error, specify error covariance structures, and estimate entire theories simultaneously (Henseler, 2012). Further, to test such models with previous methods of multiple regression would provide only separate “mini-tests” of model components that are conducted on an equation-by-equation basis (Tomarken & Waller, 2005).

### **SmartPLS**

For SEM, consideration of leading SEM software packages included SmartPLS, AMOS, EQS, LISREL and MPlus was made. SmartPLS was selected as the software for final survey analysis due to its wider acceptance and application throughout the IS research community in the context of analyzing conceptual models. SmartPLS also provides functionality for construct validity, reliability, composite reliability and AVE.

SmartPLS utilizes the Partial Least Squares (PLS) regression method. PLS is based on an iterative combination of principal components analyses and regression, where it aims to explain the variance of the constructs in the model (Chin, 1998 cited in Gregoire & Fisher, 2006). PLS methods host specific advantages such as simultaneously estimating all path coefficients and individual item loadings in the context of a specified model, thereby resulting in an outcome that enables researchers to avoid biased and inconsistent parameter estimates (Gregoire & Fisher 2006). The PLS technique has become increasingly popular in information systems research, marketing and in management disciplines in the last decade (Haider, 2009).

### **Limitations**

However, for research the limitations must also be acknowledged, which was also the case for SEM analysis. It should be considered that all statistical models are typically only approximations of reality. A view that SEM is only an approximation can be derived through the process of omitting variables that are

affected in the causal processes or other features of a model (Tomarken & Waller, 2005). Although the problem of omitted variables is not unique to SEM, it is an established source of criticism for using SEM as an approach to model testing (Tomarken & Waller, 2005), and is more widely known as Omitted Variables Bias (OVB).

When examining OVB in terms of multiple regression analysis Thomas (2005) found that ‘only when the omitted variable is totally uncorrelated with any of the variables already included in the regression equation can this bias be zero’ (Thomas, 2005; p 498).

### 3.8 Qualitative Research Methods

As mentioned earlier, there is a different research method that also exists, which is Qualitative research. Qualitative research is often based on interpretivism, constructivism, and inductivism. It aims to explore the subjective meanings through which people interpret the world (Jupp, 2006). Qualitative data analysis requires the researcher to interpret the data in terms of interpretation where ‘interpretation refers to the process whereby recorded observations are used to describe events, generate hypotheses, or test hypotheses’ (Dane, 1990; p156). Qualitative research is sometimes dismissed as it is viewed to be lacking the rigor of quantitative research (Jupp, 2006). Although this research is strictly quantitative, qualitative methods below were considered.

#### Qualitative Research Methods

A diverse variety of data collection methods for qualitative research are available to social science and IS research community. The following sections describe the qualitative research methods that were considered by this research.

**Interviews:** An interview is a conversation typically between two people. In certain instances, it is where one person the interviewer is seeking responses from the interviewee(s) for a particular purpose (Gillham, 2000). In most cases the purpose will be an objective required to fulfill the research aims. Qualitative research interviews vary in methodological features such as length, style of questioning, and participant numbers in both group or individual formats (Cassell & Symon, 2004). When conducting interviews the researcher has to conceptualize the research study, establish access and make contact with the participants, interview them, transcribe the data and then analyse the collected material (Seidman, 2006). In the case of this research, as the sample size was large, it was viewed to be a hindrance to include interviews. Access, cost and the time posed to be limitations.

**Observational Research:** The observation research method is the most commonly used method, in particular for those studies relating to behavioral sciences. Observation becomes a scientific tool and

method of data collection when it serves a formulated research purpose observational research as with other methods, is also subject to controls on validity and reliability (Kothari, 2004). Observational research methods involve observing and recording ongoing behavior, naturalistic observation is conducted in way minimizes that degree to which subjects are disturbed by the observation process (McBurney & White, 2010). Direct observation involves data collection where the researcher does not actively query or interact with the participants under observation (Trochim & Donnelly, 2008). This method was not considered appropriate, as observing older adults interaction initially or post-adoption would not provide an insight to their decision making processes and factors influencing their choices.

**Case studies:**

One of the oldest qualitative research methods is the case study method, where an in-depth study of one or more individuals, groups, social settings or events are conducted in efforts of revealing aspects that are of value to the researcher (Jackson, 2011). Case study research comprises detailed investigations, which are most often with data collection conducted over a period of time, of phenomena, within their context. Case studies aim to provide an analysis of the context and processes which highlight the theoretical issues being examined, is case study is not method, rather a research strategy (Cassell & Symon, 2004). Case studies involve the in depth investigations of a selected few units of analysis (individuals & organizations). This approach would therefore not provide the required information.

**Focus groups:** A focus group is qualitative research, as results are not obtained through percentages and statistical testing. Instead the methodology is less structured then surveys or other quantitative research and tends to be more exploratory in nature (Edmunds, 1999).

A diverse description of focus groups is that focus groups are group discussions exploring a specific set of issues, where the group is 'focused' in the sense that it involves some collective activity such as a set of questions. Crucially - focus groups are distinguished from the broader category of group interviews by the explicit use of group interaction in order to generate data (Barbour & Kitzinger, 1999).

In recent times, focus groups have become extremely popular in social research because they enable researchers to obtain detailed information about attitudes, opinions, and preferences of selected groups of participants. (Trochim & Donnelly, 2008). However focus groups require participants to appear at a stated venue and to invest at least 1-2 hours of their time. The results, consequently from a much smaller sample, cannot provide representative results; thereby resulting in a bias and incomplete understanding of the research study. Further, as focus groups are qualitative research methods analysis of procured data, are interpretivist and subjectivist, this therefore conflicts with the intended philosophy of this research.

Therefore, findings derived from a scientific (mathematical and statistical) means only provided a better solution to this research study's purpose.

**Action research:** is a type of applied social research that aims to improve social situations through change interventions involving a process of collaboration between researchers and participants of interest. Research design in action research is evolutionary throughout the process rather than specified before hand in a research protocol (Jupp, 2006). Action research aims to contribute both to the practical concerns of people in an immediate problematic situation and to the goals of social science by joint collaboration within a mutually acceptable ethical framework (Rapoport, 1970, p.499). Action research, from the outset, is involved with practical issues – the kind of issues and problems, concerns and needs that are applicable to routines aspects 'in the real world' (Denscombe, 2007).

**Grounded Theory Method (GTM):** Grounded theory is a research approach that involves the researcher developing a theory that is grounded in data. Therefore, grounded theory is both a set of research procedures and the theory that develops from that research, generated or modified from the data rather than from a pre-existing theoretical framework (Daymon & Holloway, 2011). Grounded theory is a research method with the objective to develop theory that is grounded in data and has been systematically gathered and analyzed (Myers, 1997). The Grounded theory is an approach to research that was developed in order to address concerns over the predominance of quantitative methods in the social sciences and propensity for research to test the most notorious 'grand' theories (Jupp, 2006).

### 3.9 Research Site

Having explained the research methods to be applied to this research, the next step is to identify the research site that the primary data will be acquired from.

This research provides findings using a UK perspective, which means that findings are those drawn from analysis of data collected from participants who are only UK residents. In the UK the population count in the last census was 63,182,000, where the over 50s population comprised of 34.7% (21,877,000); thereby accounting for over one third of the UK population (BBC, 2012). The population of the UK is ageing in terms of both the increase in the average (median) age of the population and the increase in the number and proportion of older people in the population (ONS, 2012f). Population ageing is a result of past improvements in mortality rates at all ages and continuing improvements in mortality rates at the oldest ages combined with overall past declines in fertility rates (ONS, 2012f). Although the fertility rate has been increasing in the UK since 2001, it is still below replacement level (ONS, 2012f). The UK population is ageing and is projected to continue ageing over the next few decades with the fastest population increases in the numbers of those aged 85 and over (ONS, 2012f). Alongside, changes in

pensions, social welfare and health costs is leading to older adults reconsidering their retirement and personal assets. Further, it is envisaged that such trends are set to increase globally as changes in economies due to economic conditions occur. When analyzing the most recent UK personal wealth statistics (2008-2010) in terms of secure asset wealth, such as estate, males aged 45 and above hold double the wealth than those males aged 44 and below (HMRC, 2012). This demonstrates the current older population in the UK have been the wealth creators and are the wealth holders, adding to the importance of understanding the older population.

These points clearly support the decision to use a UK perspective when investigating issues pertaining to older adults and the older population.

However due to resource constraints the entire UK population could not be stratified, then randomly sampled. Therefore, the area of Hertfordshire was selected due to accessibility and familiarity of the researcher. The county of Hertfordshire is situated in the South East of England (figure.) and is the second largest economic contributor among regions of England and UK countries. This economic contribution is responsible for nearly 15% of the UK's Gross Value Added (GVA) (ONS, 2012g). The south-east of England has a high population of 50 plus which makes it especially suited for this research with 35.7% aged 50 and over (46.9% male and 53.1% female) (BBC, 2012).



Figure 3.1 Hertfordshire Location (UK)

(BTMR,2013)



Figure 3.2 Map of Hertfordshire, England.

(UKSuperWeb, 2013)

Hertfordshire is made up of 267 towns and areas and has an approximate population of 1,116,000 (HCC, 2013). Gross household income per head in Hertfordshire is the fourth highest in England (ONS, 2012h). From these points it can be demonstrated that Hertfordshire's economic significance and its ageing population afford it to be suitable for older age-related research.

### **3.10 Triangulation**

Also associated with this research is the concept of triangulation. Triangulation is broadly defined as "the combination of methodologies in the study of the same phenomenon" (Denzin, 1978 pp 291). A definition of triangulation applicable to this research is provided as: "an attempt to map out, or explain more fully, the richness and complexity of human behavior by studying it from more than one standpoint" (Cohen and Manion, 2000; p 254). Triangulation is also viewed to be "a method of cross-checking data from multiple sources to search for regularities in the research data" (O'Donoghue and Punch, 2003; p 78). "Triangulation involves the practice of viewing things from more than one perspective. This can mean the use of different methods, different sources of data or even different researchers within the study" (Denscombe, 2007 p 134). Triangulation is also described as "The cross-checking of inferences by using multiple methods, sources, or forms of data for drawing conclusions" (Anderson & Aydin, 2005; p50).

#### **Triangulation types**

Within the domain of triangulation there are also types, which are diverse in nature. These are:

- Data triangulation: involves using multiple sources of data
- Investigator triangulation: involves multiple researchers in an investigation
- Theory triangulation: involves using more than one theoretical scheme in the interpretation of the phenomenon
- Methodological triangulation: involves using more than one method to gather data, such as interviews, observations, questionnaires, and documents (Denzin , 1978).

The following sections provide more detailed explanations of these triangulation types and their application within this research.

#### **3.10.1 Data Triangulation**

Data triangulation is achieved through the 'collection of data at various times, in different locations and from a range of people and groups' (Tones & Tilford, 1990). There are three types of data triangulation which include space, time and person (Polit & Beck, 2010). 'Time' triangulation involves collecting data on the same phenomenon or same people at different points of time (day/month/year) during the research.

‘Space’ refers to the collection of data at multiple sites, to test for cross-site consistency. ‘Person’ triangulation relates to data collected from different types or levels of people to validate data through multiple perspectives of a phenomenon (Polit & Beck, 2010).

All three elements of data triangulation have been addressed within this research. Time; data collection was conducted at two separate points of time in this research. These were: (1) Pilot phase: March – May 2012 (2) Final phase: June 2012 – September 2012. Space: the pilot survey and final survey were conducted using independent groups of participants from different geographic areas, which satisfies the space element of data triangulation. Person: This was addressed as data within both primary datasets and included a diverse range of age bands, occupational categories, educational levels, self-assessed health status and race.

### **3.10.2 Investigator Triangulation**

Investigator triangulation is achieved when two or more researchers from diverse research fields and expertise work together on the same study. These researchers need to be involved throughout the entire study so they may compare and deflate each other’s biases (Streubert & Carpenter, 2011). Triangulation in this context is similar to achieving intercoder reliability as it reduces interpretation bias that can occur when data is only analyzed by one source, these additional interpretations offer greater confidence in data validity and reliability (O’Hair & Kreps, 1990).

With regards to investigator triangulation, this research was conducted under the academic supervision of two additional researchers. Supervisor A is an IS academic whose research specialisms include technology adoption, digital divide, e-government and stakeholder theory. Supervisor B is an academic from the finance and econometrics areas and specializes in areas of applied economics, applied financial economics and applied labor economics. As both of these ‘investigators’ along with the principal researcher of this research study were actively involved throughout the entire research program from conception to submission, this satisfies the requirements of investigator triangulation.

### **3.10.3 Theory Triangulation**

Theory triangulation pertains to use of multiple theoretical ‘schemes’ utilized to examine a research phenomenon (Denzin, 1978). By doing so the bias associated with using only theoretical lens is reduced. Different theories can shape the kind of data collected and the way in which this data is interpreted (Denscombe, 2007). Therefore theory triangulation aims to suppress this bias that may occur from the application of only a single theory to examine the identified OSN research phenomenon.

This form of triangulation has been addressed within this research as the formulated MOSN conceptual framework was assembled by converging theoretical concepts from four independent theories. These four

theories were DTPB, MATH, DOI and e-services adoption model. By using these five theories a range of diverse perspectives and principles to examine technology adoption were employed.

### **3.10.4 Methodological Triangulation**

Building on the work of Denzin (1970), Denscombe (2007) suggests that there are two forms of methodological triangulation: between-methods and within-methods.

The distinguishing characteristic of between-methods triangulation is that it involves the use of approaches that are notably different that allow the researcher to see things with a wider perspectives as possible. Typically 'between methods' takes the form of qualitative data compared with quantitative data. This allows findings to be corroborated or questioned by comparing the data produced by different methods. (Denscombe, 2007). Between methods triangulation was not utilized within this research as a single method approach (quantitative only) was undertaken.

Methodological triangulation, within-methods involve the comparison of data yielded from similar methods to provide a check on the accuracy of the findings. If similar methods produce the same results it would seem reasonable to conclude the findings are accurate and authentic opposed to be by-products of the method employed (Denscombe, 2007). Within methods was utilized by this research due to the application of the survey questionnaire approach that employed multiple methods from the sampling arena (convenience sampling, OSN sampling and random sampling). That is, all methods are essentially survey research but changes within the sample method existed.

### **3.11 Instrument Validation**

The previous discussions have focused upon the types of triangulation utilized by this research. This section now presents the way that triangulation emerged at the point of instrument validation. For those unfamiliar to the term, 'Instrument validation is a critical step that researchers should employ in order to ensure a generation of scientifically valid knowledge' (Kim, 2009; p 1178). It is therefore important to address instrument validation by selecting a number of validity processes that should be undertaken to provide assurance the findings of this research are valid.

When deciding upon the methods to be employed in this research, previous research was sought from published, peer reviewed literature. Boudreau et al (2001) conducted a review of validation techniques that have been previously undertaken in MIS research published in 2000. The review included 143 articles from Information & Management (I&M), 65 articles from Information Systems Research (ISR), 63 articles from MIS Quarterly (MISQ), 102 articles from Journal of Management Information Systems (JMIS) and 21 articles from Management Science (MS).

<b>Instrument Categories</b>	<b>I&amp;M</b>	<b>ISR</b>	<b>MISQ</b>	<b>JMIS</b>	<b>MS</b>
Pretest	27%	35%	38%	20%	8%
Pilot	32%	19%	38%	34%	17%
Pretest or Pilot	47%	46%	54%	50%	25%
Previous Instrument Utilized	35%	58%	33%	56%	25%
Content Validity	16%	31%	42%	14%	50%
Construct Validity	31%	54%	46%	36%	25%
Reliability	56%	85%	71%	72%	8%

The results illustrated in table 3.2 show five validation methods that were utilized in selected MIS research articles. These are content validation, pretesting, pilot testing, construct validation and reliability. Therefore, to ensure a thorough validation to the standard of previous MIS research *all* five of these validation methods were considered in this research. The following sections detail these validity procedures and the methods that made them operational within this research.

### **3.11.1 Content Validity**

According to Kim (2009) the first stage of validation is content validity. Content validity refers to the extent to which the research instrument covers the content that it is supposed to measure (Yaghmaie, 2003). Content validity is also known as 'face validity' (Hair et al, 1998). From research reviews, it was learnt that it is accepted in social science research that measures must demonstrate to be content-valid before the measures can be held to be any other type of 'valid' (Rossiter, 2008). Content validity is a subjective measure of how appropriate the survey items are viewed to be.

Content validity is obtained from a set of reviewers who have some knowledge of the subject matter. This validation process typically involves an organized review of the survey's content to ensure it contains everything required and does not contain anything that is not required (Litwin, 1995).

#### **Method: Lawshe (1975)**

In order for content validation to occur, a research instrument must pass through the validation process. In this research, the Lawshe (1975) content validity method will be employed by undertaking the following steps.

Having completed the first version of the questionnaire that the entire research team approved, a Content Evaluation Panel (CVP) comprised of 10 experts from industry and/or academia was formed. The

following table contains information about the selected panelists and following this discussion are the steps pursued by this research to obtain content validity.

	<b>Participant</b>	<b>Area of Expertise</b>
<b>Academic Researchers</b>	A	General Science
	B	Information Systems
	C	Econometrics
	D	Tourism
	E	Physics/Chemistry
<b>Industry Researchers</b>	F	Dentistry
	G	Medicine
	H	Pharmacy
	I	Banking
	J	Accountancy

- Following identification and acceptance of the experts, each member of the CVP was then provided with a copy of the questionnaire (see appendix 3-1). Thereafter, each panel member provided an answer to the following question for all items in the questionnaire (Lawshe, 1975 pp 567). Results of the content validity test are discussed in chapter 4.
- The responses from each of the panelists was then collected to obtain a Content Validity Ratio (CVR) for each of the questions. This was achieved using the following formulae:

$$CVR = \frac{n_e - N_2}{N_2}$$

Where  $n_e$  is the number of panelists indicating *essential* and  $N$  is the total number of panelists. CVR ranges from  $-1.0$  to  $1.0$ , with larger values indicating greater substantive validity for an item (Lawshe, 1975).

Lawshe (1975) provides a minimum value for a question to determine its validity (Figure 3.4), which is based on the number of members within the content evaluation panel. Once a CVR value is computed for each question in the questionnaire, the CVR value is compared to the table to determine if it is equal to, or above the minimum value. If the CVR value is below the recommended minimum value it is rejected.

Table 3.4 CVR Minimum Values (Lawshe, 1975 pp 568)			
No. of Panelists	Minimum Value	No. of Panelists	Minimum Value
5	.99	13	.54
6	.99	14	.51
7	.99	15	.49
8	.75	20	.42
9	.78	25	.37
<b>10</b>	<b>.62</b>	30	.33
11	.59	35	.31
12	.56	40	.29

The minimum CVR is dependent on the number of panelists that select the reply 'essential'. The minimum CVR value can also be interpreted as the minimum number of panelists that must select 'essential' in order for a survey item to be passed. The following graph and table illustrates this conversion. Results of content validation are provided in chapter 4.

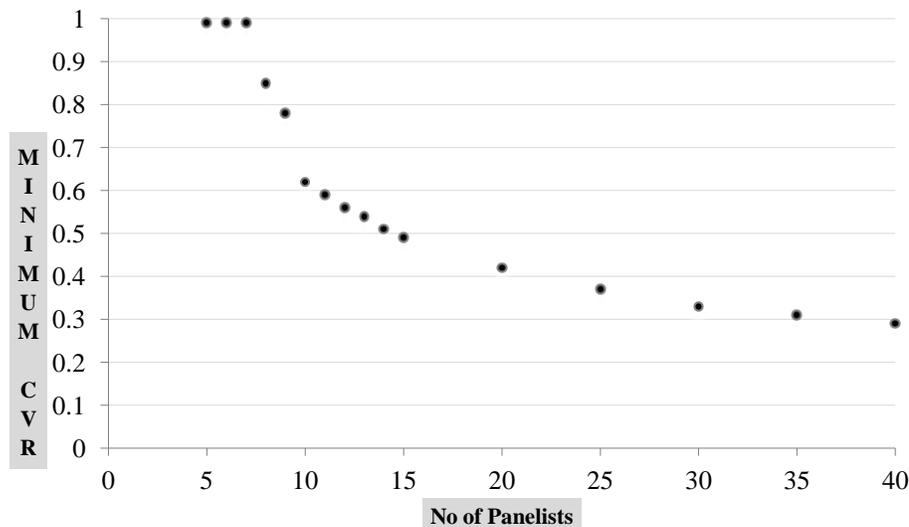


Figure 3.3 Distribution CVR Minimum Values

### 3.11.2 PreTesting

The questionnaire is best pretested informally, initially concentrating on individual questions. Colleagues, friends and family can usually be cajoled into reading them through and providing constructive comments on wording. Questions seek answers to questions such as: Are the questions clear, simple and unambiguous? (Robson, 2002).

Pretesting is generally agreed to be an indispensable stage in development of survey questionnaires (Presser & Blair, 1994). The aim of a pretest is ultimately to improve the questionnaire and response rate.

Pretesting ensures that the questionnaire reflects the theoretical model development and is also understood by participants. The suggested benefits of the approach are improved questionnaire reliability and planning which results in better response rates (Faux, 2010). Pretesting is method of determining in advance whether a questionnaire causes problems to interviewers or respondents (Presser et al, 2004).

It is suggested that 'before going into the field, the questionnaire should be tested on a small group of respondents from the target population' (Bethlehem & Biffignandi, 2012; p.192). Participants may often misunderstand words or concepts, without acknowledgement. Even though these communication difficulties may arise, respondents may still provide, what appear to be on the surface, legitimate answers (Collins, 2003). Pretests are a necessary preliminary procedure to pilot tests (Czaja & Blair, 1996). With these points in consideration pretesting was undertaken as part of the survey validation process.

Pretesting approaches include behavior coding, cognitive interviews and expert panels. Comparing aforementioned pretesting methods. Presser & Blair (1994) found that on average the expert panel pretest method was most productive in the number of problems identified within a survey instrument. Since the expert panel pretesting method provides many useful answers, this method was selected. It was also borne in mind that an expert panel pretest should aim to obtain suggestions for revising questions and/or the questionnaire. This should be in terms of wording, terminology, concepts and to determine if sections of the questionnaire and the questions within sections have a logical flow (Czaja, 1998). Further, pretesting should be conducted on people who resemble the types of people to whom the questionnaire will be finally administered to (De Vaus, 1996).

### **Pretest Expert Panel Method**

In order to conduct the pretest a self-selected expert panel was assembled. In order to obtain a range of opinions and perspectives, five categories of participants were chosen (table 3.3). These were academic researchers (experienced individuals in quantitative academic research), industry researchers & professional (to provide perspectives that will increase the practical contributions of this research), medical professionals (who are familiar with geriatric impairments, impairments which can lead to misunderstanding of questions and non-response) and academic graduates with computer science backgrounds (providing a technical opinion of the online survey). Each participant was asked to complete the online questionnaire directed to do using the same instructions that would be administered to final participants. The participants were to record the time it took to complete the questionnaire from start to finish in order to obtain an average time. Participants were asked suggest any changes that can be made to improve this survey in order to make it easier and more straightforward for a participant to follow and complete. This includes spelling and grammar errors. In order to improve the quality of the survey and reduce the possibility of survey items obtaining responses based on misinterpretation or

misunderstanding. Participants were also asked to identify any questions that they found too intrusive or thought would discourage people from taking part in this survey. These efforts were made to improve response rates.

<b>Table 3.5 Survey Pretest Validation Panel</b>			
	<b>Participant</b>	<b>Area of Expertise</b>	<b>OS</b>
<b>Academic Researchers</b>	Dr.C	Information Systems	Windows
	Dr.T	Econometrics	Windows
	Dr.Q	Tourism	Windows
<b>Industry Researchers</b>	Dr.W	Chemical Engineering	Windows
	Dr.G	Bio-Science	Mac
	Mr.P	IT	Windows
<b>Industry Professionals</b>	Mrs.M	Finance	Mac
	Mr.A	Software Development	Mac
	Mr.B	Physics	Windows
<b>Medical Professionals</b>	Dr.V	General Practice	Windows
	Dr.S	Dentistry	Windows
	Dr.W	General Practice	Windows
<b>Academic Graduates</b> <small>(Below 50 Years Old Due To Pilot Sampling Requirements)</small>	Mr.G	Computer Science	Mac
	Mr.P	Computer Science	Windows
	Mr.P	Computing & Business	Windows
	Mr.P	Business	Mac
	Mr.M	Computer Science	Mac
	Ms.M	Pharmacy	Windows
	Ms.K	Business	Windows
	Ms.K	Computer Science	Mac

### 3.11.3 Pilot Testing

One last phase of the survey design and instrument development is the pilot test (Czaja & Blair, 1996). Once a questionnaire has been developed, each question and the questionnaire as a whole must be evaluated rigorously before final administration. This evaluation phase is called pilot testing (De Vaus, 1996). Pilot testing 'is a test run of a set of questionnaire items to detect problems with the questions and questionnaire design' (De Vaus, 1996; p.392). Pilot testing allows developers a chance to correct errors before the survey is used on a wider scope to gather real data (Litwin, 1995). Sometimes issues identified during pilot testing are problems of form. In terms of older individuals, many of whom may have impaired vision, the type of question, text size and font are deemed especially important (Litwin, 1995). With older individuals forming the sample of interest a pilot test was viewed as an essential measure to ensure problems are not encountered.

At this point it is important to differentiate between a pretest and pilot test. In a pretest a small number of participants are used to detect flaws in the questionnaire (Czaja & Blair, 1996). Contrastingly with a pilot test, a relatively large number of participants are examined using the exact procedures planned for the study (Czaja & Blair, 1996), including analysis and interpretation of the data. Pretests and pilot surveys are standard practice with professional survey bodies and are widely employed in research surveys (Moser & Kalton, 1971).

### Method

Upon development from a paper based exploratory questionnaire to an online final survey instrument a pilot test phase was undertaken. To gather a substantial number of participants, snowball sampling was pursued that involved daily and routine distribution (blog posting) of an introduction e-letter and survey-link on SurveyMonkey.com requesting the co-operation of all ages (18+), including OSN non-users. The survey was conducted for two months (March 24th 2012 – May 24th 2012). This method led to 252 complete responses that then led to analysis.

<b>Class</b>	<b>Definition</b>
<b>Inter-Rater or Inter-Observer Reliability</b>	Used to assess the degree to which different raters/observers give consistent estimates of the same phenomenon.
<b>Test-Retest Reliability</b>	Used to assess the consistency of a measure from one time to another.
<b>Parallel-Forms Reliability</b>	Used to assess the consistency of the results of two tests constructed in the same way from the same content domain.
<b>Internal Consistency Reliability</b>	Used to assess the consistency of results across items within a test.

#### 3.11.4 Reliability

Once the pretest was conducted, reliability was determined. Reliability is concerned with the quality of measurement in terms of consistency of repeatability of measures, essentially where a measure is considered reliable if it will produce the same repeated result (assuming that the target measure is not changing) (Trochim & Donnelly, 2008). Reliability refers to reproducibility or stability of data and observations when using a survey. In the case of reliability, high reliability is sought; thereby implying that the data is highly reproducible (Litwin, 1995). There are four classes of reliability with each class estimate reliability interpreted in a different way (table 3.6).

Internal consistency reliability is applied not to single items, but to groups of items that are thought to measure different aspects of the same concept (Litwin, 1995). This is the case of theoretical constructs where groups of items measure diverse aspects of the same concept. In this research multiple survey items pertained to a single theoretical construct that then needed to demonstrate consistent results throughout all the research participants' replies. This process is known as the internal consistency reliability. For example: The construct Primary Influence (PI) measures the influence of friends, family and colleagues on OSN adoption. Therefore for PI, three scaled (1>7) survey items were developed: (1) my friends think I should use OSNs (2) my family think I should use OSNs (3) my colleagues think I should use OSNs. Reliability will then be tested for these three items to demonstrated reliability of survey items for PI.

<b>Cronbach <math>\alpha</math></b>	<b>Internal Consistency</b>
0.9 >	Excellent
0.8 > 0.9	Good
0.7 > 0.8	Acceptable

### **Method: Cronbachs Alpha Test**

Reliability is tested by estimating how well the construct items that reflect the same construct yield similar results. For example if the construct produces a good reliability results, it provides further support that the pertinent survey items have correctly measure the construct in question. Cronbachs alpha ( $\alpha$ ) is one specific method of estimating the reliability of a measure and tends to be the most frequently used estimate of internal consistency (Trochim & Donnelly, 2008). Using SmartPLS Cronbach alpha coefficients were calculated for each group of measures (items) which operationalised their respective construct. Reliability was then determined by interpreting the calculated Cronbach  $\alpha$  coefficients (ranging 0.00 > 1.00). Litwin (1995) states that acceptable validity is viewed to be a result of 'levels of 0.70 or more' (Litwin, 1995; p31) (table 3.5)

### **3.11.5 Construct Validity**

The term construct appeared earlier on. For those unfamiliar with the term, 'a construct is some postulated attribute of people, assumed to be reflected in test performance' (Cronbach & Meehl, 1955 p283). This research has identified theoretical constructs that have been tested (measured) using a survey instrument. However, appropriate validation of these test measures must be conducted to determine the designed measures do in fact test for their respective theoretical construct. Construct validity is a measure of how meaningful the selected scale or survey instrument is when in practical use (Litwin, 1995). Thus, in this

research construct validity will be demonstrated in order to provide evidence that the scaled questions, which were used to gather data about respective constructs, correctly do so and do not conflict with measurements of other constructs within the conceptual framework.

A note to readers, it must be recognised that to test construct validity evidence of convergent and discriminants validity must be demonstrated (Trochim & Donnelly, 2006). The following sub-sections explain these terms.

### **Convergent validity**

Convergent validity is defined as " the degree to which the operationilisation is similar to (converges on) other operationlisations to which it theoretically should be similar to (Trochim & Donnelly, 2008 pp 61). Convergent validity is evident when construct items (measures) of a construct, which theoretically should be related to each other, are observed within the data (reality) to actually be related. Therefore construct items that measure the same construct should be observed to have 'high' correlation within a correlation matrix, if this can be observed convergent validity is proven. For example convergent validity is demonstrated if the three measures for PI within a factor analysis grid show tight convergence such as: PI survey item 1: .9956 PI survey item 2: .9980 PI survey item 3 .9969, as shown below.

	<u>PI</u>
<b>PI1</b>	<b>0.9956</b>
<b>PI2</b>	<b>0.9980</b>
<b>PI3</b>	<b>0.9969</b>

### **Discriminant validity**

Discriminant validity is defined as "the degree to which the operationilisation is not similar (diverges from) other operationalisations that it theoretically should be similar to" (Trochim & Donnelly, 2008 pp 61). Discriminant validity is evident when construct items (measures) that theoretically should not be related are observed within the data (reality) to not be related. Therefore construct items that measure the same construct should be observed to have 'low' correlation within a correlation matrix. If this can be observed discriminant validity is proven.

There are no firm rules on the values assigned to a 'high' or 'low' correlation when determining the respective validity. However, it must be ensured that convergent correlations should always be higher than discriminant ones. In order to defend construct validity evidence must be provided for both convergent and discriminant validity (Trochim & Donnelly, 2008). The following section explains how both convergent and discriminant validity were demonstrated.

## Method

In order to provide evidence of convergent and divergent validity, correlations factor analysis offers a suitable solution. Factor analysis is the computer-assisted method used to assess whether different survey items belong together in one scale (Litwin, 1995). Factor analysis is a mathematically complex method of reducing a large set of variables to a smaller set of underlying variables referred to as factors (De Vaus, 1996).

Factor analysis is also a generic name given to a set of multivariate statistical methods of which the primary purpose is to define the underlying structure in data matrix (Hair et al, 1998). The fundamental aim is to examine whether on the basis of participants answers to survey items; a reduced number of more general factors that underlie the answers to individual questions can be identified (De Vaus, 1996).

A correlation matrix tabulates the inter-correlations among all variables (factors) included within the analysis also known as correlation coefficients. Correlation coefficients ( $r$ ) are a 'coefficient that indicates the strength of the association between any two metric variables' (Hair et al, 1998 p 143).

For this research, factor analysis was conducted in SmartPLS where the factor loadings (cross-loadings) were assessed to determine discriminant and convergent validity. For every construct that demonstrates such validities construct validity was determined.

### 3.11.6 Composite Reliability

Composite reliability may be used as an assessment tool for the validity of structural equation models (Ketchen & Bergh, 2006). 'The interpretation of the composite reliability is similar to that of Cronbach's alpha, except that it also takes into account the actual factor loadings rather than assuming that each item is equally weighted in the composite load determination' (Liao & Wang, 2011; p 121). For this reason it is viewed that composite reliability will eliminate any weaknesses that the Cronbachs alpha reliability test may show. Composite Reliability ( $Pc$ ) 'is a measure of internal consistency and must not be lower than 0.6' (Henselar et al, 2009 p 300). Therefore, constructs within the MOSN model that produce a composite reliability factor of 0.6 or above will demonstrate composite reliability.

### 3.11.7 Average Variance Extracted (AVE)

In order to further establish discriminant validity there is need for an appropriate AVE (Average Variance Extracted) analysis (Zait & Berteau, 2011). The AVE analysis tests to determine if the square root of every AVE value belonging to each latent construct is much larger than any correlation among any pair of latent constructs. AVE measures the explained variance of the construct.

For those unfamiliar to the term variance, the following is proffered. The variance of a data set is the arithmetic average of the squared differences between the values and the mean. The mean of a data set is calculated by determining the arithmetic average of the values in a set. This is obtained by summing the values and dividing by the number of values. Also associated with the variance is the term standard deviation. The standard deviation is the square root of the variance. The variance and the standard deviation are both measures of the spread of the distribution about the mean (Siegrist and York, 1997).

When comparing AVE with the correlation coefficient a researcher aims to determine if the items of the construct explain more variance than the items of the other constructs included within the model (Zait & Berteau, 2011). In other words 'the AVE indicates what percentage of the variance of the construct any individual item explains' (Liao & Wang, 2011 p 121). 'The Average Variance Extracted (AVE) analysis coefficient for each construct should be higher than 0.5' (Henselar et al, 2009; p 300). The AVE indicates what percentage of the variance of the construct any individual item explains (Liao & Wang, 2011). For example for the construct PI the AVE value is 0.78. This means that the three survey items that measure PI explain 78% of the variation in PI; thereby demonstrating themselves to be acceptable measures for PI.

Having selected quantitative survey questionnaire as the methods of data collection, identification of the sampling frame and selection of sampling methods and sample sizes was then addressed. The following sections details this phase of the research.

### **3.12 Sampling frames and Sample Sizes**

It is the intention of this research to produce findings representative of the population of Hertfordshire (see chapter 1). For the research study, a definition of a sample is provided. A sample is a subset of a population (De Vaus, 2006). A sample is a selection from the overall population (Robson, 2002: p 260). Therefore, in terms of this research this research sample will consist of older people in Hertfordshire drawn from the entire population of UK.

This also implies that any sample selection procedure will offer some individuals a chance to be included in the sample while excluding others. 'The sample frame is the set of people that has a chance to be selected, given the sampling approach that is chosen' (Fowler, 2002 p 11). According to De Vaus (1996) a sampling frame is the complete list of elements of the population from which a sample will be drawn (De Vaus, 1996). For this research, the population of Hertfordshire is the sample frame, as it these individuals who had a chance to be selected and the sample are those individuals selected from the participating population of Hertfordshire.

### **3.13 Sample Size**

In order to generalize from findings of a survey, the sample needs to be of an adequate size (Denscombe, 2007). Of the many issues involved in sample design, a common question posed to survey methodologists pertains to the size of a sample, in other words, how large a survey sample should be (Fowler, 2002). ‘The sample size decision, however, like most other design decisions, must be made on a case-by-case basis, with the researchers considering the variety of goals to be achieved by a particular study and taking into account numerous other aspects of the research design’ (Fowler, 2002; p 35). ‘In practice, the complexity of the competing factors of resources and accuracy means that the decision on sample tends to be based on experience and good judgment rather than relying on strict mathematical formula (Hoinville et al, 1985; p 73). It has also been found that ‘determining sample sizes is far more likely to be based on the amount of funds available instead of on a strict calculation of the limits of sample sizes (Dillman, 2007; p 209). Points of consideration for sample size should include the likely responses rate, resources available and the accuracy of results (Denscombe, 2007). With these points in consideration the following sample sizes were determined according to the research phase being undertaken.

#### **Content Validation: Sample Size**

When assembling an expert validation panel to conduct content validation Lawshe (1975) suggests a minimum of five experts; therefore twice this number of panelists was used to form the expert sample.

#### **Pretest: Sample Size**

With regards to sample size for pretesting the survey questionnaire, according to one leading expert in the field “ It usually takes no more than 12 – 25 cases to reveal the major difficulties and weaknesses in a pretest questionnaire” (Sheatsley 1983; p 226 cited: Presser et al, 2004), . For this research it meant that it was decided that a sample size of 20 should be used for the questionnaire pretesting validation phase.

#### **Pilot Test: Sample Size**

In addition to a validation measure the pilot test was also considered to be a small-scale research project. Denscombe (2006) notes that whatever the theoretical issue, surveys and sampling in small-scale research frequently involve between 30 – 250 cases. In order to undertake a thorough pilot test the upper suggestion of 250 cases was viewed to be a necessary sample size for the pilot test.

#### **Final Phase: Sample Size**

With regards to deciding upon the sample size for the final survey, literature was sought to guide the decision of a sample size. This should then provide data that can be thoroughly examined to answer all the research questions and validate the proposed conceptual framework.

Krejcie & Morgan (1970) suggest sample sizes that are applicable to any defined population; hence, suggesting that for every one million individuals in the population 384 samples should be achieved. However, a counter argument is that ‘one common misconception is that the adequacy of sample depends heavily on the fraction of the population included in that sample’ (Fowler, 2002; p.34). Taking a theoretical stance on determining sample size, and since MATH forms the underlying theoretical framework for this research, sample sizes used to originally develop and validate MATH were used to form a decision. For this, Venkatesh & Brown (2001) contacted nearly 1,000 households to procure data in order to validate MATH. Further, Venkatesh et al (2006) examined a research phenomenon utilizing MATH and based on a sample size of 1247 usable responses. Therefore a sample size of 1,000 was viewed to be strong sample on which to base the findings for this thesis.

### **3.14 Sampling Methods**

The representation of a sample population depends on the sample frame, the sample size and the specific design of selection procedures (Fowler, 2002; p10). These terms of selection procedures are also known as sampling methods. ‘The sampling method determines how a sample is collected from the sampling frame and affects the extent to which sample results can be extrapolated to the chosen population’ (De Vaus, 1996).

The various types of sampling plans are usually divided into those based on probability samples and those based on non-probability samples (Robson, 2002). ‘In probability sampling, it is possible to specify the probability that any person (or other unit on which the survey is based) that will be included in the sample. Any sampling plan where this is not possible to do so, is called non-probability sampling’ (Robson, 2002 p263).

The following sections describe both the available non-probability and probability sampling methods and selection of sampling methods employed for each data collection phase.

#### **Non-probability Sampling Methods**

Before deciding on the non-probability method to employ a range of leading non-probability methods were considered. These are as follows.

‘*Convenience sampling* involves choosing the nearest and most convenient persons to act as respondents. The process is continued until the required sample size has been reached’ (Robson, 2002; p 265). *Expert sampling* requires the assembly of sample of individuals with known or demonstrable experience or expertise in some area. This method is considered the best way to elicit the views of individuals who have specific expertise (Trochim & Donnelly, 2006). *Quota sampling* pertains to non-randomly selecting

individuals according to a fixed quota. A proportional quota sampling method can be utilized to represent the major characteristics of a population by sampling a proportional amount of each type of individual, such as 40% male and 60 female (Trochim & Donnelly, 2006). *Snowball sampling* involves the identification of individuals who meet the research criteria for the participation, who are then requested to recommend participation in the research project to those they know who also meet the research criteria (Trochim & Donnelly, 2006).

Most researchers are inhibited by time, money and workforce and for these reasons it is often necessary to consider non-probability sampling methods (ER, 2012). Further, non-probability sampling methods can be used when a researcher aims to conduct an exploratory or pilot study (ER, 2012) and often used for qualitative or exploratory research, such as for focus groups (Pew Research Center, 2012). Therefore to conserve research resources such as time and money non-probability sampling methods were used for the content validation, pretesting and pilot data collection phases.

### **Non-probability Methods Chosen**

With regards to content validation and pretesting validity methods expert participants were required; therefore expert sampling offered to be the obvious solution. For the online pilot survey OSNs themselves offered a platform for survey dissemination and were used for previous OSN research; therefore the snowball sampling method was undertaken by identifying individuals who meet the criteria for participation through OSNs (Twitter, MySpace, LinkedIn and Facebook), selected individuals were then encouraged to disseminate the link throughout their own OSNs using the 'share' facility available on most OSNs.

### **Probability Sampling Methods**

With regards to surveys and sampling it cannot be assumed that findings drawn for the obtained sample will be replicated in the rest of the population (Denscombe, 2007). The sample itself needs to be carefully selected. This is in the case that if there is to be any confidence then the findings from the sample are similar to those found within the rest of the population being investigated (Denscombe, 2007). Acknowledging this for the final survey a probability sampling method was undertaken.

A probability sampling method requires drawing a sample from a population using a procedure that ensures that every unit in the sample has an equal probability of being selected (Trochim & Donnelly, 2006). Random refers to 'statistics governed by or involving equal chances for each item' (Oxford Dictionaries, 2012); thus probability methods are termed as random sampling methods.

An added reason for a random sample is that 'it is recognised that a random sample from a well-defined population would be the most likely to be representative and to prevent the introduction of new extraneous confounding variables' (Black, 1999 p.116-117). In other words, of the non-random and random sampling methods available, undertaking random sampling methods will give this research the highest chances of obtaining data that is, to an accept extent, a representation of the over 50s population in Hertfordshire. The sampling method determines how a sample is collected and affects the extent to which sample results can be extrapolated to the chosen population (De Vaus, 1996). Combining probability-sampling methods constitutes as a probability multi-stage sampling method (Trochim & Donnelly, 2006).

In order to identify the most suitable probability sampling method to match the requirements of this research a number of leading random probability sampling methods were consulted. These included, *Simple random sampling* that employs a procedure involving drawing a sample from a population so that every possible sample has an equal probability of being selected (Trochim & Donnelly, 2006).

*Stratified Random Sampling* requires dividing the considered population into homogeneous subgroups, and then taking a simple random sample from each sub group (Trochim & Donnelly, 2006).

*Systematic Random Sampling* involves identifying and listing, randomly, elements within a sampling frame, followed by the calculation of a rule to select every  $x^{\text{th}}$  element in the list starting from a randomly chosen starting point within the list (Trochim & Donnelly, 2006).

*Cluster Random Sampling* requires dividing a population into subgroups called clusters, and randomly selecting clusters, followed by sampling each element (individual) in the selected clusters (Trochim & Donnelly, 2006).

*Multi-stage sampling* methods involves combining several sampling techniques to create a more efficient or effective sample than the use of a single sampling method could achieve independently (Trochim & Donnelly, 2006).

From these available methods two probability-sampling methods were combined to form a multistage probability sampling method for the final survey of this research. These were systematic probability sampling and simple random sampling. According to Black (1999) simple random sampling is 'highly representative if all subjects participate, and represent the ideal (p.118). This method will therefore be employed to select households within towns/areas in Hertfordshire. However independently, leaves no method for selecting how many of the 267 town/areas in Hertfordshire should be selected. Systematic

random sampling offers a solution for this, and will be used to systematically select towns/areas from those that comprise the geographic area of Hertfordshire.

The development and application of this two-phase multi-stage probability sampling method are described in the following sections.

### **Phase 1: Systematic random sampling**

Systematic random sampling involves a sampling list (assumed to be random), determining, randomly, a start point and then following a rule to select every Xth unit (Trochim & Donnelly, 2006). These steps are undertaken in the following sections.

#### **Randomising Sampling List**

To conduct systematic random sampling units that can be selected from the sampling frame must be identified, towns and areas in Hertfordshire offer a suitable selection as they are geographically defined. Therefore alphabetically ordered lists of all towns/areas in Hertfordshire were procured from web service 'postcode-info.com'. In this organization, 267 towns/areas from the Hertfordshire area are listed. Trochim & Donnelly (2006) state that the sampling frame list must be randomly ordered to minimise bias selection. Therefore Microsoft Excel 2010 was selected from available software packages due to the embedded RAND function, which was used randomly order the procured list using the following process: (1) Each town/area in the list was assigned a number which was randomly generated by Microsoft Excel 2010 'RANDBETWEEN ()' function (2) This list was then numerically ordered smallest to largest, by the assigned number; thereby producing a randomly ordered sampling list. Largest to smallest could have also been assigned without making a difference as these were randomly assigned numbers.

#### **Systematic Interval**

The next stage is to identify the systematic interval. According to Trochim & Donnelly (2006) the equation  $N/n = K$  can be used to determine the systematic interval (Nth item). The equation led to an integer of 3.74, which was then rounded to 4, this meant that at every fourth interval a town / area will be selected from the list randomly ordered sampling list.

$$\frac{N}{n} = K$$

$K = \text{Interval}$   $N = \text{number of units in the population (267)}$   $n = \text{Sample size (1000)}$

$$\frac{1000}{267} = 3.74 \qquad K \text{ (Systematic Interval)} = 4 \text{ (Rounded)}$$

$N = 267$  (Towns)  $n = 1000$  (Sample size)  $K = 4$ : At every fourth interval a town/area is identified.

*NOTE:  $N$  has been divided by the sample size ( $n$ ) in this calculation, as the sample size is larger than the number of units.  $K = N/n$  would produce an interval size of .267 and would not be of immense use to this research.*

The random number assignment and randomly ordered systematically sampled list can be found in appendix 5-2 & 5-3.

### **Random Starting Point**

The last stage of systematic random sampling is to identify a randomly chosen start point within the sampling list from which to start systematic intervals. To do this Trochim & Donnelly (2006) note that a randomly selected number from 1 to  $K$  (4) must be selected. This is conducted to prevent any systematic bias. The 'RANDBETWEEN()' function in Microsoft Excel 2010 was used to produce this random number. The number generated was 3. Therefore every fourth town/area was selected, but starting from the 3<sup>rd</sup> town/area in the randomly ordered list of elements.

= RANDBETWEEN(1,4) [ 3 ]

### **Final Sample List**

Having randomly ordered the sampling frame list, and defined the systematic interval as every fourth element starting from the 3<sup>rd</sup> element in the sampling list, a set of elements was produced using the systematic random sampling method. This led to a sampling list of 67 towns/areas in Hertfordshire.

### **Survey Flyers**

To obtain participants, a survey method was selected. For this, the more current form of documents, an electronic format was selected. The survey was in digital format and hosted on the WWW via the internet; thereby, dispensing with a postal mail survey. The length of the survey when viewed in paper format and effort/time required to post the response is also likely to increase the non-response rate. Further indications from previous research suggest that online research may actually be preferred to postal research where either is an option (Dillman, 2007; Truell et al, 2002 - cited Denscombe, 2007). Therefore consistent with methods used during the exploratory survey research, a survey flyer containing research background, research aims and instructions on how to access the online survey and participate was hand delivered on a single A4 page (Z folded) to each selected household. Dillman (2007) was used for guidance in creating the survey flyer. The survey flyer can be found in appendix 4.8.

## **Phase 2: Simple random sampling**

Undertaking the previous phase produced a sampling list of towns/areas in Hertfordshire, consequently two further aspects were addressed: (1) a method to randomly select the households that survey flyers will be distributed to within the chosen towns/areas. (2) a method to determine number of households to be sampled in each town/area. The rationale behind these decisions is provided in the proceeding sections.

### **Household Selection**

Due to the resources available to this research project (time, money & manpower) it is not possible to sample every household in each select town/area. Subsequently a method to randomly select households in each town/area was designed.

In keeping with the geographic stratification that has been use to divide Hertfordshire in a subset of towns/areas, cardinal directions; north, east, south and west offer suitable starting points to distribute survey flyers. Therefore each cardinal direction was assigned a number 1- north, 2 – south, 3 – east and 4 – west. For each of the selected towns/areas chosen in the sampling list a number ranging from 1 to 4 was randomly assigned to each town/area using Microsoft Excel 2010. Google maps will be used to identify the starting point. For example; if number generated is 1, the starting point is north, so the most northerly point on the geographic boundary of town/area in question will be used as a starting point to distribute survey flyers.

### **Number of Households Sampled**

With regards to the number of households to be sampled, the expected response rate offers a logical standpoint on which to base a decision. As only non-probability sampling methods have been employed in the exploratory and pilot phase of this research an estimated response rate cannot be calculate based on previous research phases. Therefore, guidelines were sought. Response rates are principally affected by factors such as nature of respondents, social climate and subject of research (Denscombe, 2007). As a rough guide any researcher will be fortunate to get a response rate of 20% (Denscombe, 2007; p.9).

With these principles considered to achieve a sample size of 1000 at a response of 20%, 5000 survey flyers must be distributed across the 67 towns/areas selected. However a 20% response rate is viewed to be too optimistic based on attitudes towards participation that were observed within exploratory survey research previously undertaken within Hertfordshire. Also, as the survey participants are limited to 50+ not all households selected will contain individuals eligible to participate. Thus, a response rate of 10% - 15% was estimated, which resulted in 7,500 households being sampled. Selected towns/areas were populated with a diverse number of households, ranging from small villages with as little as 35

households to large towns of over 10, 000 households. Therefore for the larger areas a maximum sample of 175 households was employed, to retain sampling consistency for the large more populated areas. 175 households were viewed to be a practical number with considerations of time and manpower.

### Sampling Methods Summary

Having identified the sampling frame and chosen appropriate sampling methods and sizes for all data collection phase figure (below) tabulates the selected sampling methods, sample sizes and sampling frame for each phase of research which involves collecting data.

<b>Table 3.8 Selected Sample Methods &amp; Sizes</b>				
	<b>Sampling Method</b>	<b>Target Sample Size</b>	<b>Actual Sample Size</b>	<b>Sampling Frame</b>
<b>Content Validity</b>	Expert Sampling	10	10	Hertfordshire
<b>Pre-test</b>	Expert Sampling	20	20	Hertfordshire
<b>Pilot test</b>	Snowball Sampling	250	252	Hertfordshire*
<b>Final Survey</b>	Multi-stage Random	1000	1080	Hertfordshire

\*NOTE: Hertfordshire is the sampling frame for this research. However the snowball sampling method chosen for the pilot test involved passing the survey link throughout online social networks, it was considered likely that geographic boundary of Hertfordshire would be breached, for this reason the sampling frame was extended to London & home county regions.

### 3.15 Research Methodology

Having selected and triangulated a quantitative research approach for the acquisition of primary data, which will be used to refine the final quantitative questionnaire. A set of steps were strategically compiled to form the research methodology. This will be conducted in four main phases; (1) pilot phase (2) final research (3) evaluation. The following tables outline the three phase of the research methodology.

<b>Phase 1: Research Instrument Development &amp; Pilot Testing</b>
<ul style="list-style-type: none"> <li>• Develop pilot questionnaire</li> <li>• Content Validation</li> <li>• Collect 250 responses from a combination of both younger and older participants (Pilot Validation)</li> <li>• Analyze data and draw findings</li> <li>• Develop final survey</li> </ul>

**Phase 2: Final Survey**

- Pretest final survey
- Collect 1000 responses using a multi-stage sampling method
- Analyze data (Regression & SEM)
- Construct validation
- Measurement reliability validation
- Draw final findings

**Phase 3: Evaluation**

- Obtain Nationally Representative Datasets (NRDs)
- Produce ordered probit/probit regression models
- Compare the results NRDs to final research findings
- Test research hypotheses using NRDs

### 3.16 Chapter Summary

Having developed a conceptual model to guide reasoned avenues of investigation within the previous chapter, chapter three provided an ordered selection of techniques, methods and approaches toward progressing this investigation from theoretical to empirical. This process led to development of a triangulated four-phase methodology. Phase one provides the development of an online survey questionnaire guided by survey design principles. Phase two draws on pilot findings and outcomes to produce a stronger robust survey questionnaire instrument that will be used to gather data on final findings. For this purpose a multi-stage random sampling method representing the Hertfordshire area of the UK will be deployed. Survey development will be validated using content validation, pre-test, construct measurement reliability and construct validity in order to demonstrate substantial integrity of the final findings. Phase three undertakes a summative evaluation using NRDs in order to provide verification and validation of final findings.

# Chapter 4

## Pilot Test & Final Survey Development

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### 4.1 Introduction

Chapter 3 described the reasoning and selection of the applied research method, which is a quantitative method. Also included in the chapter was a description and reasoning for the selected sampling methods and data validation. The described and explained methods were used for the pilot phase of this research and for the expert panel pre-test. This chapter describes the pilot findings that then led to the final questionnaire development and construct measurement for the final phase of research.

### 4.2 The Pilot Study

The identified OSN age phenomenon regarding poor adoption within UK residents of the age bands 50 and above and rapid adoption with age band 18 -50 were amongst the reasons that led to this research. This difference was identified and detailed in the exploratory phase of this research, which was conducted using samples of participants 50 years old or above. However, within the pilot phase of this research there were four research aims.

- (1) To pilot test a survey instrument design that involved data collection, coding and analysis procedures and methods. These methods and procedures would then be evaluated to determine their suitability for the final phase of this research.
- (2) Produce a set of statistical regression models that will provide preliminary results regarding the proportion of variation of participants' intention, which can be explained by the MOSN model. Alongside this there will also be an identification of constructs that are statistically significant explanatory variables for OSN behaviour.
- (3) To comparatively examine the effect of the MOSN theoretical constructs on individual groups aged 50 years and below and participants aged 51 years and above.
- (4) To determine whether including demographic variables as explanatory variables of an individual's Actual Behavior (AU) increases or decreases the model fit and accuracy of predictions made by MOSN.

Before conducting the pilot test, a survey questionnaire instrument was needed in order to gather data on which to draw findings. Explanation of this survey questionnaire development is described in the following sections.

### **4.3 Pilot Survey Questionnaire Development**

When determining the mode for dissemination form the survey questionnaire, it was noted that “Using the Internet to conduct quantitative research presents challenges not found in conventional research” (Andrews et al, 2003 p.185). The internet provides opportunities to undertake surveys more efficiently and effectively than traditional means previously used such as paper based surveys (Zhang, 1999). Web surveys have become an attractive research method as they hold several advantages, which are as follows. Web surveys allow for simple, fast and cheap access to large groups of potential respondents and for this reason the number of web surveys conducted has increased dramatically over time (Bethlehem & Biffignandi, 2012).

Initially, the pilot phase began with the formation of a paper-based exploratory survey questionnaire where the design and content were informed fundamentally by secondary information obtained from existing research within the IS and neighbouring fields. However, when considering the implementation and dissemination of a paper-based exploratory survey it was noted that a low response rate could emerge. This could be due to individuals being deterred due to the time and effort required to post or arrange collection of the physical copies of the survey. With these points considered along with computer availability and widespread internet access available to much of the UK and certainly Hertfordshire, the internet survey research method offered a more flexible, cost effective and efficient method of survey based data collection for this research. At this stage of the research project conversion and development of the paper based exploratory survey questionnaire to an online survey tool then took place.

In order to develop the internet survey, in addition to the findings and outcomes of the exploratory phase, firm methodological guidance for internet survey development was sought. Hewson et al (2003) suggests a number of internet survey design principles that were considered for this research study:

- Collect information regarding demographics,
- Factor in procedures that allow for measurement of sampling frame and responses rates,
- Control access to the survey,
- Send a preliminary request for participation,
- Include an introduction to the survey that gives affiliation details and aim to maintain a professional appearance,
- Aim for simplicity and clarity in layout and presentation,
- Keep procedures and software requirements as low-tech as possible,

- Undertake extensive piloting across different platforms,
- Maintain participant anonymity and use server side scripting.

These principles were referred to during the development of the internet survey. Principles and information was also sought from Dillmans' (2007) tailor design method for internet surveys. Dillman (2007) suggested principles for questionnaire design led to an online questionnaire for this research study that comprised three sections; (1) demographics (2) Internet Usage (3) OSN usage. Eventually 39 items based on the constructs were used. The survey items used a range of options including dichotomous (survey items with only two possible values, e.g. In terms of variables, e.g., age: under 65/65 and over; generally 0 or 1), ordinal (survey items with multiple logically ordered values; e.g. the choice on a rating scale from 1 to 5) and scale (survey items asking participants to respond by choosing a value from a scale of 1 = disagree to 5 = agree). The pilot questionnaire can be found in appendix 4.1

#### **4.4 Development of Construct Measures**

In addition to question and questionnaire design, the development of survey items that can be administered to participants was essential. The survey items will allow for each construct's data collection. By doing so, the MOSN framework can then be empirically tested and validated.

Before proceeding onto development of construct measures clarification of the term 'construct' is made. Constructs are defined as: 'internal attributes or characteristics that cannot be directly observed but are useful for describing and explaining behavior' (Gravetter & Wallnau, 2009 p 18). It has also been found that 'constructs are conceptual or theoretical entities that are not directly observable and are the topics of research (Levine & Kotowski, 2010 p.68). Earlier studies defined a construct as 'some postulated attribute of people, assumed to be reflected in test performance' (Cronbach & Meehl, 1955 p.283). A construct in recent times has been defined in terms of attributes and tests as shown in the following: 'invisible internal attributes, measurable by personality tests, whose existence can be used to help explain and predict behaviour' (Carducci, 2009; p.46). Many variables such as height, weight and eye colour are well defined tangible elements. This means that they can be observed and directly measured. Contrastingly many variables examined by behavioural scientists such as 'intelligence' or 'self-esteem' are intangible and referred to as constructs since they cannot be directly observed and known as hypothetical constructs (Gravetter & Wallnau, 2009). For this research, the definition of Gravener & Wallnau (2009) is used and the following construct measures along with explanations using previous research studies constructs have been formed.

<b>Table 4.1 Pilot Survey Construct Measures</b>		
<b>Construct</b>	<b>Measure Definition (survey item)</b>	<b>Source</b>
<b>Resource F.C</b>	Online social networks take up much valuable time.	Venkatesh & Brown (2001)
<b>Requisite Knowledge</b>	I have the knowledge/confidence needed to use online social networks.	Adapted from 'self-efficacy' Venkatesh & Brown (2001)
<b>Relative Advantage</b>	I prefer face-to-face contact rather than using online social networks.	Taylor & Todd (1995)
<b>Technology F.C</b>	I have a computer/laptop and internet access that support the use of online social networks.	Taylor & Todd (1995)
<b>Secondary Influence</b>	TV, newspapers or radio influence the choices I make about online social networks.	Venkatesh & Brown (2001)
<b>Primary Influence</b>	Many of my friends, family and colleagues use online social networks.	Venkatesh & Brown (2001)
<b>Hedonic Outcomes</b>	Online social networks is (are) a fun and entertaining activity.	Venkatesh & Brown (2001)
<b>Social Outcomes</b>	Online social networks have social benefits.	Venkatesh & Brown (2001)
<b>Utilitarian Outcomes</b>	Online social networks are useful for work related activities.	Venkatesh & Brown (2001)

As earlier mentioned, intangible constructs that are not directly observable such as, 'attention' and 'honesty' must be inferred from the measures used to investigate them (Goodwin, 2010). Therefore, construct measures are operational definitions. An operational definition identifies a measurement procedure (a set of operations such as, survey items) for measuring an external behavior, and uses the resulting measurements as measurements of a hypothetical construct (Gravetter & Wallnau, 2009). Measurement is the act of assigning numbers or numerals to represent attributes of people, objects or events (Nunnally & Bernstein 1994). For the constructs used within this pilot phase as guided by the original theories assigned numerals will take the form of numerical rating scales from 1 to 5 (disagree > agree).

Within each of the selected research frameworks, the original construct measures that were applied for the empirical work are provided. Research suggests that typically a single theoretical construct is tested with three or more measures (Venkatesh & Brown, 2001; Taylor & Todd, 1995; Featherman & Pavlou, 2003). This is conducted in order to allow for evaluation of constructs measures through construct validity and reliability. However, as this is a pilot questionnaire and the primary purpose was to pilot test all the procedures of data collection, such as a web-link launch, technical issues, data extraction, coding and analysis. Therefore only one measure was exercised for each construct. This was essential in order to reduce the questionnaire size (by 18 items) and to increase the response rates.

The development of a single measure for each of the nine chosen constructs was made possible by converging the keywords from multiple construct measures supplied selected theoretical frameworks; DTPB, MATH, E-Services Adoption Model, into one single measure. This single measure was developed to represent all the key components of its respective construct. This then allowed for the capture of the

behaviors under investigation. Within the final survey test three measures were contextually adapted and utilized for each construct. This was important to allow for adequate validation and exercise all theoretical construct fully. The construct measures used within the pilot test are provided in table 4.1.

#### 4.5 Content Validation

Having developed a survey questionnaire research instrument guided by the outcomes of the exploratory research phase, the first of the phase of instrument validation commenced. It is accepted in social science research that construct measures can demonstrate content validity before the measures can hold any other type of validity (Rossiter, 2008). Therefore, Lawshe (1975) content validity method that involved employing a content evaluation panel was employed. More details for this method are available in chapter 3.

	<b>Participant</b>	<b>Area of Expertise</b>
<b>Academic Researchers</b>	A	General Science
	B	Information Systems
	C	Econometrics
	D	Tourism
	E	Physics/Chemistry
<b>Industry Researchers</b>	F	Dentistry
	G	Medicine
	H	Pharmacy
	I	Banking
	J	Accountancy

For this research, a Content Validity Panel (CVP) of five industry and five academic experts were self-selected to participate (table 4.2). The experts' selection process was based on getting a broad spectrum of specialized, experienced and informed opinion on the pilot questionnaire survey items. Therefore, five academic researchers (PhDs) were chosen all with quantitative experience. Five industry researchers were all chosen from a spectrum of disciplines to ensure the panel was not bias toward any particular research culture.

As suggested by Lawshe (1975) experts were then asked to rate each survey item as either (a) essential (b) useful, but not essential (c) not necessary. Once replies were received, Content Validity Ratios (CVRs) were calculated using Microsoft Excel 2010. Content validity results of all the items are available in appendix 4.6. All the measurements met the accepted CVR value of 0.62 (Lawshe, 1975; p.568). Two survey items were rejected: total household income (CVR: 0.40) and individual household income (CVR: 0.00). These items were rejected on the basis that they would produce non-responses. The expert panel

believed that the older individuals' demographic group would not be willing to reveal very personal information, which is viewed to be income in this case.

#### 4.6 Pilot Test: Analysis & Findings

Having developed the exploratory survey questionnaire, an online Internet survey method was chosen to be the appropriate mode for data collection. It was also viewed as important to test this mode as it was to be used for the final phase of this research study.

Within the pilot test all age groups 18 years old and above were sampled. This was essential in order to utilise MOSN and understand the behavior and attitudes of the general population towards OSN use. This means would also allow for a comparative analysis of the usefulness and explanatory power of the MOSN model between older and younger age groups. The following sections describe the sample, analysis and findings, which were revealed as a result of this pilot phase.

##### 4.6.1 Sampling & Sample Size

To gather a substantial number of participants, snowball sampling was pursued. This involved daily and routine distribution (blog posting) of an introduction e-letter and survey-link on SurveyMonkey.com where the co-operation of all ages (18+), including OSN non-users was sought. The survey was conducted for two months (March 24th 2012 – May 24th 2012). The principal researcher initially began with 35 self-selected OSN accounts (Facebook, Twitter, LinkedIn & MySpace) belonging to members residing in the sampling frame.

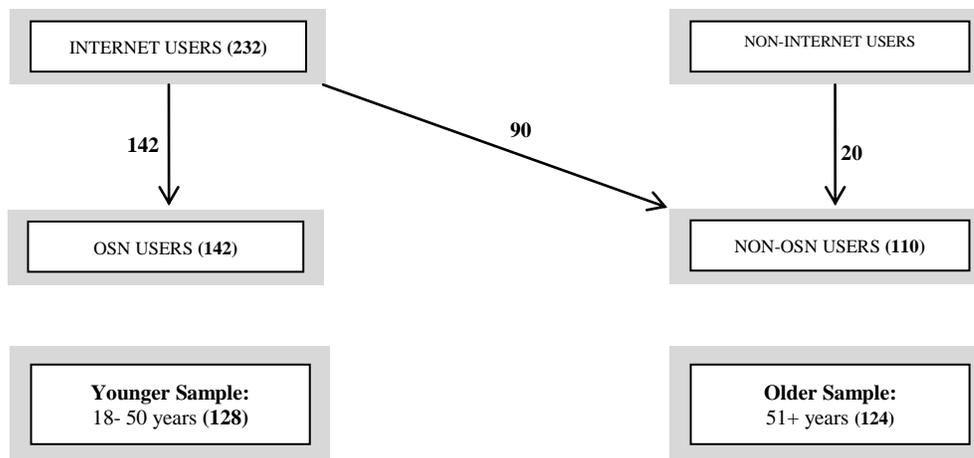


Figure 4.1 Pilot Survey Sample (n=252)

In total 271 responses were obtained. Following a data cleansing and screening process, 19 responses were found to be incomplete, which led to a pilot survey sample of 252 participants (figure 4.1).

The sampling frame comprised residents from UK's London, southeast and east of England. These areas were specifically selected due to their current economic contributions to economic growth in the UK. The southeast of England is the second largest economic contributor among regions of England and UK countries and is responsible for nearly 15% of the UK's Gross Value Added (GVA) (ONS, 2012i). The east of England has the highest employment rate of any English region or country of the UK. Gross household income per head in Hertfordshire is the fourth highest in England (ONS, 2012j). London is by far the largest contributor to the economy within the English regions and countries of the UK. It provides its greatest contribution from financial and insurance activities (ONS, 2012k).

#### **4.6.2 Demographics**

Within both data sets, the age ranges were relatively equally distributed, with the 25-30 age group having the largest numbers (Table 4.3). In terms of gender, it was almost equally distributed: Males 125; 127 females (Table 4.4). Of the 252 participants, 142 were OSN users and 110 non-OSN users. 128 participants were of age ranges 18-50 years (forming the younger data set) and 124 were 51 years and above (forming the older data set). Within this data set 50.4% were males and 49.6% female.

In terms of age ranges, these were: 18 – 30 (27%); 31-40 (15.1%); 41 -50 (4%); 51-65 (27.4%); 66-80 (21.8%). Educationally, 42.8% of participants held undergraduate and/or postgraduate university degrees. In terms of ethnicity, the majority of participants were of white British origin (71%) with the remaining 29% being Asian/British, mixed background or of another white background.

As older adults were also of interest, participants were requested to evaluate their overall state of health at the time of the survey, where 43.3% were in excellent health. 52.4% had good health and 4.4% poor health. The majority of the participants, 36.5% resided in the Hertfordshire area of the southeast, followed by London (17.9%), Kent (17.5%) and Essex (10.7%). The remainder of the participants were almost equally distributed throughout the remaining areas.

In terms of the labor force status of participants, 47.6% were at the time of completing the questionnaire currently in full time work. 19.8% were pensioners, 65 years old or above. The remaining participants were either full time students, retired, unemployed and one individual was redundant (Table 4.6). In terms of occupation, 30.2% were in service/sales, 28.6% were legislators/managers/professional, and 9.5% were academic students. The remaining participants were employed in a range of industrial and commercial sectors (Table 4.7). For the reader's information, all the demographics tables can be found in appendix 4.2.

When considering the variables for analysis impact, researchers have suggested five core socio-economic demographic variables of importance. These are age, gender, education, employment and occupation (Burgess, 1986). These demographics provide important information about the characteristics of the population under investigation. Therefore comparative analysis using frequencies of adopters and non-adopters pertaining to these demographic variables is provided in the following sections.

<b>Table 4.3 Age: Adopters Vs Non-adopters</b>					
<b>ADOPTERS N-142</b>			<b>NON-ADOPTERS N-110</b>		<b>Adopters Vs Non-Adopters</b>
<b>AGE</b>	<b>Frequency</b>	<b>Percent</b>	<b>Frequency</b>	<b>Percent</b>	
18-24	26	18.3	--	--	<b>18 -50</b> <b>Adopters: 106</b> <b>Non-adopters: 22</b>
25-30	37	26.1	5	4.5	
31-35	19	13.4	5	4.5	
36-40	11	7.7	3	2.7	
41-45	6	4.2	6	5.5	
46-50	7	4.9	3	2.7	
51-55	15	10.6	11	10.0	<b>51+</b> <b>Adopters: 36</b> <b>Non-adopters: 88</b>
56-60	10	7.0	18	16.4	
61-65	3	2.1	12	10.9	
66-70	5	3.5	23	20.9	
71-75	2	1.4	19	17.3	
76-80	1	.7	5	4.5	
<b>Total</b>	<b>142</b>	<b>100.0</b>	<b>110</b>	<b>100.0</b>	

### Demographics: Age and OSN adoption

When examining age it is clearly illustrated that the majority of adopters within the sample are of the age of 18 – 40 years (65.5%). Contrastingly the majority of non-adopters were of the age ranges, 51 years or above (80%). Further, 26.1% of adopters were aged between 25-30 and the majority (20.9%) of non-adopters in the age ranges of 66-70. This demonstrates that the older age groups (51+) are far less likely to be OSN adopters. This observation was further supported by the absence of any non-adopters appearing in the age ranges of 18-24 years. Therefore, there was a 100% adoption rate in the sample of ages 18-24. This confirms that based on the pilot survey sample individuals aged between the ages of 18-50s are the majority adopters of OSNs.

### Demographics: Gender and OSN adoption

In terms of gender, the distribution of OSN adopters and non-adopters was far less diverse. Male adopters held the majority at 57.7% . Within the non-adopters category, females held the majority at 59.1%. This suggested that behavioral changes regarding OSN adoption are not diverse when considering age.

<b>ADOPTERS N-142</b>		<b>NON-ADOPTERS N-110</b>		
<b>GENDER</b>	<b>Frequency</b>	<b>Percent</b>	<b>Frequency</b>	<b>Percent</b>
Male	82	57.7	45	40.9
Female	60	42.3	65	59.1
<b>Total</b>	<b>142</b>	<b>100.0</b>	<b>110</b>	<b>100.0</b>

### Demographics: Education and OSN adoption

When considering education levels, 55.6% of OSN adopters were educated to a university level. This includes, either HND/HNC, degree level or of a postgraduate level (MSc, MA, MBA, PhD, MD). Not entirely dissimilar were the 42.8% of non-adopters who were also educated at university level. This illustrates that education does not reveal any contrasting results within the sample with regards to education. However, it does demonstrate that the sample population was educated since 126 participants, an overall 50% were educated to a university level and 126 participants were not. This does also suggest that whether individuals are educated or not, if there is a desire to use Facebook, then it will be used.

<b>Table 4.5 Education: Adopters Vs Non-adopters</b>				
<b>ADOPTERS N-142</b>			<b>NON-ADOPTERS N-110</b>	
<b>EDUCATION</b>	<b>Frequency</b>	<b>Percent</b>	<b>Frequency</b>	<b>Percent</b>
Higher Degree	22	15.5	6	5.5
1st Degree (BA/BSc)	48	33.8	32	29.1
HND / HNC / Teaching	9	6.3	9	8.2
A- Level	26	18.3	4	3.6
BTEC/ Diploma	27	19.0	32	29.1
GCSE / O-Level	10	7.0	27	24.5
<b>Total</b>	<b>142</b>	<b>100.0</b>	<b>110</b>	<b>100.0</b>

### Demographics: Employment Status and OSN adoption

When comparing the employment status results were similar to the age factor. The vast majority of the participating adopters, 80.3% were currently in full or part-time employment. These results perhaps indicate that OSNs may provide benefits to those in employment. This point is further reinforced, as the majority of non-adopters, 59.1% were not in any form of employment. In terms of the non-adopters, 41 individuals were aged between 51- 65. This suggests that these individuals could also be employed; therefore, it cannot be argued that this observation is the result of the majority of the older sample being above the retirement age where employment is viewed to be no longer feasible, or desirable.

<b>Table 4.6 Employment: Adopters Vs Non-adopters</b>				
<b>ADOPTERS N-142</b>			<b>NON-ADOPTERS N-110</b>	
<b>EMPLOYMENT</b>	<b>Frequency</b>	<b>Percent</b>	<b>Frequency</b>	<b>Percent</b>
Currently Employed Full Time	86	60.6	34	30.9
Currently Employed Part Time	11	7.7	11	10.0
Student - Full Time Education	17	12.0	--	--
Pensioner 65+	8	5.6	42	38.2
Retired (Under 60 Years Old)	3	2.1	19	17.3
Currently Unemployed (< 6 Months)	8	5.6	2	1.8
Currently Unemployed (6 Months+)	8	5.6	2	1.8
Redundant	1	.7	--	--
<b>Total</b>	<b>142</b>	<b>100.0</b>	<b>110</b>	<b>100.0</b>

### Demographics: Occupation and OSN adoption

With regards to occupation, 31% were legislators, managers, professionals. There were also 29.6 % participants working in the sectors of service and sales positions where the most frequently occurring occupations of OSN adopters emerged. The remaining occupational categories were sparsely distributed. However these outcomes were also replicated within the non-adopters categories of legislators, managers and professionals-25.5% and service/sales workers-30.9% being the most frequently occurring occupations. However, it can also be seen that the percentages are the opposite with the legislators, managers and professionals leading in terms of adopters and in terms of non-adopters, the sales and service position holders were leading. This consistency within both sets of participants demonstrates that the category of occupation does not reveal any significant explanatory findings with regards to the OSN adoption decision process.

<b>Table 4.7 Occupation: Adopters Vs Non-adopters</b>				
<b>ADOPTERS N-142</b>			<b>NON-ADOPTERS N-110</b>	
<b>OCCUPATION</b>	<b>Frequency</b>	<b>Percent</b>	<b>Frequency</b>	<b>Percent</b>
Student	24	16.9	--	--
Legislators/Managers/Professionals	44	31.0	28	25.5
Academics/Teachers	8	5.6	8	7.3
Crafts/Trades	5	3.5	16	14.5
Clerks	7	4.9	10	9.1
Service/Sales	42	29.6	34	30.9
Agriculture/Forestry/Fishery	2	1.4	2	1.8
Plant/Machine Operators	3	2.1	3	2.7
Freelance	7	4.9	9	8.2
<b>Total</b>	<b>142</b>	<b>100.0</b>	<b>110</b>	<b>100.0</b>

### 4.6.3 Descriptive Statistics

Having considered the demographic factors and considering the age aspect of this research, the next step involved regression modelling. Before conducting regression modelling using the collated data and obtaining an empirical analysis of the application of the MOSN framework, descriptive statistics are provided for the nine administered construct measures. ‘Descriptive statistics consists of procedures used to summarize and describe the important characteristics of a set of measurements’ (Mendenhall et al, 2009: p.4). As the construct measures were answered

using numerical scales the mean or average value selected on the 1-5 scale can be interpreted as an ‘average’ view of the sample for the construct in question. This allows for interpretation of data using a wider view representation of the entire sample. Along with the mean, standard Deviation (S.D) is also calculated, which is a measure of the variation/dispersion in data being analyzed (Johnson & Kuby, 2008). The SD is a measure of the distribution of the data around both sides (+-) of the mean. The greater the SD value, the wider the difference of the minimum and maximum values of the scales selected by the participants. This allows for identification of how diverse views were toward each constructed regarding the entire sample.

<b>Table 4.8 Descriptive Statistics - Pilot Survey Construct Measures (n-252)</b>			
<b>Construct</b>	<b>Mean</b>	<b>S.D</b>	<b>Measure Description</b>
<b>RFC</b>	2.56	1.533	Online social networks take up much valuable time. <sup>1</sup>
<b>RK</b>	3.90	1.436	I have the knowledge/confidence needed to use online social networks. <sup>1</sup>
<b>RA</b>	4.29	1.220	I prefer face-to-face contact rather than using online social networks. <sup>1</sup>
<b>TFC</b>	4.50	1.162	I have a computer/laptop and internet access that support the use of online social networks. <sup>1</sup>
<b>SI</b>	1.93	1.143	TV, newspapers or radio influence the choices I make about online social networks. <sup>1</sup>
<b>PI</b>	2.23	1.523	Many of my friends, family and colleagues use online social networks. <sup>1</sup>
<b>HO</b>	3.13	1.609	Online social networks is (are) a fun and entertaining activity. <sup>1</sup>
<b>SO</b>	3.18	1.504	Online social networks have social benefits. <sup>1</sup>
<b>UO</b>	2.34	1.375	Online social networks are useful for work related activities. <sup>1</sup>

1 = Likert Scale – 1 Agree > 5 Disagree

Table 4.8 provides the construct survey item descriptions and descriptive statistics of the measured items from the survey. From table 4.8 it can be seen that the constructs RA and TFC obtained mean values of 4.29 and 4.5. This suggested that on average participants disagreed to the measure descriptions. SI’s mean value was 1.93 which favoured towards agreement of the measure descriptions. RFC, RK, PI, SO and UO all had mean values ranging from 2.23 – 3.9. This showed that for these particular constructs agreement or disagreement to the measure descriptions was not as one sided as the remaining constructs. This suggested that the wider population, in both the young and older generations are mostly in agreement in terms of required knowledge to use OSNs. This was on the basis that many of one’s friends and family use OSNs and OSNs are useful for work related activities.

#### 4.6.4 OSN Adoption

Having undertaken data collection and instrument validity, PASW statistics 18 (formally SPSS 18) was utilized for the data analysis of the demographics, usage and diffusion data. To test the MOSN model, regression analysis was conducted using Microsoft Excel 2012 (table 4.9). In addition to modelling the entire sample, two additional models were tested by sub-dividing the sample into younger participants ( $\leq 50$  years) and older participants ( $\geq 51$  years) and allowed a comparative analysis of the diverse age groups. In order to test whether the inclusion of demographic variables does impact the outcome of results, these three models were run twice. This was conducted using and not using the demographic variables. Results were then drawn and interpreted by observing regression path coefficients. For this, significance of path coefficients ( $p$ -value) and the coefficient of determination ( $R^2$ ) value were used to determine the proportion of variance in OSN use (dependent variable) that was explained and accounted for by the MOSN theoretical explanatory variables. The following six sections illustrate and explain the results and findings of these six models.

#### All Participants ( $n=252$ )

Before individually testing the older and younger sample populations, the entire data set was tested to determine the overall predictive and explanatory powers of the MOSN constructs (table 4.9).

<b>Table 4.9 All Participants - MOSN Constructs (<math>n=252</math>)</b>					
<b>MOSN Construct</b>	<b>Coef.</b>	<b>Std. Err.</b>	<b><i>t</i></b>	<b><i>p</i>&gt;<i>t</i></b>	<b><i>p</i>*</b>
<b>Resource F.C</b>	0.165	.0531692	3.10	0.002	**
<b>Requisite Knowledge</b>	-0.032	.0532016	-0.60	0.547	
<b>Relative Advantage</b>	0.008	.0509847	0.16	0.870	
<b>Technology F.C</b>	0.075	.0582014	1.30	0.196	
<b>Secondary Influence</b>	-0.082	.0568118	-1.44	0.152	
<b>Primary Influence</b>	-0.268	.0501252	-5.35	0.000	***
<b>Hedonic Outcomes</b>	0.429	.0777472	5.52	0.000	***
<b>Social Outcomes</b>	0.204	.0787759	2.59	0.010	**
<b>Utilitarian Outcomes</b>	0.214	.0553818	3.87	0.000	***

$R^2 = .696$   $P^* < .05$   $P^{**} < .01$   $P^{***} < .001$

It was observed in the  $r^2$  that 69.6% of the variance in OSN use can be explained by the nine identified theoretical constructs. Five constructs were found to significantly influence OSN adoption, which are discussed as follows.

Hedonic outcomes had a positive effect on OSN use; thereby confirming that a user's propensity to use OSNs is increased through the perception of OSNs ability to provide fun and/or entertainment.

Utilitarian outcomes had a positive effect on OSN use that then suggested that OSNs are perceived to be beneficiary as a tool to support paid and/or unpaid (voluntary) work.

Primary influence significantly suppressed OSN adoption. Therefore of the 110 non-adopters that participated, there were negative influences, or perhaps potential adopters were warned by their friends, family, co-workers, peers and superiors when making decisions of adoption of OSNs. Since 70.9% of the over 50s group were non-adopters, this result was expected as this age group is viewed to be more likely not to use OSNs; thereby discouraging others from using OSNs. This rationale was confirmed by this finding.

A significant effect of resource F.Cs, measured through internet availability and possession or access to an internet able device was found to positively influence the decision to become an OSN user.

### **All Participants & Demographics (*n*-252)**

Earlier regression analysis was pursued on the conceptual framework's constructs. Further analysis was then undertaken on all the participants and including the demographic variables within the regression equation (table 4.10). This resulted in a 7.3% increase in the  $R^2$  coefficient to 76.9%. From this result it can be seen that the MOSN model and selected demographic variables can unarguably be used to predict and understand the OSN behaviour of all the pilot test participants. Additionally the regression test resulted in nine statistically significant predictors of OSN use as shown in table 4.10 and discussed as follows.

Consistent with the previous model, Hedonic Outcomes had a positive effect on OSN adoption for all the participants. This confirmed that OSN use within the 18 years and above age ranges is motivated by the perception of a fun and entertaining internet experience.

Variable	Coef.	Std. Err.	t	P>t	P*
Age 36-50	-0.864	.2754881	-3.14	0.002	**
Age: 51-65	-1.178	.2990576	-3.94	0.000	***
Age: 65+	-1.586	.3652487	4.34	0.000	***
1st Degree (BA/BSc)	0.302	.1275121	2.37	0.019	*
Resource F.C	0.157	.0482144	3.26	0.001	***
Secondary Influence	-0.100	.0501798	-2.00	0.047	*
Primary Influence	-0.153	.0472131	-3.24	0.001	***
Hedonic Outcomes	0.389	.0701792	5.54	0.000	***
Utilitarian Outcomes	0.166	.0511789	3.23	0.001	***

$R^2 = .769$  P\* <.05 P\*\* <.01 P\*\*\* <.001

Utilitarian Outcomes was again equally significant to the previous test; however this time the regression coefficient decreased by 0.048. Primary influence was also equally significant, but the regression coefficient was reduced by 15.3%. The Resource F.C construct emerged with a higher significance than the previous model with the *p*-value increasing from 0.002 to 0.001. This showed that when including demographic variables with the theoretical constructs in a regression calculation, the predictive power of theoretical constructs changes. This suggests that it was beneficial to run analysis with and without demographics.

Within the previous model Secondary influence had no significant effect on OSN adoption. However, taking into consideration the demographic variables, SI did test significantly (*p*-value .047). This significant negative effect on OSN adoption revealed that information carried by the communication and media channels of TV, newspapers and magazines suppressed OSN use within all the participants.

With regards to demographic predictors, age was found to be a strong significant predictor of OSN adoption in all the age groups- 36 -50, 51-65 and 65+. Hence, these results confirmed that age as a demographic predictor is a strong explanatory variable. However the strongest significant predictions of age were observed in the 51 and above age categories (51-65 & 65+); thereby demonstrating that MOSN is perhaps better suited to understanding the behavior of older adults, as was intended during its conception and implementation.

With regards to the remaining demographic variables, education, specifically for the participants who had acquired an undergraduate qualification- a bachelor's degree had positive significant effect on OSN adoption.

### Participants 50 and Under (*n*-128)

Table 4.11 Under 50s - MOSN Constructs ( <i>n</i> -128)					
MOSN Construct	Coef.	Std. Err.	t	<i>p</i> > t	<i>p</i> *
Resource F.C	0.169	.0740785	2.28	0.024	*
Requisite Knowledge	0.345	.1066288	3.23	0.002	**
Relative Advantage	-0.028	.0730476	-0.38	0.704	
Technology F.C	-0.487	.1957769	-2.49	0.014	*
Secondary Influence	-0.076	.0830099	-0.91	0.364	
Primary Influence	-0.104	.1133254	-0.92	0.361	
Hedonic Outcomes	0.164	.1174296	1.39	0.166	
Social Outcomes	0.335	.1073298	3.12	0.002	**
Utilitarian Outcomes	0.130	.0687884	1.90	0.061	

$R^2 = .634$   $P^* < .05$   $P^{**} < .01$   $P^{***} < .001$

Further analysis of the MOSN model with younger participants resulted in fewer and weaker relationships (table 4.11). Overall, four constructs observed significant results, which are: SO, Resource F.C, Technology F.C, and RK. The following explanations to the constructs and their results are provided.

Social outcomes had a significant positive effect on the younger samples decision to adopt OSNs; thereby supporting the view that OSNs do provide a platform to create and sustain social interaction. Resource F.Cs, measured by the available time to use OSNs and available money to purchase an internet device and internet access had a positive effect on OSN adoption. This was interpreted as the more time and money available to younger individuals, the more probable that the individual would be an OSN user. Technology F.C measured by the availability of reliable internet access in combination with an internet 'able' device (PC, Laptop or Smartphone) experienced a weak negative effect on OSN adoption. This suggested that of the younger sample population, some participants OSN adoption was impeded by the lack of available technologies to support OSN use. Consistent with the analysis examining the entire sample, Social Outcomes influence on OSN adoption was positive at a 0.01 significance level. This implies that social

outcomes are for the younger population as highly motivational for OSN use, as social outcomes are for the entire population. However, the regression coefficient increased by .131. This demonstrates that the construct SO had a stronger change on OSN use within the younger sample. Requisite Knowledge, the fourth construct experienced a positive effect on OSN use; therefore those participants within the younger sample evaluated themselves to have a strong familiarity, confidence and skills to use the internet and internet devices.

### Participants 50 and Under & Demographics (n-128)

Table 4.12 Under 50s - MOSN Constructs + Demographics (n-128)					
Variable	Coef.	Std. Err.	t	p >t	p*
Age:36-50	-0.643	.315581	-2.04	0.044	*
In Employment	1.987	.9517238	2.09	0.039	*
Out of Labor Force (Not Working/Student)	1.929	.9596942	2.01	0.047	*
Resource F.C	0.171	.0757036	2.26	0.026	*
Requisite Knowledge	0.328	.1087399	3.02	0.003	**
Social Outcomes	0.259	.1180243	2.20	0.03	*

$R^2 = .649$  P\* <.05 P\*\* <.01 P\*\*\* <.001

When analysing the younger sample population, including the demographic variables within the regression equation, three demographics were found to have significant effects on OSN adoption (table 4.12). The 36 participants in the age bands of 36 and 50 experienced a weak significant effect on adoption. This suggests that these age groups were less inclined to be adopters of OSNs. Those participants who were currently in employment or who were not in the labour force were significantly inclined to be OSN adopters.

With regards to the MOSN construct SO, there was a weaker significant effect on OSNs. Comparatively, Resource F.Cs maintained the same level of significance on OSN adoption; hence, strengthening the interpretation that theoretical control factors in the form of facilitating conditions will have a significant positive influence on the OSN adoption decision.

### Participants 51+ (n-124)

When analysing the data older adult participants of the 124 participants aged 51 years or above resulted with a  $R^2$  coefficient of 62.5%. This confirmed that MOSN provides an understanding of the adoption and use of OSNs in terms of older adults, as well as younger individuals (table 4.13).

MOSN Construct	Coef.	Std. Err.	t	p >t	p*
Resource F.C	0.089	.0584947	1.52	0.130	
Requisite Knowledge	-0.289	.0550473	-5.25	0.000	***
Relative Advantage	0.060	.0523227	1.14	0.255	
Technology F.C	-0.030	.0486432	-0.63	0.532	
Secondary Influence	-0.016	.0584572	-0.27	0.788	
Primary Influence	-0.092	.0658369	-1.39	0.167	
Hedonic Outcomes	0.380	.103061	3.69	0.000	***
Social Outcomes	-0.025	.0838925	-0.30	0.766	
Utilitarian Outcomes	0.109	.0738092	1.48	0.142	

$$R^2 = .625 \quad P^* <.05 \quad P^{**} <.01 \quad P^{***} <.001$$

As expected, Requisite Knowledge had a strong negative significant effect on OSN adoption. This confirmed that a lack of the pertinent knowledge regarding computers use and internet use does significantly impede an older individual's decision when adopting OSNs. The expectation of this result arises from the notion that digital immigrants (older adults) are not embracing various attributes of the digital revolution, due to the lack of familiarity and computer literacy that has not been instilled in them from their early ages (childhood).

Hedonic Outcomes observed a strong significant positive on OSN adoption consistent with the results from the entire sample. This confirms that fun and entertainment is a key motivation for OSN adoption amongst the older age groups.

#### Participants 51+ & Demographics (n-124)

Variable	Coef.	Std. Err.	t	p >t	p*
1st Degree (Ba/BSc)	0.306	.1460988	2.10	0.039	*
Employed	-1.757	.7953195	-2.21	0.029	*
Requisite Knowledge	-0.227	.0617487	-3.68	0.000	***
Hedonic Outcomes	0.414	.107254	3.86	0.000	***
Utilitarian Outcomes	0.152	.0754767	2.02	0.046	*

$$R^2 = .652 \quad P^* <.05 \quad P^{**} <.01 \quad P^{***} <.001$$

When testing for participants aged 51 years and above, and including the demographic predictors, the resulting variance ( $R^2$ ) was 65.2%. This was the highest  $R^2$  and this was the largest proportion of variance explained by any of the six regression models (table 4.14). This

suggests that MOSN is a stronger tool for examining older individuals compared to younger individuals.

With the inclusion of demographic predictors Hedonic Outcome sustained a strong positive significant effect on OSN use.

In comparison to the previous analysis of the younger samples, it was found in the older sample that a positive significant effect ( $<0.05$ ) of Utilitarian Outcomes OSN use does exist. Utilitarian Outcomes were measured and interpreted as OSNs applications for paid or unpaid work. This suggested that older individuals are finding work orientated uses for OSNs. Six of the thirty-six adopters in older sample did report the use of OSNs for paid work and as a means of promoting themselves and their work.

Importantly, requisite knowledge had a highly significant negative effect on OSN use; thus endorsing the view that one's evaluation of the required skills and knowledge (pre-requisites) to use an internet device, navigate the internet and sign-up for and use an OSN profile is an integral consideration undertaken before an individual proceeds to OSN adoption and use. This was also a significant construct within the younger sample. However the significance was stronger among older individuals (p-value .001).

With regards to demographics, employment had a weak negative significant effect on OSN use. This was likely to be due to 71 out of the 124 older individuals being either pensioners- 65+ or retired, or under the age of 60 years. Education was consistent with the analysis from the entire sample, where positive significant effects had resulted from those possessing a University degree.

#### **4.6.5 OSN Diffusion**

The MOSN framework also applied some of the diffusion theory. To examine diffusion, participants were asked to select from a list of communication channels including, television (TV), newspapers, internet, radio, magazines, word of mouth that includes, friends, family and co-workers and receipt of positive or negative information in terms of OSNs.

Path analysis of this data revealed that overall, for the 142 OSN adopters, media influence had a highly significant ( ) negative effect on their OSN use. That is, the p- value was at 0.002. This is understood to be an influence of the UK media providers frequently reporting on instances of possible personal information threats as a result of engaging in OSN related activities. However,

when independently analyzing media channels influence, TV was found to have a significant positive effect on OSN use for all the adopters. Information, communication channels providing the highest proportion of information pertaining to OSNs in both older and younger participants were word of mouth, TV and newspapers.

#### **4.6.6 OSN Usage**

With regards to OSN usage behavior, the survey items regarding OSN use were administered to participants who were at the time of the survey currently OSN users. The following findings were extracted.

##### **Usage – 51+ OSN adopters**

Of the 124 older participants, 36 were active OSN users at 29%, with 24 users accessing their OSN accounts on a weekly basis. Seven accessed OSNs on a daily basis for less than two hours, four on a monthly basis and one user, on a daily basis for more than two hours a day.

In terms of the OSNs, Facebook and LinkedIn were equally the most popular OSN providers followed by Twitter for the older OSN adopters. The top five most popular OSN activities were: 1. Friending/adding those you know in real life. 2. Viewing photos. 3. Messaging. 4. Picture commenting 5. Promoting yourself, business, events planning, or information.

The most popular internet capable devices to access OSNs were laptops and Personal Computers (PCs), with five users accessing OSNs via a Personal Digital assistant (PDA) and four users accessing via a smartphone. 12 users did not have a profile picture and did not intend to have one at all. Three users had the intention to have a profile picture, but not currently doing so. The remaining users all had profile pictures. In terms of OSN membership duration, three users had been actively using OSN for over four years, but the majority of users, which was 16, were for between one and two years, with the remaining participants being users of one year or less. All the older participants stated that they had the intention to continue using OSNs in the future.

##### **Usage – 50 and Below OSN adopters**

Of the 128 younger participants, 106 were active OSN users, which in percentage terms is 82.8%. 70 users accessed their OSN account(s) on a daily basis for less than two hours a day. Seven individuals of 35 years and less were daily users and used OSNs for more than two hours a day. The remaining 19 were weekly users and there were no monthly users.

The OSN platform provider Facebook, held the majority of the younger audience with 100 active users. This was followed by Twitter with 46 users and LinkedIn with 28 users. What was also noted is that some users actively maintained multiple OSN accounts. Interestingly, the relatively new and emerging Google + online social network held 13 active users. The top five most popular OSN activities were: 1. Friending /adding those they know in real life 2. Messaging. 3. Viewing photos. 4. Picture comments. 5. Uploading photos.

In terms of internet capable devices used to access OSNs, 81 participants used laptops, whilst 75 used smart phones; thus, suggesting these being the most popular devices and reflecting the signs of the times. Dell the desktop PC maker posted large losses on May 16, 2013 and it was suggested that the times are changing with users preferring smartphones and tablet devices (BBC, 2013). This is why the desktop PC users were 49. The least utilized devices were the Apple iPod Touch and PDAs/tablets. In terms of features of the OSNs, 102 users had profile pictures, four users from the 30-50 age groups had no profile picture. The majority of the younger OSN users, 72 individuals had been using OSNs for between two to six years, 19 users for less than two years and 15 users for more than six years. Compared to the older OSN users, younger users had been OSN users for a far longer period of time.

Variable	Coef.	Std. Err.	t	p	p*
Age	-.202	.013	-4.412	.000	***
OSN Requisite Knowledge	-.167	.028	-4.046	.000	***
OSN Primary Influence	-.134	.027	-3.196	.002	**
OSN Hedonic Outcomes	.499	.041	7.463	.000	***
OSN Utilitarian Outcomes	.182	.030	4.435	.000	***

$R^2 = .750$   $P^* < .05$   $P^{**} < .01$   $P^{***} < .001$

### Continuance Intention

As explained in chapter 2, continuance intention confirms long-term acceptance and use of OSNs after initial adoption. By doing so, there is an elimination of doubt regarding participating adopters being first time or trial users. To analyse this variable the MOSN constructs were tested as explanatory variables of continuance intention (table 4.15).

Continuance intention was measured using a single survey item. All the participants were asked whether they intended to continue using OSNs. Non-adopters were provided with the option ' I

do not currently use OSNs' and adopters were provided with answer options 'yes' or 'no'. Four of the 142 adopters stated that they do not intend to continue using OSNs. 102 participants had the intention of using OSNs, but four did not.

A regression test was then performed on the overall MOSN constructs and demographics in order to estimate the probability of an individual's characteristics explaining continued OSN behavior. The analysis resulted in a  $R^2$  value of 0.750. This indicated that 75% of the variance continuance intention was explained by demographics and MOSN constructs. Age was the only significant demographic explanatory variable where a negative effect was found. This explains that the lower the age of the participant, the greater the intention to continue using OSNs. Requisite knowledge had a strong negative effect on continuance use where it was showed that insufficient knowledge of computer and internet use do not only impact adoption as found in previously discussed models; however, an individual's intention to continue using OSNs. Also negatively effecting continuance intention was the influence of friends/family and co-workers measured as primary influences. Strong positive significant effects were also found to impact continuance intention in terms of perceived hedonic outcomes (fun and entertainment) and utilitarian outcomes (applications for work). Four of the significant findings were consistent with the same explanatory variables tested with the dependent variable of actual use.

However, requisite knowledge emerged significantly where the p-value was at 0.001. This suggested that continuance intention was diverse to no significance within the test using the dependent variable, actual behavior. An explanation for this outcome is that requisite knowledge to use OSNs is perhaps not integral when experimenting and trialling the use of OSNs, but does become an impediment within the consideration of regular and continued use of OSNs. This reasoning is made on the basis that the procured evidence suggests continuance intention can be explained by the proposed theoretical model (MOSN). A key outcome of the pilot phase was that CI will be tested and included within the analysis models within the final phase. This will allow for confirmation of these results using a sample taken from a wider group of older adults.

#### **4.6.7 Internet Usage**

As with the exploratory phase internet behaviour was viewed as important as the internet is the platform providing access to OSNs. The survey items were administered where frequency of use, reasons for use, devices used to access the internet, ISP and internet experiences of the

individuals were measured. This was from the time that the internet was accessed in a household. The results of these questions in terms of both the younger and older samples are discussed below.

### Usage – 51+ Internet Users

Within the older adults, there were 20 participants who were not internet users and 104 participants who accessed the internet regularly (table 4.16). Of these, 50% accessed the internet on a daily basis for less than two hours, 13.5% daily for more than two hours and 36.5% on average just once a week. Three devices were most popular within the older participants when accessing the internet. 81 participants indicated use of a laptop; 44 used a Desktop PC and 31 utilised smartphones. Ten participants also reported using tablet devices for internet access, with one participant using their satellite TV service for internet access.

Internet Access Device	Gender		Total
	Male	Female	
Internet Access Device: Desktop PC	27	17	44
Internet Access Device: Laptop	37	44	81
Internet Access Device: Mobile / Smart Phone	21	10	31
Internet Access Device: TV Service	1	0	1
Internet Access Device: 3G iPad/PDA	1	0	1
Internet Access Device: iPad/PDA	7	2	9
<b>Total</b>	<b>49</b>	<b>55</b>	<b>104</b>

The internet is also employed for certain internet based activities. The five most frequently selected activities included Google searching (102), checking e-mails (82), internet use for leisurely entertainment (79), searching, browsing and purchasing insurances (home, car and pet) (56) and for financial purposes such as online banking (46). With regards to e-government services such as renewing car taxes, completing tax forms and communication with online government subsidiaries, 11 older participants used the internet for these purposes.

In terms of ISPs, Table 4.18 illustrates that the most popular ISPs were BT (42), Virgin Media (22), and Sky (14). A majority of the older participants, 43, did not know the current speed of

their internet connections. There were 41 participants using super- fast broadband (high speed internet) connections of 20Mbps and above.

Internet Use	Gender		Total
	Male	Female	
Internet Usage: Check e-mails	46	36	82
Internet Usage: Google Searching	49	53	102
Internet Usage: YouTube	15	15	30
Internet Usage: Video Calling	8	6	14
Internet Usage: Paid Work	6	2	8
Internet Usage: Unpaid Work	10	6	16
Internet Usage: Education/Coursework	6	2	8
Internet Usage: Leisure	38	41	79
Internet Usage: Instant Messaging	6	1	7
Internet Usage: Financial/Banking	28	18	46
Internet Usage: Insurance	33	23	56
Internet Usage: Gov. Central	7	0	7
Internet Usage: Gov. Local	3	1	4
<b>Total</b>	<b>49</b>	<b>55</b>	<b>104</b>

The remaining participants used internet connections below this speed. When considering the participants experience with internet use within a household, diverse results emerged where the majority, 37 participants had been using the internet for four to six years. 24 individuals had employed the internet for eight years or more. 20 people used the internet for two to four years and 18 individuals used the internet for six to eight years and five people were least experienced at using the internet.

ISP	Gender		Total
	Male	Female	
BT	18	24	42
Virgin Media	14	8	22
Sky	7	7	14
Talk Talk	1	6	7
Orange	1	4	5
AOL	1	1	2
O2	4	3	7
Plus Net	3	2	5
<b>Total</b>	<b>49</b>	<b>55</b>	<b>104</b>

### Usage – 50 and Below Internet Users

When considering the 50 years and below users, the overall numbers of participants used the internet within their household with some degree of regularity. 49.2% used the internet daily for less than two hours a day, 46.9% utilised the internet daily for more than two hours a day and on average 3.9% used the internet only once a week. 102 participants used laptops to access the internet, followed by 108 accessing the internet from smartphones, 61 individuals used a desktop PC and 39 participants used a tablet device such as an i-pad to access the internet and six individuals indicated using televisions to access the internet.

Internet Access Device	Gender		Total
	Male	Female	
Internet Access Device: Desktop PC	37	24	61
Internet Access Device: Laptop	53	49	102
Internet Access Device: Mobile / Smart Phone	60	48	108
Internet Access Device: TV Service	2	4	6
Internet Access Device: 3G iPad/PDA	4	3	7
Internet Access Device: iPad/PDA	23	9	32
<b>Total</b>	<b>71</b>	<b>57</b>	<b>128</b>

As illustrated in Table 4.20 within the younger population group the internet was employed for activities including, Google search (127), checking e-mails (121), leisurely activities for

entertainment (105), YouTube (92) and online banking (85). 27 participants reported the internet use for interaction with central and local government subsidiaries.

Internet Use	Gender		Total
	Male	Female	
Internet Usage: Check e-mails	69	52	121
Internet Usage: Google Searching	71	56	127
Internet Usage: YouTube	53	39	92
Internet Usage: Video Calling	34	29	63
Internet Usage: Paid Work	18	9	27
Internet Usage: Unpaid Work	14	18	32
Internet Usage: Education/Coursework	23	23	46
Internet Usage: Leisure	58	47	105
Internet Usage: Instant Messaging	29	23	52
Internet Usage: Financial/Banking	51	34	85
Internet Usage: Insurance	51	32	83
Internet Usage: Gov. Central	11	4	15
Internet Usage: Gov. Local	8	4	12
<b>Total</b>	<b>71</b>	<b>57</b>	<b>128</b>

The most popular ISP within this age group was Virgin Media (44) followed by BT (36), Sky (26) and Talk Talk (10). 42 participants did not know the exact speed of their current internet connection, while 57 participants had internet connections of 20 mbps or above.

Within the younger sample group years of having internet access was as follows: 36 participants had been using the internet in their household for between four to six years; 25 participants for more than eight years and 23 participants for between four to six years and the remainder for four years or less.

**NOTE: All data analysis for the pilot phase of research can be found in appendix 4.3**

#### **4.7 Pilot Phase: Hypotheses Testing**

Having collected and analysed the empirical data, hypothesis testing commenced. Hypotheses testing is a statistical procedure that uses the sample data to draw inferences about the population of interest (Gravetter & Wallnau, 2009). A hypothesis test is also interpreted as a statistical

method that uses sample data to evaluate a hypothesis about a population (Gravetter & Wallnau, 2009). Conducting regression analysis for the three samples resulted in 22 statistically significant results. These results were then tested against the hypotheses created during the conceptual development phase in chapter 2. By doing so, the tests identified what hypotheses should be supported or rejected.

Table 4.21 below depicts the entire numbers of statistically significant relationships that resulted from the pilot phase of this study.

Table 4.21 Summary of Significant Results (Constructs)						
	All Participants (N-252)	All Participants + Demographics (N-252)	50 and Below (N-128)	50 and Below + Demographics (N-128)	51 and Above (N-124)	51 and Above + Demographics (N-124)
Hedonic Outcomes	*** <sup>+</sup>	*** <sup>+</sup>			*** <sup>+</sup>	*** <sup>+</sup>
Utilitarian Outcomes	*** <sup>+</sup>	*** <sup>+</sup>				* <sup>+</sup>
Relative Advantage						
Social Outcomes	** <sup>+</sup>		** <sup>+</sup>	* <sup>+</sup>		
Primary Influence	*** <sup>-</sup>	*** <sup>-</sup>				
Secondary Influence		* <sup>-</sup>				
Resource F.C	** <sup>+</sup>	*** <sup>+</sup>	* <sup>+</sup>	* <sup>+</sup>		
Technology F.C			* <sup>+</sup>			
Requisite Knowledge			** <sup>+</sup>	** <sup>+</sup>	*** <sup>-</sup>	*** <sup>-</sup>

P\* <.05 P\*\* <.01 P\*\*\* <.001

NOTE: In chapter 2 hypotheses were developed from the literature, as this was an essential step in order to fuse the relationships between constructs in the framework. Behavioural Intention (BI) was the dependent variable for all the constructs within MOSN, which was also stipulated by the theories that the constructs were drawn from. However, within this pilot phase Actual Behavior (AU) was the dependent variable. Actual behavior was modelled as the dependent variables within the pilot phase in order to determine what constructs were significant to actual adoption. Later, within the pilot phase constructs will be modelled to determine construct significant to intention to adopt. Having and understanding both phenomena broadens the overall findings of this thesis. The results of these statistically significant results in the context of the hypotheses are illustrated in table 4.17 and discussed below.

### **Hypothesis 1**

H1 predicted a positive effect of hedonic outcomes, which was supported in the cases of all the participants and the older adults sample population. No significant effect was found in HO within the younger participants OSN adoption decisions.

### **Hypothesis 2 (Supported)**

H2 predicted that the OSNs ability to provide benefits for paid or unpaid work will have a positive significant effect on OSN adoption. This was only found to be the case within the entire sample and older adults that suggested the younger individuals being more interested in using OSNs for work purposes.

### **Hypothesis 3**

H3 was not supported by any of the samples. Therefore based on this pilot test's participants the advantages or disadvantages that OSNs hold relative to superseding technologies such as, land telecoms and email did not influence the adoption decision at all.

### **Hypothesis 4 (Supported)**

H4 tested the influence of an individual's consideration or perception of the social outcomes of adopting and using OSNs. Within the overall sample population hypotheses 4 was supported and was also the case within the younger sample population. This confirmed that social outcomes are considered and positively influence the decision to adopt OSNs. Hypothesis 5 was not supported by the older adult population, but the results suggested that younger individuals are inclined to use OSNs for socially orientated purposes. The motivation to socially interact with others using OSNs was not of much importance to older adults.

### **Hypothesis 5**

Hypothesis five pertains to the construct privacy risk. Privacy risk was included following the pilot phase results. In light of previous literature findings there was a suggestion that privacy risk is pertinent for examining internet technology adoption (*see* Shin, 2010; Balenger & Carter, 2008; Lieberman & Stashevsky, 2002). The researcher identified this as important and included this hypothesis within this research study.

**Hypothesis 6**

Primary influence that is the influence of friends, family and co-workers was predicted to have a significant positive effect on an individual's decision to use OSNs. However, following the analysis H6 was not supported within any of the regression tests.

**Hypothesis 7 (Supported)**

H7 predicted that the influence of information using TV, newspapers and radio will have a significant negative effect on an individual's decision to adopt and use OSNs. This hypothesis was supported when analysing the entire sample, but did not test significantly within the younger and older adults sample population groups. From the analysis, the generated *p*-value was 0.047. This indicated that the significance level was very weak, which suggested that within this pilot test, secondary influence was not a deterministic theoretical construct that impeded OSN adoption.

**Hypothesis 8**

H8 forecasted that insufficient knowledge regarding the use of internet devices and the internet would result in a significant negative effect on OSN adoption. As expected, this hypothesis was supported within only the older sample population. It is assumed that this is a result of older individuals having less experience and knowledge regarding the internet. The internet was not prevalent and had not developed during the eras of the older generation, which accounts for the lack of exposure to novel technologies; hence being sceptical and negative towards adopting and using such devices. Therefore, a lack of familiarity or the ability to learn quickly and adapt to a new online service such as OSNs is an impediment of adoption and use of OSNs.

**Hypothesis 9**

H9 forecasted that access or ownership of internet access devices and an internet enabled device such as a tablet, smartphone, PC or laptop will have a significant positive effect on OSN adoption. This is due to such devices and the infrastructure facilitating regular OSN use. This hypothesis was supported within the younger participants, as younger individuals are more likely to have access and ownership of the internet and internet enabled devices. Possessing these devices and the infrastructure are viewed to be essential as they are viewed to be requisites of modern day life, such as in school, college, University and work.

### **Hypothesis 10 (Supported)**

H10 predicted that the time available to use OSNs will have a significant positive effect on OSN adoption. This is due to the time available in an individual's daily life is viewed to be mandatory to facilitate OSN adoption. This was supported within the entire sample population and younger users. RFC was measured by asking all participants if they agreed or disagreed to the statement 'OSNs take up much valuable time'. This outcome reveals that younger individuals do not consider the time spent on OSN is not one that involves foregoing valuable time that could be better spent on other essential daily activities. Comparatively, older adults felt that OSN adoption and use was a waste of time and is also indicated in the mean scaled value for older participants being 2.02.

As four hypotheses were supported by the overall dataset, this suggested that the theoretically conceptualised framework of MOSN does explain behavior and can be used to explain OSN behavior in the older adults. These results were viewed to illustrate the explanatory power of MOSN in understanding adoption and non-adoption OSN factors, as the final phase empirical test will use a much larger sample.

### **4.8 Pilot Test Lessons**

The aims of the pilot study were to pre-test the procedures to be used for the survey dissemination, data collection, coding and data analysis. By doing so, lessons were drawn and preparations for the final phase of this research study were made. Additionally, the purpose of the pilot was to address the main aim of this research, which is to identify whether older adults are adopting and using OSNs and to determine whether inclusion of the demographic factors would make an impact upon the theoretically formed, conceptual framework.

Overall the MOSN statistical model produced an  $R^2$  value of 0.769. This indicates that 76.9% of the variation in an individual's actual behavior regarding OSN adoption and use can be accounted for, and explained by the selected MOSN theoretical constructs. This view is provided on the basis of: 'R-square values closer to 1 will indicate a better fit and will yield more accurate predictions' (Walkenbach, 2007; p.165). It is therefore viewed that MOSN is a strong theoretical framework for investigating OSN adoption. The theoretical explanatory variables of Hedonic Outcomes, Utilitarian Outcomes and Resource F.Cs were found to be strong positive predictors

of adoption and use as their p-value is 0.000. Primary Influence was also viewed to be a strong negative predictor of an individual's actual behaviour regarding OSNs.

From the pilot study it was found that the predesigned and formed protocols for data collection, data coding and data analysis were successful; thereby supporting the view that few to no discrepancies should emerge during the final phase of data collection.

After sub-dividing the sample population into younger ( $n=128$ ) and older ( $n=124$ ) participant samples, the statistical models resulting from the collated data confirmed that the views, behavior and attitudes pertaining to the adoption and use of OSN are diverse among different younger and older age groups in society. This provides confirmatory evidence to support the research issue of investigation.

The younger sample population resulted in an R-square of 0.634 (without demographics included within the regression model) and 0.649 (with demographics included in the regression model). This is considered to be an adequate fit of a sample size used for this research. It was also found that there were no strong (p-value .000) constructs that had a p-value of 0.000. However, social outcomes had a p-value of 0.002 and Requisite knowledge had a p value of 0.002 which were found to be significant motivational constructs for OSN use. It therefore appears that the social benefits associated with OSN use are significant motivational factors for OSN adoption. Possession, familiarity and confidence with internet enabled devices and internet use are also significant motivational factors of OSN adoption for younger individuals, i.e. those aged 50 years old or below.

The older adults sample population had an R-squared value of 0.625 (without demographics) and 0.652 (with demographics). In this case, hedonic outcomes that are associated with fun and entertainment had a strong positive effect on an older OSN adopter's decision to use OSNs where the p-value was at 0.000. Contrastingly, Requisite knowledge had a strong negative effect on an individual's actual behavior with a p-value of 0.000. Therefore a lack of familiarity and confidence with internet enabled devices and internet use were strong impediments for OSN adoption within older individuals.

<b>Table 4.22 Pilot Test R-Squared Comparisons</b>		
<b>Sample</b>	<b>R-Squared (Demographics)</b>	<b>R-Squared (No Demographics)</b>
<b>Total Sample (n-252)</b>	$R^2 = .769$	$R^2 = .696$
<b>Younger Sample =&lt;50 years (n-128)</b>	$R^2 = .649$	$R^2 = .634$
<b>Older Sample &gt;51 years (n-124)</b>	$R^2 = .652$	$R^2 = .625$

An element of the pilot test also involved determining whether the inclusion of demographic variables as explanatory variables of Actual Behavior (AU) will increase or decrease the fit and accuracy of predictions. As shown in Table 4.22 the results demonstrated that the regression tests of all the three samples observed an increased r-square value when calculated *with* demographic variables. This result confirms that the MOSN model will be tested with demographics in the final phase, which will lead to valuable and important results for this research project.

#### **4.9 Final Survey Development**

Following the pilot is the final phase that will involve disseminating an online survey instrument. To develop the final survey instrument, aspects of research instrument improvement were identified and factored into when redeveloping the pilot survey into the final survey instrument. A set of construct measures drawn from the original theories were identified, contextually adapted and included in the final survey. Once again, an expert panel pre tested the constructs and a validation step was also pursued to develop the final survey instrument.

#### **Final Survey Development**

Following the pre-construct validity test of the pilot phase, final modifications were made to develop the final quantitative research instrument. The undertaken changes are detailed below.

- (1) The survey welcome screen was updated**
- (2) The 36 construct measures developed in the following section were included and replaced by the nine previously used measures in the pilot test.**
- (3) Behavioural intention and privacy risk were included in order to be empirically tested in the final survey.**

- (4) A survey item seeking information about the internet provided speed was inserted. This was in the form of fast & reliable, fast & unreliable, slow & reliable and slow and reliable.
- (5) Two additional answer options were included in the internet usage variable: 'internet shopping (browsing) and 'internet shopping (purchasing).
- (6) Frequency measurements of OSN use were updated from 'once a week' to weekly and from 'once a month' to monthly.
- (7) Age bands were replaced accordingly to fit a 50+ only participant sample.
- (8) The answer options regarding residential area were replaced with the 67 towns/areas randomly selected within the multi-stage random sampling method (see chapter 3).

The changes resulted in a four page online internet survey questionnaire containing 62 survey items using categorical, dichotomous and a 7-point Likert scale answer option. The online survey questionnaire included the first page where there was a welcome screen that included a background of the research issue, the aims of the research, estimated completion time and contact details of the research team.

The final online survey questionnaire and distributed cover letter can be found in appendix 4-7 & 4.8.

The second page contained 11 survey items regarding personal characteristics and socio-economic variables. The third page contained nine survey items regarding frequency of internet use, devices used for internet access, activities conducted on the internet, household ISP and connection speed. The fourth page contained 45 survey items regarding frequency of OSN use, OSN providers, construct measurements, devices used for OSN access and mediums by which information about OSNs has been received.

#### **4.9.1 Development of Final Construct Measurements**

Measurement involves assigning numbers to things, people, events or whatever, according to particular set of rules (Punch, 2005). With regards to the research at hand, as a scientific element was involved, it was a requirement to 'measure' the theoretical constructs included within the MOSN research model. These are also referred to as construct measures. Cronbach Alpha  $\alpha$  and

composites reliability methods were applied in order to test the scale reliabilities. In addition to construct validation, factor analysis was used and three multiple measures were administered for each construct. The original construct measures, which were conceived and validated within the initial research were contextually adapted and utilised for this purpose. Therefore thirty-six construct measure descriptions were adapted to test the eleven theoretical constructs. These measures are defined and discussed in the following section.

### **Attitudinal Belief Construct Measures**

When preparing a survey questionnaire with constructs, the questions do need to provide a definition in order to demonstrate relevance and associations. Attitudinal beliefs (AB) are one construct that was included in this research project. AB refers to an individual's positive or negative feelings about performing a behavior (Eagly, & Chaiken, 1993). In addition to the attitudinal constructs, a construct for privacy risk was also included within the final phase. As explained earlier, this was due to the discovery of existing empirical findings, which suggested that privacy concerns are highly significant consideration in the technology adoption decision process (*see* Shin, 2010; Balanger & Carter, 2008; Lieberman & Stashevsky, 2002). 'Hedonic outcomes' measures perceptions relating to enjoyment, fun and entertainment regarding the use of a technology, in this case OSNs (Venkatesh & Brown, 2001). 'Utilitarian outcomes' measures the usefulness of OSNs for personal reasons, work conducted within the household and usefulness for work related activities (Venkatesh & Brown, 2001). 'Relative Advantage' measures whether a participant perceives OSNs to provide additional benefits compared to previously available ICTs such as e-mail, telephone calling and text messaging – Drawn from DOI theory, measures were provided from Taylor & Todd (1995a) as these have been extensively validated as accurate measures of RA.

In addition relative advantage measures perceived benefits that OSNs offer and an OSN's perceived ability to improve communication with a participants contacts. 'Social outcomes' measures the associations of OSN use and the number of friends one has, or an individual's social status regarding popularity and respect (Venkatesh & Brown, 2001). 'Privacy risk' measures the perceived risks associated with submitting ones personal to an OSN, in terms of information security, privacy invasion and criminal behavior such as identity theft. This is likely to be a deterrent for some older individuals as a result from distributing news regarding loss of

control, personal information and criminal takeovers that arise due to the presence of an individual's identity in an OSN. Measures for privacy risk were adapted from the original theory of e-services adoption (Featherman & Pavlou, 2003).

Original constructs measurements before adaptation can be found in appendix 4-4.

<b>Construct</b>	<b>Construct Measure Definition</b>	<b>Source</b>
<b>Hedonic Outcomes</b>	1. Online social networks provide much enjoyment	<b>MATH Brown &amp; Venkatesh (2005)</b>
	2. Online social networks are fun to use	
	3. I am able to use online social networks for entertainment	
<b>Utilitarian Outcomes</b>	4. Online social networks are useful for personal reasons	<b>MATH Brown &amp; Venkatesh (2005)</b>
	5. Online social networks are useful for me to work at home	
	6. Online social networks are useful for my paid job	
<b>Relative Advantage</b>	7. Online social networks provide additional benefits to e-mail, telephone & text messaging	<b>DTPB Taylor &amp; Todd (1995a)</b>
	8. There are benefits to using online social networks	
	9. Using online social networks improves my communication with my contacts	
<b>Social Outcomes</b>	10. People who use online social networks have more friends than those who do not	<b>MATH Brown &amp; Venkatesh (2005)</b>
	11. People who use online social networks are highly respected by those they know	
	12. Using online social networks improves a person's popularity	
<b>Privacy Risk</b>	13. Using online social networks will cause me to lose control over the privacy of my personal information	<b>Featherman &amp; Pavlou (2003)</b>
	14. Using online social networks could lead to my personal information being used without my knowledge	
	15. Criminals might take control of my personal information if I used online social networks	

### **Normative Belief Construct Measures**

Another construct included from the start of this project is the normative beliefs construct that pertains to subjective normalities such as, peer influences and superior influences (Venkatesh & Brown, 2001). Selected influential normative beliefs emerged in both primary and secondary influence. Primary influences measure the perception of the influence that friends, family and colleagues opinions over a recommendation. Therefore, in this case, the opinions of friends, family and colleagues views on whether a participant should use OSNs. There were three individual measures for PI (table 4.24). Secondary influence measures the perceived suggestion that information and opinions provided by communication channels in the form of TV,

newspapers and radio broadcasts recommend using OSNs. Once again, this was evident in three individual measures (table 4.24)

<b>Construct</b>	<b>Construct Measure Definition</b>	<b>Source</b>
<b>Primary Influence</b>	16. My friends think I should use online social networks	<b>MATH Brown &amp; Venkatesh (2005)</b>
	17. My family members think I should use online social networks	
	18. My colleagues (current or past) think I should use online social networks	
<b>Secondary Influence</b>	19. Newspapers suggest that I should use online social networks	<b>MATH Brown &amp; Venkatesh (2005)</b>
	20. TV programs, advertising and films encourage me to use online social networks	
	21. Based on what I have heard on the radio, I am encouraged to use online social networks	

### Control Beliefs Construct Measures

“Control belief structures is a third important construct for this research project and refers to an individual’s perception regarding the faced difficulties when performing a behavior’ (Eagly & Chaiken, 1993). Control beliefs emerged in the form of the theoretical constructs TFC, RFC and RK. TFC measured a participant’s access to the internet, access to an internet device (e.g. computer, laptop or iPad), speed and reliability of their household internet connection. Resource F.C initially asked participants if they can afford to pay for an internet connection and the internet enabled device. Examples of the internet enabled devices were a computer, laptop or iPad. The second measure asked participants if they had the perceived length of time that is needed to set up an OSN profile and the third measure asked participants if they had the time needed to use OSNs.

<b>Construct</b>	<b>Construct Measure Definition</b>	<b>Source</b>
<b>Technology F.C</b>	22. I have access to the internet whenever I want	<b>DTPB Taylor &amp; Todd (1995a)</b>
	23. I have access to a computer, laptop or iPad whenever I want	
	24. My internet is fast and reliable enough to use online social networks	
<b>Resource F.C</b>	25. I can afford to pay for the internet and a computer, laptop or iPad	<b>DTPB Taylor &amp; Todd (1995a)</b>
	26. I have the time needed to set up an online social networking account	
	27. I have the time to use online social networks	
<b>Requisite Knowledge</b>	28. I feel comfortable using the internet on my own	<b>MATH Brown &amp; Venkatesh (2005)</b>
	29. If I wanted to, I could easily use the internet on my own	
	30. I can use the internet even if no one is there to help me	

## Behavioral Intention

The Behavioral intention construct measures the willingness and effort that an individual is planning to exert in order to perform a given behavior (Ajzen, 1991). Behavioral Intention (BI) has been defined as ‘the degree to which a person has formulated conscious plans to perform or perform some specified future behaviour’ (Warshaw & Davis, 1985; p.215). Three construct measures were administered measuring the intention, prediction and expectation to begin using OSNs and constituted behavioral intention, as suggested by Venkatesh & Brown (2001).

<b>Table 4.26 Final survey - Behavioral Intention Construct Measures</b>		
<b>Construct</b>	<b>Construct Measure Definition</b>	<b>Source</b>
<b>Behavioral Intention</b>	31. I intend to start using online social networks	<b>MATH Brown &amp; Venkatesh (2005)</b>
	32. I predict that I will start using online social networks	
	33. I expect to start using online social networks in the near future	

## Scale Development

Following development of the questions relating to the constructs, the next step involved developing the required scales for the questions. With regards to scale development for RA, TFC and RFC, as a note to readers, these constructs were originally tested using measures in the form of numerical scales ranging from -3 to +3 and -9 to +9 and scale definitions of unlikely>likely and unimportant> important as recommended by Taylor and Todd (1995). The remaining construct measures were assigned Likert scales of 1 (strongly disagree) and 7 strongly disagree as validated within MATH (Brown & Venkatesh, 2005). However using three different scale types and three different numerical scales was viewed to cause confusion and could result in non-response or measurement errors (Dillman, 2007). Therefore the RA, TFC and RFC constructs measures were reworded and measured using Likert scales 1>7. All the construct measures were further worded to provide stable and applicable measures for both participating OSN adopters and OSN non-adopters.

### 4.9.2 Pre-Test Validation

Pretesting is generally agreed to be an indispensable stage when developing survey questionnaires (Presser & Blair, 1994). Presser & Blair (1994) found that on average the expert panel pre-test method is most useful to identify problems within a survey instrument, which accounted for its application in this research study.

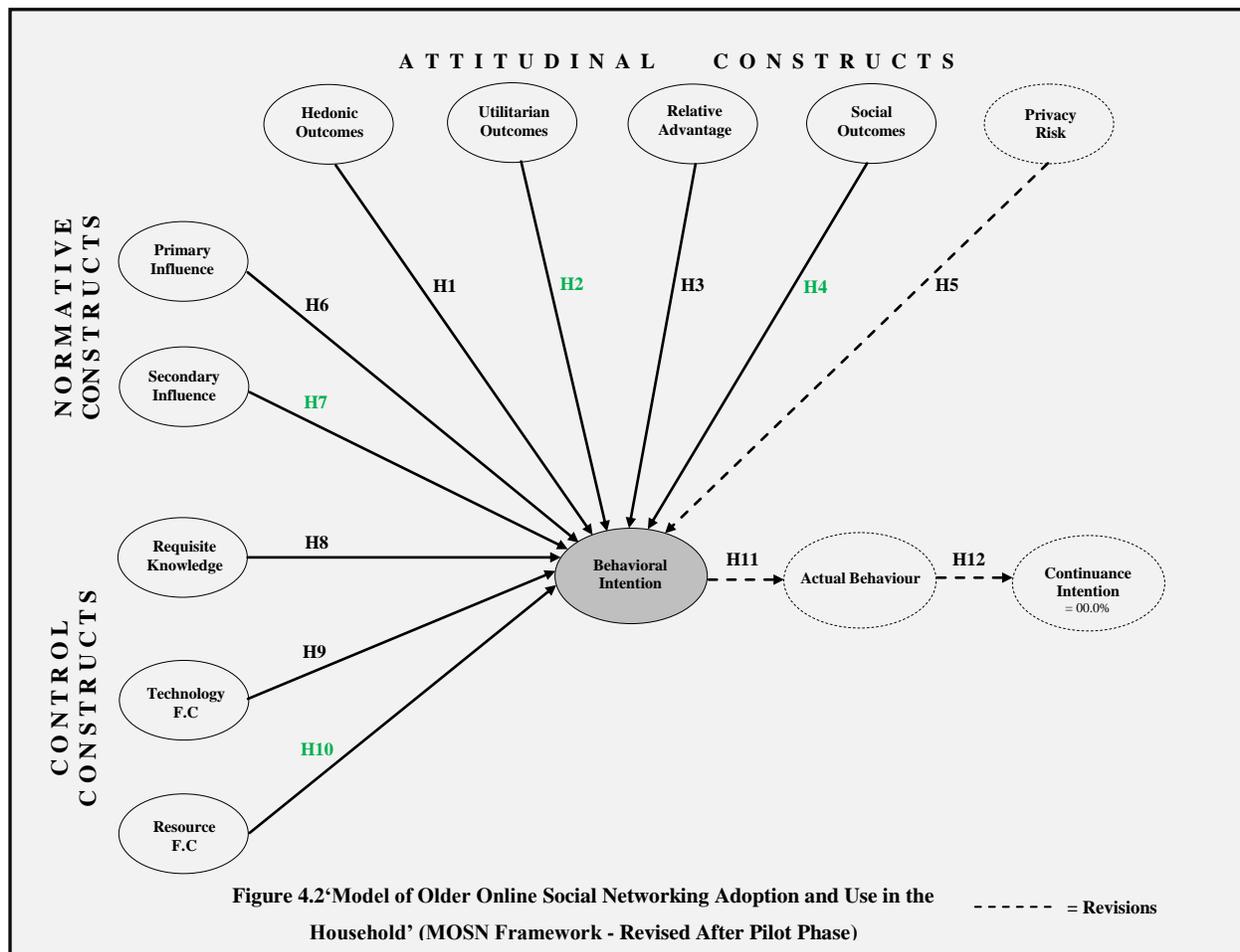
The expert panel composed of 20 individuals and in this instance again was diverse, and consisted of the following: three academic researchers, three researchers from industry, three industry professionals, three medical professionals and eight academic graduates. Each of the panel participants employed various devices and applications. For instance, there was a range of Mac and Windows Operating Systems (OS) including Windows Vista, Windows 7, Mac OS X (leopard), Mac OS X (Snow Leopard). By having these variations, a test for any cross-platform technical issue that may occur based on the survey questionnaire including HTML coding could be avoided or reduced. Each expert was asked to complete the online final survey, complete three questions regarding completion time, and suggest changes to increase understand ability and to identify any questions that may be the source of non-responses (method detailed in chapter 3). The pre test form distributed to selected expert participants can be found in appendix 4.5.

When calculating the completion times submitted by the pre-test panel the mean completion time was 14.3 minutes and the range varied between 9-18 minutes, which resulted in an estimated completion time of between 10 to 15 minutes.

<b>Table 4.27 Survey Pretest Validation Panel</b>			
	<b>Participant</b>	<b>Area of Expertise</b>	<b>OS</b>
<b>Academic Researchers</b>	Dr.C	Information Systems	Windows
	Dr.T	Econometrics	Windows
	Dr.Q	Tourism	Windows
<b>Industry Researchers</b>	Dr.W	Chemical Engineering	Windows
	Dr.G	Bio-Science	Mac
	Mr.P	IT	Windows
<b>Industry Professionals</b>	Mrs.M	Finance	Mac
	Mr.A	Software Development	Mac
	Mr.B	Physics	Windows
<b>Medical Professionals</b>	Dr.V	General Practice	Windows
	Dr.S	Dentistry	Windows
	Dr.W	General Practice	Windows
<b>Academic Graduates</b> <small>(Below 50 Years Old Due To Pilot Sampling Requirements)</small>	Mr.G	Computer Science	Mac
	Mr.P	Computer Science	Windows
	Mr.P	Computing & Business	Windows
	Mr.P	Business	Mac
	Mr.M	Computer Science	Mac
	Ms.M	Pharmacy	Windows
	Ms.K	Business	Windows
Ms.K	Computer Science	Mac	

With regards to suggestions or improvements to the questionnaire, the expert panel recommended forty-four comments of improvement (shown in appendix 4.5). These comments covered suggestions varying from improving the clarity of asked questions, grammatical suggestions, suggestions of additional answer options for multiple-choice questions and recommendations for additional questions that may be of use, given the research aims of this research project.

No suggestions were made to the following: questions that may be a source of non-response; the informed consent letter that introduced the research team; the aim of the research; purpose of the research project, or reasons that may cause a participant to abandon completion of the questionnaire following issuance of the invitation.



#### **4.10 Revised MOSN Framework**

Following an in-depth literature review in chapter 2a conceptual theoretical framework was offered. Evidence was found using empirical data to support the view that the overall theorised constructs may potentially hold explanatory value when understanding the older adult's intention to adopt OSNs. Actual behavior will also act as a predictor of continuance intention as initial acceptance of IS an important first step towards understanding IS success; however eventual success is dependent on continued use rather than first-time use (Bhattacharjee, 2001). This will provide a long-term perspective of older adult's behavior towards OSNs. The revised conceptual framework now informed with preliminary empirical testing is offered in figure 4.2 above. This framework will be rigorously, empirically validated in this research using the larger sample population from the final survey findings of chapter 5.

#### **4.11 Chapter Summary**

This chapter presented the findings of the pilot phase of this research. An online survey questionnaire was developed and survey items were content validated using ten self-selected academic and industry experts. The survey questionnaire was then pilot tested using a convenience sample of 252 participants. It was revealed that HO, UO, SO, PI and RFC were significant explanatory variables in the OSN decision-making process. After assessing the outcomes of the pilot test, revisions and modifications were made to the survey questionnaire in order to improve the success rates in the final survey research phase. Constructs measurements employed within the pilot phase were expanded to multiple measurements using the original theories that they were drawn from. The modified survey was then subjected to expert panel pre-testing. Pre-testing feedback from the survey was collected from twenty experts, reviewed and applied accordingly. The aforementioned processes produced the final validated survey questionnaire research instrument, which will be utilised in the final data collection phase that is examined in the next chapter.

# Chapter 5

## Research Findings

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### 5.1 Introduction

Having designed and pilot tested the survey instrument including development of contextually adapted measures for all selected theoretical constructs; this chapter reveals the findings that were drawn from scientific statistical analysis of the data collected from participating older individuals. This chapter offers details such as, response rates, non-response bias and path analysis of the MOSN framework that was tested in terms of all the participants, all OSN adopters, and all non-OSN adopters. Further analysis within these sections addresses the behavioral differences that emerged between participants aged 50-60, 61-70 and the remaining participants aged 71 and over. Each model is presented with appropriate statistical validity tests including composite reliability, Average Variance Extracted (AVE), Cronbach's  $\alpha$  reliability and construct validation in order to demonstrate the robustness of statistically significant relationships. All significant findings drawn from the individual models are then compared to demonstrate the diversity that occurs between the aforementioned sub groups when analyzed in the context of the conceptual framework, MOSN. The significant findings are then used to test all the hypotheses devised in chapter 2.

### 5.2 Sampling and Sample Size

Prior to delving into the discussion some introductions are made. Sampling refers to the techniques used to select groups from the wider population (Jupp, 2006). Chapter 3 explained how the probability random sampling method was viewed to be appropriate for this research and used for the data collection part of the research. Overall, 68 towns and areas within the geographic area of Hertfordshire were sampled. Initially, 67 vicinities in Hertfordshire (appendix 5.2) were randomly selected, but due to ambiguous geographic boundaries between areas, 15 households in area of Potters Bar was unintentionally sampled. Following identification of this error to ensure an equal random selection, Potters Bar was then sampled using the same method as other areas (175 letters distributed) leading to 34 responses in total.

For the data collection an allocated time period of June 29<sup>th</sup> 2012 – September 29<sup>th</sup> 2012 was used. This was done in order to ensure that if a working population is sued, then this also includes individuals working in the higher education sector and they would have completed marking exam scripts. Further, the time period included the end of September as families returned from summer holidays and parents would be back at work, or at home. To inform and obtain participants, survey flyers were used that were

disseminated to 7480 randomly sampled households in the initial five weeks from June 29<sup>th</sup>, 2012. The remaining period was allocated to allow sufficient time for all potential respondents to participate. Reminders were not sent to any households.

It can be seen in appendix 5.3 that the final sample of complete responses was drawn from 52 of the randomly sampled 68 towns and areas. Responses from each town and area ranged from one to 40 responses. The final sample of complete and responses validated for analysis was 1080, which is 8% above the target of 1000.

### 5.3 Response Rate

Whilst conducting this research, careful predictions and accuracy of the required response rates was required. For the response rate, several sources were consulted that led to the following being considered. Response rates, it was found, are typically calculated using the formula *response rate = number of participants / total sample size* (Owen, 1951 p.64). As 7,480 households were sampled and the number of responses was 1,080 the calculated response rate for the final survey test is **14.43%**. However, a few considerations must be mentioned before interpreting the response rate. The units of analysis for this survey were individuals aged fifty or above. The sampling unit was not individuals, but households. Also participating households were not limited to only one response per household; therefore it cannot be suggested that the results are a representation of 1080 households in Hertfordshire. It can only be stated that the sample is representative of 1080 individuals, from the sampled 7,480 households. Further, due to the application of the random sampling method and multistage sampling method it was assumed that not every sampled household would have residents aged 50 or above, which eliminated them from participating. Therefore with these points being considered, acquiring the exact number of households that were eligible to participate with any degree of accuracy was not possible. Eligibility of households was determined by dividing the number of households by the number of responses, which offers an approximation of the response rate, which is calculated to be 14.43%.

$$\frac{\text{Number of Households Sampled} = 7,480}{\text{Number of Valid Responses} = 1080} = \mathbf{14.43\%}$$

### 5.4 Survey Error

Associated with surveys is the term survey error. This term refers to factors that reduce the accuracy of the survey estimates and results. There are four generally accepted factors of survey error that are defined and discussed in the following sections.

**1) Sampling error** is a result of surveying only a proportion and not all, (randomly selected) elements of the survey population (Dillman, 2007). Sampling was considered for this phase as efforts were made to reduce the sampling error to an absolute minimum by distributing an equal number of surveys within randomly selected towns and areas of Hertfordshire. A degree of sampling error may have been present as the entire population of Hertfordshire was not surveyed.

**2) Coverage error** is the result of not allowing all members of the survey population to have an equal or known chance of being sampled for participation in the research survey (Dillman, 2007). Coverage error was eliminated within this phase by utilizing a multi-stage random sampling method, which has been explained in the earlier chapter 3. This sampling method allowed for an equal-chance selection of all towns/areas and households within those towns, areas that comprise the geographic area of Hertfordshire.

**3) Measurement error** occurs due to a result of question wording being unacceptable and below the required standard. It also implies questions being presented in a way that are inaccurate or uninterruptable answers are received within responses (Dillman, 2007). In order to reduce measurement error pertaining to questions within the final questionnaire, a pretest using an expert panel was conducted, where enquiries were made regarding the misunderstanding that could arise in the structuring or wording of the questionnaire. Following feedback, these were resolved accordingly. With regards to un-interpretable answers, this possibility was removed, as all questions were multiple choice and compulsory questions for the participants to answer.

**4) A Non-response error** occurs due to the respondents replying to a survey being different to the sampled individuals who did not respond. These participants are in a context that is relevant to the study (Dillman, 2007). Non-response error did occur as only 14.4% of the selected households participated in this research. This can be partly accounted for, by those households that contained non-internet users or were not of the age of 50 years old or above. The households in the 16 areas that did not respond did contribute to non-response error and it can be argued that this created an imbalance towards the geographical representation of the obtained sample.

## 5.5 Demographics

Before conducting regression analysis for the MOSN conceptual framework, the following sections describe the range and diversity of key socio-economic characteristics within obtained the total sample of n-1080) in Tables 5.1 & 5.2.

<b>Table 5.1 Socio-demographic Summary of Final Participants (n=1080)</b>			
	<b>Intervals</b>	<b>Frequency</b>	<b>Percent</b>
<b>Age</b>	50-55	184	17%
	56-60	184	17%
	61-65	174	16.1%
	66-70	210	19.4%
	71-75	212	19.6%
	76-80	106	9.8%
	81+	10	.9%
	<b>TOTAL</b>	<b>1080</b>	<b>100%</b>
<b>Gender</b>	Male	564	52.2%
	Female	516	47.8%
	<b>TOTAL</b>	<b>1080</b>	<b>100%</b>
<b>Education</b>	Higher Degree/Postgraduate	126	11.7%
	1st Degree	331	30.6%
	HND/HNC Teaching	119	11%
	A-Level	92	8.5%
	BTEC/ College Diploma	173	16%
	GCSE/O-level	209	19.4%
	Other Qualification	30	2.8%
	<b>TOTAL</b>	<b>1080</b>	<b>100%</b>

From Table 5.1 It can be seen that the age ranges were almost equally distributed in the age bands ranging between 50 and 75, with few results in, the participants aged between 76 and 80. In the age groups of 80 and above, 10 replies were received.

In terms of gender, the gender split was 48% (male) / 52% (female), which allowed for an un-biased representation of the older individuals within the obtained sample. Education was diverse in the qualification levels ranges beginning from secondary school qualifications such as, GCSE's at 19.4%. 24.5% of the participants had undertaken further education at an A-level level or an equivalent qualification within a college institution. Participants with a University bachelor's degree had the majority of results with 30.6%; 11.7% at a University degree, postgraduate levels of Masters or doctoral level.

In terms of employment, a majority 47.8% were pensioners of the age 65 years or above. This was essentially due to the age specific nature of the intended sample. 37.1 % of the participants were in employment, both part-time and full-time. The remaining participants were in either, early retirement, unemployment or redundancy. As the ageing process involves health related issues, a questions seeking participants self-assessment of their health was also inserted. The majority of participants, 75.2%

considered themselves to be of good health; 20.6% were of excellent health and a minority 45 participants (4.2%) viewed themselves to be in poor health.

In terms of occupation, participants, who were at the time of participation, unemployed, redundant, or retired were asked to selection the occupational category that they had held for the majority of their life. 38.5% were legislators, professionals or held jobs at a managerial level. 16.8% were in service jobs or in sales positions, 12.1% were craft workers or in trade sectors, 9.5% were in freelance work but did not specify what sectors their freelance work was conducted within; 7.5% were academics or teachers and the remainder were clerks or plant/machine operators. Only one participant held student status.

Since over 40% of the sample was qualified to a university level or equivalent and 38.5% were legislators, professionals or held jobs at a managerial level it can be argued that a sample bias may exist. This pertains to misrepresentation, as these core socio-economic variables do not mimic the reality of Hertfordshire. Therefore it is noted that these results are not demographically representative, but represent an affluent part of East England's population's occupation categories. All final phase demographic data can be found in appendix 5-1.

<b>Labor Force Status</b>	Employed Full-Time	310	28.7%
	Employed Part-Time	91	8.4%
	Pensioners (65+)	516	47.8%
	Retired (below 65)	118	10.9%
	Unemployed (<6 months)	5	.5%
	Unemployed (Medical Reasons)	13	1.2%
	Unemployed (+6 Months)	25	2.3%
	Redundant	2	.2%
	<b>TOTAL</b>	<b>1080</b>	<b>100%</b>
<b>Health</b>	Excellent	223	20.6%
	Good	812	75.2%
	Poor	45	4.2%
	<b>TOTAL</b>	<b>1080</b>	<b>100%</b>
<b>Occupation</b>	Student	1	.1%
	Legislator/Manager/Professional	416	38.5%
	Academic/Teacher	81	7.5%
	Craft/Trade	131	12.1%
	Clerk	87	8.1%
	Service/Sales	181	16.8%
	Agriculture/Forestry/Fishery	51	4.7%
	Plant/Machine Operators	29	2.7%
	Freelance	103	9.5%
	<b>TOTAL</b>	<b>1080</b>	<b>100%</b>

## 5.6 Instrument Validation

Before commencing path analysis of MOSN, essential validation tests were performed. This was necessary to demonstrate that the construct measures employed to operate MOSN were appropriate and correct, and that the path model met statistical and IS standards. This then led in providing a premise that supports the validity and robustness of the produced research findings. The first instrument validation test was construct validation. In order to provide support for the validity of constructs that were used in the final test a factor analysis was used. Factor analysis is the computer-assisted method used to assess whether different survey items belong together in one scale (Litwin, 1995). Factor analysis is a mathematically complex method of reducing a large set of variables to a smaller set of underlying variables referred to as factors (De Vaus, 1996). 'A Factor analysis allows the researcher to check whether, for example, all of ten indicators developed to measure 'autonomy' are really related to each other and not to indicators that supposed to measure other dimensions' (Bryman & Cramer, 2005 p.75). Indicators in the previous sentence in this research's context refer to construct measurements that were used to measure each construct within MOSN.

However the collected sample must be proven to be adequate enough before determining that a factor analysis is appropriate. The following section discusses the test that was conducted in order to provide integrity to the factor analysis used for construct validation.

### Sampling Adequacy

In addition to the statistical basis for the correlations, data matrix is necessary so that a researcher can ensure that the data has sufficient correlations to justify the application of a factor analysis (Hair et al, 1998). This can be accomplished using the Kaiser-Meyer-Olkin (KMO) measure of sampling of adequacy, discussed below.

#### KMO Measure of Sampling Adequacy

The KMO test produces a KMO measure value. The measure value index ranges from 0 to 1, reaching 1 when each variable is perfectly predicted by the other variables included within the sampling adequacy test. SPSS was used to carry out the test on the entire sample (n=1080) using all the construct measurements. The results of the KMO test are shown in table 5.3. For a reader's information, 'If the KMO measure in the 0.80s or 0.90 levels is achieved, this supports the use of factor analysis for the data' (Munro, 2005; p.336). For this research, the resulting KMO measure value was 0.953; thereby indicating that is appropriate to proceed with a factor analysis.

<b>Kaiser-Meyer-Olkin Measure of Sampling Adequacy.</b>		<b>.953</b>
<b>Bartlett's Test of Sphericity</b>	Approx. Chi-Square	61440.451
	df	528
	Sig.	<b>.000</b>

### **Bartlett's Test of Sphericity**

An additional test to justify the appropriateness of a factor analysis is the Bartlett's test of sphericity. The purpose of this test is to determine that there is a relationship between the variables that will be subject to the factor analysis. As a general rule, a  $p$ -value of  $<0.05$  indicates that is appropriate to conduct a factor analysis (Hinton et al, 2004 p.349). In this case, a  $p$ -value of  $<0.001$  was achieved; thereby confirming that is appropriate to conduct a factor analysis (table 5.3).

### **5.6.1 Construct Validation**

Following tests indicating the suitability of factor analysis, factor analysis of the measurement variables was conducted. To test for construct validity evidence of convergent and discriminant validity was demonstrated, which is a requirement when construct validity is conducted (Trochim & Donnelly, 2006). From the completed factor analysis, factor loadings were assessed for construct validation. The results are detailed in the following sections.

#### **Convergent Validity**

Convergent validity is evident when the construct items (measures) of a construct, which theoretically should be related to each other, are observed within the data (reality) to actually be related (Trochim & Donnelly, 2006). Within table 5.4 it can be observed that convergent validity was demonstrated by all the constructs except for SI and RFC as RFC1 did not converge with the related RFC measures (RFC2 & RFC3).

#### **Discriminant validity**

Discriminant validity is evident when the construct items, or measures that theoretically should not be related are observed within the real data not to be related (Trochim & Donnelly, 2006). Within table 5.4 it can be observed that all the constructs except for RFC demonstrate discriminant validity. This was determined as all the three factors loadings for the same construct load far greater than those factors loadings of any other construct within the factor analysis. From the factor analysis that demonstrated construct validity for the practical application of MOSN from the collected data it was learnt that all the measures were appropriate, except for SI and RFC, as convergent and discriminant validity could not be observed in these cases.

Table 5.4 Factor Loadings (Cross Loadings) (*n*- 1080)

	<b>BI</b>	<b>HO</b>	<b>PI</b>	<b>PR</b>	<b>RA</b>	<b>RFC</b>	<b>RK</b>	<b>SI</b>	<b>SO</b>	<b>TFC</b>	<b>UO</b>
<b>BI1</b>	<b>0.9956</b>	0.9037	0.9312	-0.8735	0.9238	0.5260	0.2055	-0.1002	0.9121	0.2492	0.7920
<b>BI2</b>	<b>0.9980</b>	0.9053	0.9348	-0.8780	0.9244	0.5295	0.2111	-0.0975	0.9162	0.2460	0.7966
<b>BI3</b>	<b>0.9969</b>	0.9030	0.9341	-0.8765	0.9226	0.5323	0.2093	-0.1014	0.9150	0.2463	0.7948
<b>HO1</b>	0.8778	<b>0.9870</b>	0.8647	-0.8503	0.9232	0.4853	0.1910	-0.0436	0.8857	0.1155	0.8220
<b>HO2</b>	0.8918	<b>0.9908</b>	0.8805	-0.8627	0.9325	0.4945	0.1935	-0.0540	0.8929	0.1390	0.8243
<b>HO3</b>	0.9060	<b>0.9734</b>	0.8874	-0.8688	0.9335	0.5175	0.2035	-0.0515	0.8915	0.1870	0.8247
<b>PI1</b>	0.9193	0.8842	<b>0.9799</b>	-0.8477	0.8996	0.5107	0.1991	-0.0960	0.9203	0.2228	0.7690
<b>PI2</b>	0.9125	0.8591	<b>0.9721</b>	-0.8332	0.8800	0.5194	0.1803	-0.0924	0.8879	0.2367	0.7436
<b>PI3</b>	0.8997	0.8594	<b>0.9652</b>	-0.8204	0.8845	0.4877	0.1955	-0.0697	0.8977	0.2194	0.7810
<b>PR1</b>	-0.8409	-0.8507	-0.8162	<b>0.9783</b>	-0.8491	-0.4506	-0.1868	0.0692	-0.8138	-0.0995	-0.7535
<b>PR2</b>	-0.8783	-0.8643	-0.8640	<b>0.9870</b>	-0.8714	-0.4941	-0.1864	0.1062	-0.8549	-0.1403	-0.7539
<b>PR3</b>	-0.8728	-0.8665	-0.8488	<b>0.9851</b>	-0.8728	-0.4850	-0.1922	0.0798	-0.8473	-0.1184	-0.7639
<b>RA1</b>	0.8888	0.9046	0.8791	-0.8389	<b>0.9736</b>	0.5095	0.2213	-0.0454	0.8800	0.1828	0.8030
<b>RA2</b>	0.9077	0.9331	0.8947	-0.8657	<b>0.9842</b>	0.5172	0.2051	-0.0453	0.9001	0.1811	0.8324
<b>RA3</b>	0.9217	0.9354	0.9054	-0.8743	<b>0.9764</b>	0.5107	0.1918	-0.0777	0.9049	0.1822	0.8410
<b>RFC1</b>	0.1972	0.1321	0.1807	-0.1139	0.1601	<b>0.3832</b>	0.2711	-0.0752	0.1519	0.5882	0.0799
<b>RFC2</b>	0.4992	0.4891	0.4911	-0.4701	0.5005	<b>0.9644</b>	0.0921	0.0042	0.4654	0.2578	0.4175
<b>RFC3</b>	0.5208	0.5078	0.5134	-0.4871	0.5194	<b>0.9532</b>	0.1167	-0.0631	0.4902	0.2949	0.4213
<b>RK1</b>	0.2134	0.2049	0.2002	-0.1935	0.2182	0.1619	<b>0.9357</b>	-0.0198	0.1900	0.2877	0.1517
<b>RK2</b>	0.1983	0.1872	0.1856	-0.1831	0.1958	0.1359	<b>0.9698</b>	-0.0158	0.1703	0.2484	0.1391
<b>RK3</b>	0.1871	0.1780	0.1781	-0.1718	0.1878	0.1368	<b>0.9657</b>	-0.0151	0.1656	0.2469	0.1334
<b>SI1</b>	0.0131	0.0828	0.0551	-0.0311	0.0678	-0.0243	-0.0236	<b>0.5254</b>	0.0480	-0.1985	0.1778
<b>SI2</b>	-0.0761	-0.0168	-0.0583	0.0662	-0.0263	-0.0383	-0.0266	<b>0.9654</b>	-0.0638	-0.1903	0.0781
<b>SI3</b>	0.0134	0.0556	0.0212	0.0087	0.0488	0.0049	-0.0466	<b>0.3859</b>	0.0151	-0.1312	0.1328
<b>SO1</b>	0.8892	0.8870	0.9020	-0.8342	0.8937	0.4690	0.1715	-0.0823	<b>0.9858</b>	0.1817	0.7699
<b>SO2</b>	0.9108	0.8955	0.9177	-0.8467	0.9065	0.4886	0.1825	-0.0949	<b>0.9920</b>	0.1909	0.7739
<b>SO3</b>	0.9178	0.8987	0.9284	-0.8466	0.9113	0.4979	0.1904	-0.0968	<b>0.9854</b>	0.1976	0.7853
<b>TFC1</b>	0.1894	0.1028	0.1637	-0.0739	0.1217	0.3165	0.2856	-0.1538	0.1398	<b>0.8627</b>	0.0416
<b>TFC2</b>	0.1699	0.0826	0.1597	-0.0469	0.1216	0.2754	0.2260	-0.1373	0.1243	<b>0.8226</b>	0.0538
<b>TFC3</b>	0.2490	0.1734	0.2442	-0.1616	0.2065	0.3474	0.1907	-0.1277	0.2040	<b>0.8350</b>	0.1117
<b>UO1</b>	0.8931	0.9495	0.8764	-0.8629	0.9342	0.4814	0.1945	-0.0167	0.8817	0.1199	<b>0.8703</b>
<b>UO2</b>	0.4448	0.4628	0.4393	-0.4338	0.4733	0.2290	0.0419	0.0582	0.4411	0.0271	<b>0.8209</b>
<b>UO3</b>	0.4186	0.4208	0.4219	-0.3992	0.4662	0.2072	0.0607	0.0790	0.4087	0.0233	<b>0.7798</b>

Actual Behavior, Internet Usage &amp; Continuance Intention Loaded at 1.000

## 5.6.2 Construct Measurement Reliability

Following the construct validity, reliability needed to be determined. Reliability refers to reproducibility or stability of data and observations (Litwin, 1995). In this research study reliability was essential in order to demonstrate the integrity of the new measures developed uniquely for this research. To measure reliability, three accepted methods of assessment are possible, which are, Cronbachs alpha, composite reliability & Average Variance Extracted that are described below:

### **Cronbachs (*a*)**

Cronbachs alpha (*a*) is one specific method of estimating the internal consistency reliability of a set of measures (Trochim & Donnelly, 2008). When considering internal consistency reliability, it has been found that levels of 0.70 or more are generally accepted as representing good validity (Litwin, 1995). As seen in table 5.5 all the constructs demonstrated very high levels of reliability using this method. However, RFC did not meet the accepted level by a marginal difference of .0012 (table 5.4).

### **Composite Reliability**

'The interpretation of the composite reliability is similar to that of Cronbach's alpha, except that it also takes into account the actual factor loadings rather than assuming that each item is equally weighted in the composite load determination' (Liao & Wang, 2011; p 121). When considering composite reliability, output results of composite reliability must be no lower than 0.6 (Henselar et al, 2009). In the instance of this research, all the constructs demonstrated accepted levels of composite reliability (table 5.5).

### **Average Variance Extracted (AVE)**

The AVE indicates what percentage of the variance (the measure of how diverse a set of numbers are spread out) of the construct any individual item explains (Liao & Wang, 2011). 'The Average Variance Extracted (AVE) analysis coefficient for each construct should be higher than 0.5' (Henselar et al, 2009 p 300). In this research, all the constructs except for SI had acceptable AVE coefficients (table 5.5). This suggests that SI measures need to be revised in order that variation meets acceptable standards.

<b>Table 5.5 AVE, Composite Reliability &amp; Cronbach <math>a</math> (n-1080)</b>			
<b>Construct</b>	<b>AVE<sup>1</sup></b>	<b>Composite Reliability<sup>2</sup></b>	<b>Cronbachs (<math>a</math>)<sup>3</sup></b>
Behavioral Intention (BI) <sup>a</sup>	.9936	.9979	.9968
Hedonic Outcomes (HO) <sup>a</sup>	.9677	.9890	.9833
Primary Influence (PI) <sup>a</sup>	.9456	.9812	.9712
Privacy Risk (PR) <sup>a</sup>	.9673	.9888	.9831
Relative Advantage (RA) <sup>a</sup>	.9567	.9851	.9774
Resource F.C (RFC) <sup>a</sup>	.6618	.8392	<b>.6988*</b>
Requisite Knowledge (RK) <sup>a</sup>	.9162	.9704	.9542
Secondary Influence (SI) <sup>a</sup>	<b>.4524*</b>	.6819	.8197
Social Outcomes (SO) <sup>a</sup>	.9756	.9917	.9875
Technology F.C (TFC) <sup>a</sup>	.7061	.8781	.7969
Utilitarian Outcomes (UO) <sup>a</sup>	.6798	.8641	.7953

1 = Accepted ( $\Rightarrow$  0.5) (Henselar et al , 2009)

2 = Accepted ( $\Rightarrow$  0.6) (Henselar et al , 2009)

3 = Acceptable ( $\Rightarrow$  0.7) (Litwin, 1995)

a = Likert Scale 1 - 7 (1 = Strongly Disagree 7 = Strongly Disagree)

\* Unacceptable

## Model Validation Results

After employing appropriate validation tests using the data of all 1080 participants the final model appeared to be robust and valid. However, two constructs did not demonstrate what would be considered acceptable results, which are: SI did not demonstrate construct validity nor an acceptable level of AVE. Second RFC also did not demonstrate construct validity through the lack of convergent validity for measure; RFC1. The Cronbach  $a$  coefficient resulting for RFC was also not of an acceptable level. However, this was only of marginal difference of 0.0012, which perhaps a larger sample would have led to a reduction in the gap. The outcomes of the model validations demonstrate that the applied measures were reliable and the constructs within the MOSN theoretical framework were correctly measured. Consequently, as the measures for RFC and SI did not provide acceptable results, the results, even if significant for these constructs would have been excluded. Future directions will therefore identify that modifications should be made to respective measures of RFC and SI in order to produce stronger results when using the MOSN in future research endeavors.

## 5.7 Adoption: Final MOSN

Having discussed and described the methods for data collection, sample, sampling error and demographics the following sections begin the process of using the obtained sample to statistically and empirically validate and test the MOSN framework. By doing so, an understanding can be formed of the theoretical elements that impact the adoption of OSNs; thereby, practice and theory's application (table 5.6). For this, initially descriptive statistics will be calculated; reliabilities or measures and validity of

constructs will then be tested, and path-analysis will then be used to identify statistically significant paths within MOSN. This will be followed with narrative interpretations of the results.

**Table 5.6 Descriptive Statistics MOSN Final Construct Measurements**

<b>Construct Measure</b>	<b>Mean</b>	<b>SD</b>	<b>Construct Measure Definition</b>
<i>Hedonic Outcomes (HO)<sup>a</sup></i>			
HO1	3.79	2.42	- Online social networks provide much enjoyment
HO2	3.74	2.46	- Online social networks are fun to use
HO3	3.66	2.56	- I am able to use online social networks for entertainment
<i>Utilitarian Outcomes (UO)<sup>a</sup></i>			
UO1	3.78	2.60	- I find that online social networks have uses for personal reasons
UO2	2.00	1.74	- Online social networks are useful for me to work at home
UO3	1.91	1.68	- Online social networks are useful for my paid job
<i>Relative Advantage (RA)<sup>a</sup></i>			
RA1	3.83	2.61	- Online social networks provide more benefits from internet use
RA2	3.93	2.59	- There are benefits to using online social networks
RA3	3.79	2.69	- Using the internet and online social networks improves my communication with my contacts
<i>Social Outcomes (SO)<sup>a</sup></i>			
SO1	3.32	2.47	- People who use online social networks have more friends than those who do not
SO2	3.28	2.50	- People who use online social networks are highly respected by those they know
SO3	3.36	2.58	- Using online social networks improves a person's popularity
<i>Primary Influence (PI)<sup>a</sup></i>			
PI1	3.71	2.72	- My friends think I should use online social networks
PI2	3.82	2.69	- My family members think I should use online social networks
PI3	3.42	2.67	- My relatives think I should use online social networks
<i>Secondary Influence (SI)<sup>a</sup></i>			
SI1	1.81	1.32	- Newspapers suggest that I should use online social networks
SI2	1.89	1.43	- TV programs, advertising and films encourage me to use online social networks
SI3	1.53	1.02	- Based on what I have heard on the radio, I am encouraged to use online social networks
<i>Technology (FCs) (TFC)<sup>a</sup></i>			
TFC1	6.84	.567	- I have access to the internet whenever I want
TFC2	6.84	.661	- I have access to a computer, laptop or iPad whenever I want
TFC3	6.60	1.08	- My internet is fast and reliable enough to use online social networks
<i>Resource (FCs) (RFC)<sup>a</sup></i>			
RFC1	6.82	.675	- I can afford to pay for the internet and a computer, laptop or iPad
RFC2	5.63	2.14	- I have the time needed to set up an online social networking account
RFC3	5.47	2.25	- I have the time to use online social networks
<i>Requisite Knowledge (RK)<sup>a</sup></i>			
RK1	6.72	.884	- I feel comfortable using the internet on my own
RK2	6.75	.801	- If I wanted to, I could easily use the internet on my own
RK3	6.77	.798	- I can use the internet even if no one is there to help me
<i>Privacy Risk (PR)<sup>a</sup></i>			
PR1	4.22	2.46	- Using online social networks will cause me to lose control over the privacy of my personal information
PR2	4.28	2.57	- Using online social networks could lead to my personal information being used without my knowledge.
PR3	4.18	2.59	- Criminals might take control of my personal information if I used online social networks.
<i>Behavioral Intention (BI)<sup>a</sup></i>			
BI1	3.62	2.80	- I intend to start using online social networks
BI2	3.61	2.83	- I predict that I will start using online social networks
BI3	3.59	2.84	- I expect to start using online social networks in the near future

a = Likert Scale 1 - 7 (1 = Strongly Disagree 7 = Strongly Disagree)

n-1080

### 5.7.1 Descriptive Statistics & Construct Measurements

To empirically operate the conceptual framework (MOSN) 33 construct measurements (survey items) were completed by 1080 participating older adults, resulting in 35,640 valid responses. For this part of the research, descriptive statistics was used (table 5.6). This method is one where statistics summarise patterns in a sample of participant's responses (De Vaus, 1996). This method is also preferred as it provides quantitative descriptions of data in manageable forms through the provision of results that provide an overview of single variables, in this case the numerical scale responses collected for all construct measurements (Babbie, 2010). Hence, data is not in a large format such that some meaning or comprehension cannot be made. Instead, it consists of measures such as, the mean value. The mean value in this case was calculated to demonstrate the overall average value, which was selected for each construct item. By doing so, there are insights into the perspectives that are held for the collected sample with regards to each theoretical construct. Another associated measure is the Standard Deviation (S.D). 'The standard deviation is the most common measure of statistical dispersion, measuring how widely spread values in the data are' (MR, 2007), in particular the dispersion of the data from the mean. The SD therefore provides some approximation of how tightly clustered the answers for each construct were from the mean value selected from the scale item. Therefore the greater the Standard Deviation the less consistent the answers were for the analyzed sample.

From the descriptive analysis of the entire sample it was revealed that the factor SI produced mean values of between 1.53-1.81 (1= strongly disagree); thereby revealing consistency within the entire sample. This means that the communication, media channels of TV, newspaper and radio do not encourage or motivate the use of OSNs.

### 5.7.2 Significant Results

From the empirical work, that is, the collated data, a test of all the paths within the MOSN framework was completed. For this, Smart PLS 2.0 M3 was used (figure 5.1); and the reasoning for the selection of SEM and SmartPLS is provided in chapter 3. From this software, path coefficients, p-values and  $R^2$  values were observed in order to interpret the results that are explained below.

#### Coefficients of Determination ( $R^2$ )

Based on the outputs from the main SEM (figure 5.1) and based on the entire sample, the following results emerged: The key dependent variable BI observed an  $R^2$  of 0.92, which demonstrated that 92% of the variation occurring within older participants adoption rates of OSNs can be explained and accounted for by the ten theoretical explanatory constructs within the MOSN model. Note: This is with the addition of the intensity of internet usage. Actual behavior observed that 51.6% of the variation within a participant's actual decision to go ahead and use or reject OSNs was accounted for by the measures of

actual use and Internet usage. Continuance intention explained 64.4% of the variance in continued and intended long-term use of OSNs. Overall from the analysis of the entire sample, the achieved  $R^2$  values demonstrated a strong explanatory power for the purpose that MOSN was formed for. From this analysis, an overall eleven significant relationships were observed within the final MOSN model. Six theoretical constructs had significant influences on the key dependent variable behavioral intention. However, it was found that hedonic outcomes had the weakest positive effect ( $p$ -values  $<.05$ ) on BI. This showed that although not strongly significant, participants' perceptions of fun and entertainment were motivational considerations toward OSN intention. The five other remaining significant constructs held extremely strong significant paths ( $p$ -values  $<.001$ ) and these results are now interpreted.

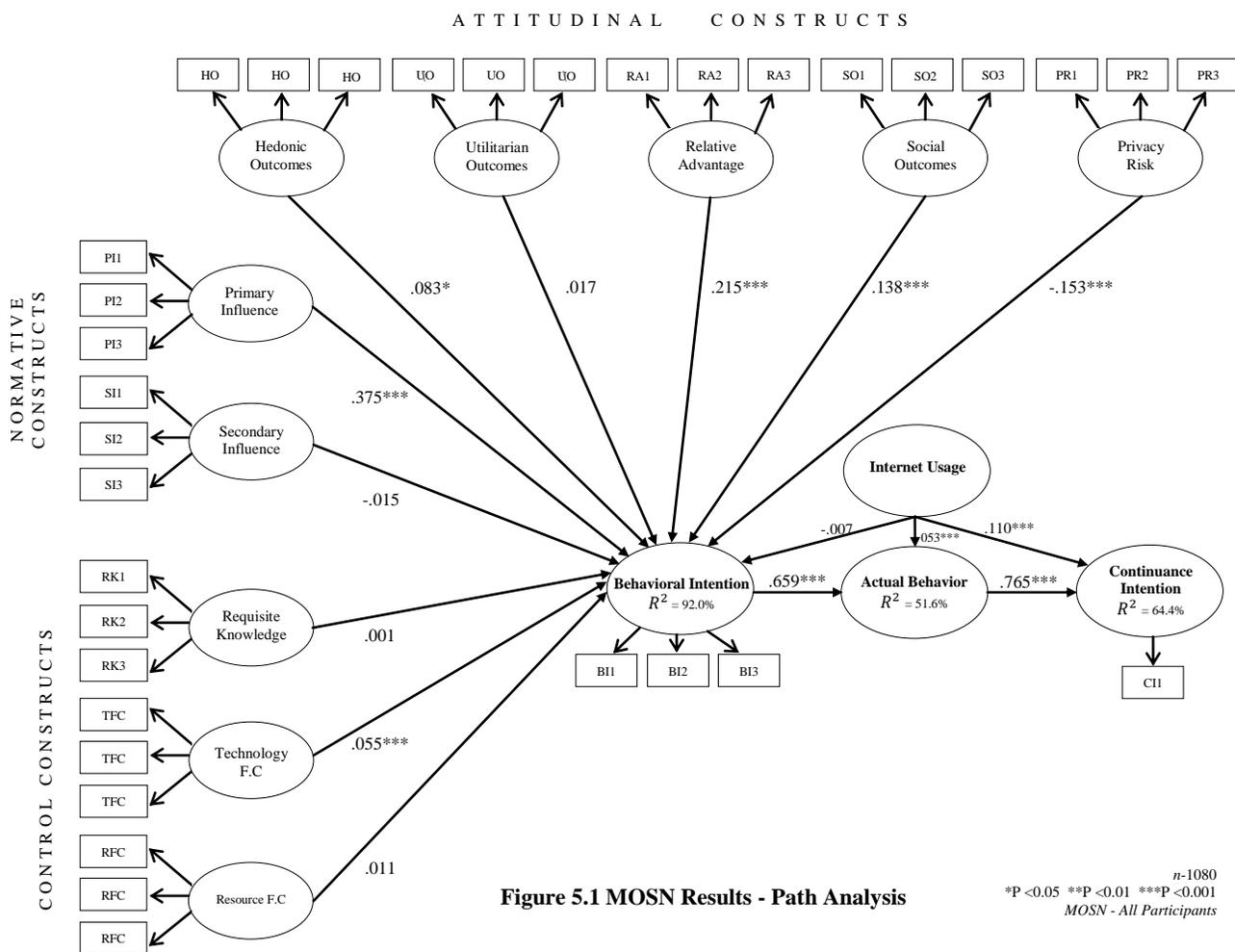


Figure 5.1 MOSN Results - Path Analysis

Privacy risk observed a significant negative influence on BI that showed the perceived loss of control over personal information. Therefore, personal information being used without consent and criminal

activity associated with internet services such as OSNs are impediments to older individuals' intentions to use OSNs. The first construct that had a significant positive influence on BI was social outcomes that confirmed the view that older individuals perceive OSN use to have greater social status in terms of number of friends or respect from those they know and popularity among personal peers.

Relative Advantage was the second construct that had a significant positive influence on BI. Therefore if a participant experienced positive perceptions of OSN use in terms of improved communication and a more beneficial internet experience, then those perceptions encouraged OSN adoption.

As expected primary influence in the form of a participant's friends, family and co-workers recommending OSN use was found to be a strongly significant positive explanatory construct of BI. The construct Technology F.C, which included 'anytime' access to the internet within the household, availability of internet devices and internet access that is perceived to be fast and reliable enough to support OSN use also positively influenced an older individuals intention.

### **5.7.3 Adoption: Age Differences**

The next analytical process was the obtaining of a deeper understanding of explanatory power, application and use of the MOSN research framework in a variety of contexts and samples (table 5.7). That is, in addition to analysis of the entire sample, MOSN was tested using sub-samples of the data: OSN adopters, OSN non-adopters, all participants aged 50-60, all participants aged 61-70, and all participants aged 70 or above, all participating males and all participating females. In consideration that OSN adopters vs. non-adopters, males vs. females and ages group; 50-60, 61-70 and 71+ had relatively similar sample size, there was still diversity within the results. Path analysis models, validations and measurement reliabilities for all eight models can be found in the appendix.

#### **Adopters Vs. Non-Adopters**

When considering the adopters and non-adopters responses to MOSN constructs differences emerged. Before discussing effects of the constructs on BI, it must be noted that for the non-adopters MOSN explained a low level of variance in BI, which was at 10.7%. This was taken to indicate that MOSN is least suited to examining only non-adopters. With regards to constructs, the adopter sample noted weak positive effects on hedonic outcomes and social outcomes. This result was not observed in the non-adopters; hence, suggesting that entertainment, fun and social benefits are not perceived as outcomes of OSN use by current non-adopters. Both the adopters and non-adopters considered privacy risks to be a negative outcome of OSN adoption. Meanwhile, the influence of friends, family and co-workers had a positive effect on BI for both the adopters and non-adopters. Observed only within the adopter's sample were the following: basic knowledge of internet and computer use (RK), availability of fast and reliable

internet connection and an internet capable device in the household were found to be motivational factors seen to positively influence the OSN adoption decision making process.

Within the adopters sample BI was not a significant predictor of actual behavior and was also the case in all the remaining key dependent variables; AB, CI & IU. This was contradictory to the non-adopters samples, where Internet usage was a weak significant predictor of actual behavior (choosing not to use OSNs).

### **Gender: Males Vs. Females**

MOSN path analysis was then computed for gender, using two further sub-samples: 564 males & 516 females. Both models observed similarly high R2 values of 91.9% (male model) and 92.2% (female model). This explained that when individual gender differences are examined, then MOSN serves as a good explanatory model for OSN BI. When determining the use of OSNs, it was found that only men were significantly motivated to adopt OSN due to the perceptions of fun, enjoyment, entertainment and the influence to use OSNs by media such as advertising, TV, newspapers and radio. Males also considered technology-facilitating conditions within their households to be pertinent for OSN use.

Comparatively, females were significantly motivated to use OSNs due to factors pertaining to non-recreational utilitarian benefits such as personal use, paid work and assisting with household tasks and consideration of having the necessary resource facilitating conditions such as, enough time to use OSNs. Positive social outcomes as a result of OSN adoption such as, increased respect within one's social circle, and increased number of friends and social status were motivational factors to drive OSN adoption within only the female sample population.

Similarities in the significance and effects of certain constructs did emerge. In both the male and the female samples, privacy risks of one's personal information and security were significant impediments to the OSN adoption decision. Also, both males and females experienced equally significant positive influence from friends, family and co-workers when using OSNs.

### **Pre-senior, Young-Old & Older-Old**

When researching the older age groups, an adaption of the sub-categories of the older population (50+) that were coined by Lee et al (2011) led to the following sub-categories. These were used to sub-divide and analyze the final sample: Pre-senior (aged; 50-60); young-old (aged; 61-70); and older-old (aged; 71+).

Of the three age categories only the young-old participants were found to be significantly motivated to use OSNs due to the belief that enjoyment, fun and entertainment will be experienced as a result of OSN use.

Benefits of OSN use regarding assistance of paid, un-paid and household activities was experienced only by the participating pre-seniors, and most likely as a result of participants in this age category being at the time of the survey in employment, in either a part-time (12.5%), or full-time work (66%) capacity.

Both pre-seniors and older-old were significantly encouraged to adopt OSNs due to the view that there are benefits to using OSNs. OSNs were viewed to provide additional benefits to Internet use and an improvement in communication with their contacts.

The youngest of participants (pre-seniors & young-old), that is, those aged 50-70 observed significant positive effects on BI due to the construct social outcomes. This demonstrates that within these ages positive social outcomes are viewed to be a potential outcome/benefit of becoming an OSN user.

The oldest of participant's intention (young-old & older-old) was significantly negatively affected by perceptions that one's personal privacy is jeopardized through OSN use. Participants aged 50-60 are evidently less concerned or less perturbed to upload their personal information on the internet; thus, showing greater 'trust in the internet'.

**Table 5.7 Summary of Significant Results - MOSN (Constructs)**

MOSN Construct	All Participants (n-1080)	OSN Adopters (n-519)	OSN Non-Adopters (n-561)	All 50-60s (n-368)	All 61-70s (n-384)	All 71+ (n-328)	All Males (n-564)	All Females (n-516)
Behavioral Intention $R^2$	92%	80.1%	10.7%	89.7%	92%	94.1%	91.9%	92.2%
Hedonic Outcomes	* <sup>+</sup>	* <sup>+</sup>			* <sup>+</sup>		* <sup>+</sup>	
Utilitarian Outcomes				* <sup>+</sup>				* <sup>+</sup>
Relative Advantage	*** <sup>+</sup>			*** <sup>+</sup>		** <sup>+</sup>	*** <sup>+</sup>	* <sup>+</sup>
Social Outcomes	*** <sup>+</sup>	* <sup>+</sup>		** <sup>+</sup>	** <sup>+</sup>			*** <sup>+</sup>
Privacy Risk	*** <sup>-</sup>	* <sup>-</sup>	* <sup>-</sup>		*** <sup>-</sup>	*** <sup>-</sup>	*** <sup>-</sup>	*** <sup>-</sup>
Primary Influence	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>
Secondary Influence							* <sup>-</sup>	
Requisite Knowledge		* <sup>+</sup>						
Technology F.C	*** <sup>+</sup>	** <sup>+</sup>		* <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	
Resource F.C			*** <sup>+</sup>					** <sup>+</sup>
BI --> AB	*** <sup>+</sup>			*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>
Actual Behavior $R^2$	51.6%	.03%	.6%	44.1%	43.6%	60.7%	53.3%	49.9%
AB --> CI	*** <sup>+</sup>		*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>
Continuance Intention $R^2$	64.4%	.01%	12.4%	57.7%	62.1%	62.1%	64.7%	63.8%
IU --> BI								* <sup>-</sup>
IU --> AB	*** <sup>+</sup>		* <sup>+</sup>		* <sup>+</sup>			*** <sup>-</sup>
IU --> CI	*** <sup>+</sup>		** <sup>+</sup>		*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>

P\* <.05 P\*\* <.01 P\*\*\* <.001

A number of constructs were found to have the same influence on ones intention to use OSNs within all sub-sample categories. All age group's intention was positivity influenced by primary influence and the availability of technology facilitating conditions within the household. With regards to key dependent variables, behavioral intention was a strong significant predictor of actual behavior. Actual behavior was seen to be a strong significant predictor of a participant's intention to continue using OSNs. All final phase MOSN path analysis models and validation results can be found in appendix 5-5 and appendix 5-6.

## 5.8 OSN Usage

For those participants who were OSN adopters (n-519) a number of survey items were administered regarding OSN use behavior. The first is age as it is the key demographic variable of interest for this research, combined with the efforts to move away from the assumption that all 50+ individuals interact in similar ways when considering internet technologies. Analysis was segmented in the age brackets of 50-60, 61-70 and 71+ in order to understand and identify differences in use behavior within the 'older individuals' research category.

### Intensity of OSN Use

Age	OSN: Actual Use				Total
	Monthly	Weekly	Daily (+2 hours)	Daily (< 2 hours)	
50-55	8	57	3	75	143
56-60	13	57	1	43	114
61-65	14	35	2	31	82
66-70	19	45	1	20	85
71-75	14	44	0	23	81
76-80	7	5	0	1	13
81+	1	0	0	0	1
<b>Total</b>	<b>76</b>	<b>243</b>	<b>7</b>	<b>193</b>	<b>519</b>

In terms of intensity of OSN usage the 257 OSN adopters were aged between 50-60 years. 118 participants (majority) used OSNs on a daily basis for less than two hours each day (table 5.8). 114 participants used the OSNs on a weekly basis and the remaining in the 50-60 age band used OSNs on a monthly (21) or daily for more than two hours basis (4).

Of the 167 OSN adopters aged 61-70, the majority, 80 of these participants) used OSNs on a weekly basis; 51 used OSN on a daily basis for less than two hours and the remainder used OSNs on monthly

basis (33). Within the 61-70 age brackets, no OSN adopters were found to be 'high intensity users' (i.e. daily users for more than two hours a day).

Within the 95 OSN adopters in the 71+ category, a majority, 49 of these participants were found to use OSNs on a weekly basis and 24 participants used OSNs on a daily basis for less than two hours. The remaining participants used OSNs on monthly basis, which amounted to 22, or 24 daily for less than two hours (24). No participants in this age category were found to use OSNs on a daily basis for more than two hours. However, only one participant of the age of 81+ was an OSN adopter and used OSNs on a monthly basis.

OSN Use Activity	Age							Total
	50-55	56-60	61-65	66-70	71-75	76-80	81+	
<b>Adding</b>	127	102	65	71	75	9	0	449
<b>Picture comments</b>	101	71	40	37	43	4	0	296
<b>Messaging</b>	109	73	44	43	38	4	0	311
<b>Uploading photos</b>	86	46	13	17	15	2	0	179
<b>View photos</b>	92	63	35	41	48	5	1	285
<b>Uploading videos</b>	10	6	4	0	1	1	0	22
<b>Viewing videos</b>	9	13	4	4	2	1	0	33
<b>Paid work</b>	14	6	5	2	0	0	0	27
<b>Voluntary work</b>	1	4	2	6	1	0	0	14
<b>Facebook places</b>	11	4	4	0	1	0	0	20
<b>Health related purposes</b>	6	2	2	5	3	0	0	18
<b>Central Government</b>	29	12	8	10	11	3	0	73
<b>Local Government</b>	2	0	1	1	0	1	0	5
<b>Promoting yourself/work/events</b>	19	12	3	4	4	0	0	42
<b>Forming new relationships</b>	12	14	6	4	3	0	0	39
<b>Private messaging</b>	54	33	25	12	14	1	0	139
<b>Forming groups</b>	42	18	12	10	6	0	0	88
<b>Events information</b>	77	45	34	28	22	4	1	211
<b>Media information</b>	72	44	35	32	26	4	0	213
<b>Posting to message boards</b>	69	38	28	19	22	1	0	177
<b>Promoting yourself (employment)</b>	28	15	9	3	1	1	0	57
<b>Total</b>	<b>141</b>	<b>112</b>	<b>81</b>	<b>84</b>	<b>81</b>	<b>13</b>	<b>1</b>	<b>513</b>

### OSN Usage (Activities)

The participating OSN adopters were asked to select the activities they partake in when using the OSN service of their choice. The six most popular activities among the entire sample are crossed analyzed in the following sections. Information regarding all OSN usage activities can be found in table 5.9).

From Table 5.9 it can be seen that within the 50-60 age category the most popular OSN activities were found to be: adding other members (62%), messaging other members (49%), writing pictures comments (49%), viewing photos (42%), uploading photos (8%), obtain events information (33%), posting to message boards (29%) and obtaining media information (20%).

For the 61-70 years category: adding other members (35%), messaging other members (23%), writing picture comments (20.5%), viewing photos (20%), obtaining media information (17%), obtaining events information (16%), posting to message boards (12%) uploading photos (7.8%).

In the 71+ years category: adding other members (26%), viewing photos (16%), writing picture comments (14%), messaging other members (13%), obtaining media information (9%), posting to message boards (7%) uploading photos (5%) and obtaining events information (2%).

### OSN Use Period

Age	OSN Use Period							Total
	Non-user	<1 year	1-2 years	2-4 years	4-6 years	6-8 years	+8 years	
50-55	0	6	32	59	39	4	3	143
56-60	0	22	20	47	18	4	3	114
61-65	1	12	20	33	13	1	2	82
66-70	1	23	20	32	8	0	1	85
71-75	0	20	27	24	8	0	2	81
76-80	0	2	5	4	1	0	1	13
81+	0	0	0	1	0	0	0	1
<b>Total</b>	<b>2</b>	<b>85</b>	<b>124</b>	<b>200</b>	<b>87</b>	<b>9</b>	<b>12</b>	<b>519</b>

Table 5.10 illustrates the duration in terms of years that participants have been using OSNs for. It can be seen that the majority of those age 50-60 years, 106 had been using OSNs for between two-four years; 52 for one-two years, or 57 for four-six years. The remaining participants were using OSNs either for less than one year, or were established users for more than six-eight years or more (table 5.10).

Within the 61-70 age category the majority of participants, 65, had been using OSN for two-four years; 40 participants for one-two years; 43 for less than one year and 21 for four-six years. One participant had been using OSNs for six-eight years and three participants were found to be high intensity users.

Within the 71+ OSN adopters category, participants had been using OSNs for noticeably shorter periods of time. The majority of 32 had been users for one-two years; 29 for two-four years and 22 less than one year. Three participants in this age category were found to be high intensity users, that is, using OSNs for eight years or longer.

### OSN Provider

When considering OSNs, all internet users face difficulties as there are a number of OSNs on offer that provide essentially the same functionalities with variations in terms of graphical user interface and focus of the OSN in terms of professional or social purposes (table 5.11). ‘Professional’ OSNs such as LinkedIn and Branch Out are focused towards online networking for the purposes of employment, recruitment and professionally orientated communication and media exchange. Contrastingly ‘social’ OSNs such as Facebook and Twitter provide a communication platform for the exchange of text, images and media for the socially orientated purposes, with limited functionality focused towards work based benefits. An analysis of OSN preferences according to age was conducted.

OSN Provider	Age							Total
	50-55	56-60	61-65	66-70	71-75	76-80	81+	
LinkedIn	71	56	31	27	29	1	0	215
Twitter	80	54	35	39	33	3	0	244
Facebook	107	71	49	56	50	9	1	343
Bebo	2	1	3	0	2	0	0	8
Instagram	4	0	0	1	0	0	0	5
MySpace	8	9	4	3	2	1	0	27
FLickR	8	5	2	0	0	1	0	16
Badoo	0	1	0	0	0	1	0	2
Google+	12	8	6	4	5	2	1	38
Branch Out	22	13	9	5	5	0	0	54
<b>Total</b>	<b>140</b>	<b>114</b>	<b>81</b>	<b>84</b>	<b>81</b>	<b>13</b>	<b>1</b>	<b>514</b>

Overall it can be clearly observed that LinkedIn, Facebook and Twitter are the most popular OSNs within the tested sample. The 50-60s age group was more partial to Facebook (178) then Twitter (134). When considering the professional OSNs, LinkedIn (127) and Branch Out (35) were considered. Within the 50-

60s group a small group of participants- 12 or less- were also using the music orientated OSN MySpace, and photo sharing OSN Flickr. The emerging OSN, Google+ was also used by 20 participants.

The majority of 61-70s were also using Facebook (105) and Twitter (74). LinkedIn (58) and Branch Out (14).

In the 71+ age group, which was predominantly constituted of retired or pensioner status individuals, LinkedIn was still ranked within the top three of OSNs and emerged with 30 users. Twitter had 36 and Facebook 60.

### OSN Access Location

Although the context of this research is firmly focused on OSN use within the household, participants were asked to select locations from where OSNs are accessed. It can be observed that in all age groups participants accessed OSNs from their homes. Within the 50-60 age band 25% of participants also accessed OSN from their workplace and 5.7% from their friends and families households (table 5.12). Within the 61-70 age group participants' homes were the prime location for OSN access, with a small proportion of 3.6% accessing OSNs from their workplace or friends/family households (1.3%). It was also found that two participants accessed OSN from an internet café. The 71+ age group predominantly accessed OSNs from their households. The different locations within age group were far narrower as the only other location the older participants accessed OSNs from, was their friends/family households (2.1%).

OSN Access Location	Age							Total
	50-55	56-60	61-65	66-70	71-75	76-80	81+	
Home	140	113	81	84	80	13	1	512
Work	61	31	13	1	1	0	0	107
Library	0	0	0	1	0	0	0	1
Friends/family house	15	6	3	2	6	1	0	33
Internet Cafe	0	1	1	1	0	0	0	3
Restaurant	1	3	1	0	0	0	0	5
Coffeehouse	1	3	0	1	0	0	0	5
Fast Food	2	1	0	0	0	0	0	3
<b>Total</b>	<b>142</b>	<b>114</b>	<b>81</b>	<b>84</b>	<b>81</b>	<b>13</b>	<b>1</b>	<b>516</b>

### OSN Access Device

In order to understand the variations in devices that are used to access OSNs, participants were asked to select from possible internet access devices. The greatest diversity was observed in this category. Within

all the age groups laptops were the preferred method of OSN access (table 5.13). PCs were the next preferred device of choice. It should be noted that PCs were the only device cited for OSN use within the 81+ age category. Access of OSNs using smartphones was a chosen method of access for 14% of the 50-60 age category. However, comparatively, no participants in the older age groups (>71+) accessed OSNs using smartphone technology. PDAs, such as, tablet PCs were used by 11.4% of the 50-60s; 5.4% of the 61-70s and 2.7 % of the 71+. Access using Apple iPods was made by under 2% of 50-60s and 61-70s. Only two participants used iPods for OSN access in the older age group.

OSN Access Device	Age							Total
	50-55	56-60	61-65	66-70	71-75	76-80	81+	
iPod	5	1	4	1	1	1	0	13
PC	78	57	34	37	30	6	1	243
Laptop	130	98	67	69	64	7	0	435
Smartphone	35	17	9	5	0	0	0	66
Cable Provider	1	3	1	1	0	1	0	7
PDA (3G)	6	2	5	0	1	0	0	14
PDA (Wi-Fi)	22	12	9	7	7	1	0	58
<b>Total</b>	<b>143</b>	<b>114</b>	<b>80</b>	<b>84</b>	<b>81</b>	<b>13</b>	<b>1</b>	<b>516</b>

### Continuance Intention

This research also wanted to determine whether there is an intention to continue using OSNs after an initial use (a test run). Table 5.14 illustrates the results of all the OSN adopters when asked if they intended to continue using OSNs in the future (table 5.14).

Age	OSN User Continuance Intention			Total
	Non-user	No	Yes	
50-55	1	2	140	143
56-60	1	3	110	114
61-65	1	3	78	82
66-70	3	4	78	85
71-75	0	2	79	81
76-80	0	0	13	13
81+	0	0	1	1
<b>Total</b>	<b>6</b>	<b>14</b>	<b>499</b>	<b>519</b>

A small minority of those aged 50-75 (less than 2%) stated that they will not continue using OSNs. This minority was most likely to be individuals who were currently in a ‘trial period’ of OSN use or did not expect any benefits of continued and regular use. There were no OSN adopters aged 76+ who did not intend to continue using OSNs.

### 5.9 Diffusion

Principally guided by Rogers (2003) Diffusion of Innovations (DoI) theory the diffusion of OSNs was another line of enquiry of this research (figure 5.2). ‘Diffusion is the process by which an innovation is communicated through certain channels over time and among members of a social system’ (Rogers, 2003 p.5). The social system analyzed in this diffusion study is that of the participating older individuals. Communication channels are the means by which messages get transmitted from one individual to another. Rogers (2003) suggests that mass media channels such as radio, television and newspapers are communication channels that usually provide the most rapid and efficient means of informing potential adopters about the existence of an innovation, in this case OSNs. Consequently, to examine the identified OSN phenomena using DoI, the mass media channels of TV, newspaper, Internet, radio Word of Mouth (W.O.M) and magazines were examined.

All the participants, both OSN users and Non-OSN users were asked about the communication channels they had obtained information regarding OSNs. This was applicable to any context. A SmartPLS path analysis model was then developed using these communication channels as explanatory variables of BI.

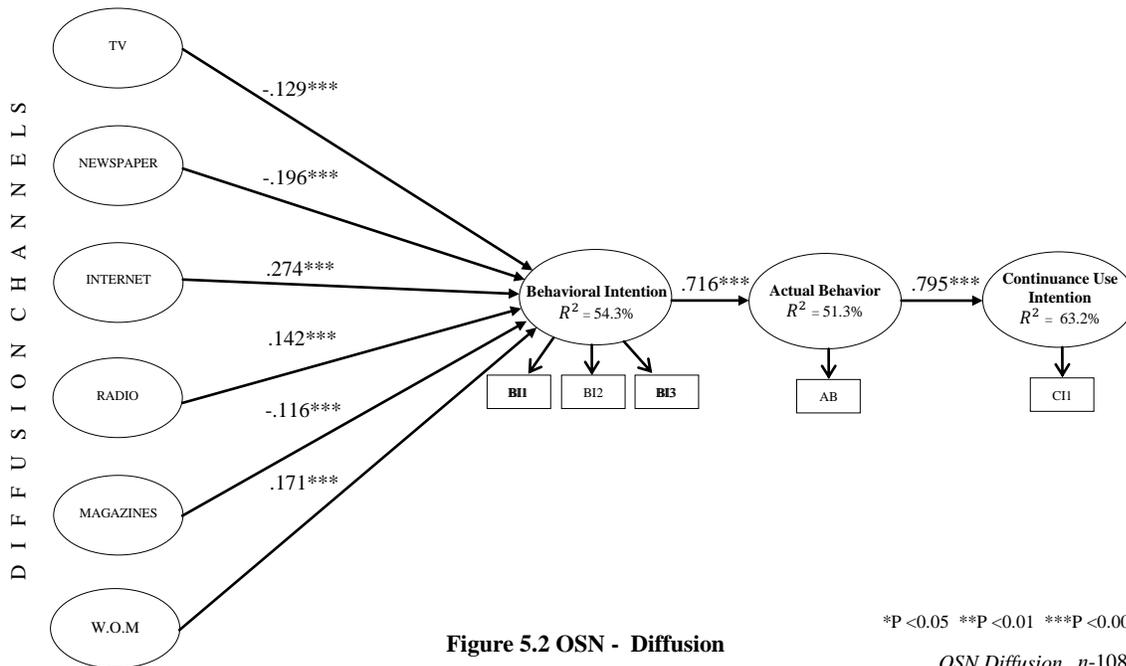


Figure 5.2 OSN - Diffusion

The path analysis model demonstrated that the chosen mass media channels accounted for and explained 54.3% of the variance of BI. All the mass media channels were found to have a highly significant ( $p$ -value:  $< 0.001$ ) effect on BI. Information transmitted using TV, media, newspaper and magazines had a negative effect on OSN intention. Information transmitted using the internet, radio and word-of-mouth had significant positive effects on OSN intention. In the context of OSN diffusion, these results provide preliminary evidence to support theoretical suggestions that information transmitted using mass media channels do have significant effects on the adoption decision throughout the social systems of older individuals. This is an important avenue of research to pursue since OSN providers efforts and attempts of increasing adoption and use of OSNs may be more effective through the mass media communication channels of the Internet and radio.

### **Age Differences: Diffusion**

A series of path analysis models using the diffusion configuration were created in order to understand how diffusion channels have different effects on subsets of the entire sample. All the path analysis models can be found in appendix 5.10.

Initial outcomes of the R2 values resulted in all the diffusion models. For all the diffusion tests the proportion variance explained by the dependent variable BI ranged from 41.8% - 61%, except for the OSN adopters and all OSN non-adopters. In this case, there were low R2 values for BI and unacceptable R2 values for AB and CI that resulted. Additionally, minimal significant relationships were observed; thus excluded from the analysis.

In terms of significant results TV had a significant negative effect on behavioral intention. This effect was found to be the weakest ( $p$ -value 0.05) for the sample of 61+ and weaker within the female only sample. Newspapers had an equally strong ( $p$ -value  $<.001$ ) negative impact on BI. The Diffusion communication channels of the Internet and W.O.M had consistently strong ( $p$ -value  $<.001$ ) significant positive effects on the BI when adopting OSNs. Excluding the 50-60 sample, radio was found to have strongly positive effects on BI, but this relationship was found to be the weakest on the 71+ sample. Magazines observed negative significant effect on BI within the entire sample except the 71+ participants. This effect was found to be the weakest in the youngest participants of the 50-60 group.

BI was consistently, strongly positively related to AB in all models with R2 values ranging from 43.2%- 60.4%. AB was consistently, strongly positively related to participant's continuance intention with higher R2 values of 57.5%- 63.2%. These relationships and R2 values demonstrate that theoretically and empirically that behavioral intention  $\rightarrow$  actual behavior  $\rightarrow$  continuance intention are interrelated construct on the OSN adoption decision-making process.

All diffusion path analysis models can be found in appendix 5-7.

Table 5.15 Summary of Significant Results - Diffusion								
Diffusion Channel	Non-Adopters (n-561)	Adopters (n-519)	All Participants (n-1080)	All 50-60s (n-368)	All 61-70s (n-384)	All 71+ (n328)	All Males (n-564)	All Females (n516)
Behavioral Intention $R^2$	33%	18.2%	54.3%	41.8%	57.3%	61%	49.8%	58.8%
TV			*** <sup>-</sup>	*** <sup>-</sup>	* <sup>-</sup>	** <sup>-</sup>	*** <sup>-</sup>	** <sup>-</sup>
Newspaper		** <sup>-</sup>	*** <sup>-</sup>	*** <sup>-</sup>	*** <sup>-</sup>	*** <sup>-</sup>	*** <sup>+</sup>	*** <sup>-</sup>
Internet			*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>
Radio			*** <sup>+</sup>		*** <sup>+</sup>	* <sup>+</sup>	*** <sup>+</sup>	** <sup>+</sup>
Magazines	*** <sup>-</sup>	*** <sup>-</sup>	*** <sup>-</sup>	* <sup>-</sup>	*** <sup>-</sup>		*** <sup>-</sup>	*** <sup>-</sup>
W.O.M	*** <sup>+</sup>		*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>
BI --> AB			*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>
Actual Behavior $R^2$	0.00%	.003%	51.3%	44.1%	43.2%	60.4%	53.2%	48.5%
AB --> CI	*** <sup>+</sup>		*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>
Continuence Intention $R^2$	12.1%	.001%	63.2%	57.5%	60.9%	60.5%	63.1%	63%

P\* <.05 P\*\* <.01 P\*\*\* <.001

## 5.10 Internet Usage

As the final survey was in online format it was anticipated that a vast majority of participants would be internet users. Therefore in addition to examining OSN use behavior, all the participants were asked to complete survey items regarding Internet usage behavior. The following paragraphs discuss the findings. Internet frequency was assessed in all the age groups as illustrated in table. Results revealed that monthly usage of the internet was an infrequent occurrence and tended to be mainly within individuals aged 66+. 23.3 % of participants used the internet on a weekly basis, where the majority of these participants were once again in the age groups of 66+.

The majority of participants (74.8%) described internet usage on a daily basis. This usage frequency was further segmented two groups (table 5.16). The first segment was: Those who used the internet daily, but less than two hours (51 %). In this segment, participants were almost equally distributed along all the age bands, with a noticeable decline in those aged 76+. The second segment was of those who used the internet daily for more than two hours (23%). The majority of these high intensity users were found to be within the younger age groups of 50-65 and then significantly declining in the older age groups of participants. These results show that the older the individual, then internet use is less frequent and for smaller periods of time.

Frequency	Age							Total
	50-55	56-60	61-65	66-70	71-75	76-80	81+	
Non-User	0	1	0	1	0	0	0	2
Monthly User	0	0	1	4	7	6	0	18
Weekly User	10	21	36	63	57	63	2	252
Daily (more than 2 hours)	81	58	48	28	26	5	4	250
Daily (less than 2 hours)	93	104	89	114	122	32	4	558
<b>Total</b>	<b>184</b>	<b>184</b>	<b>174</b>	<b>210</b>	<b>212</b>	<b>106</b>	<b>10</b>	<b>1080</b>

Participants were asked for the duration they have had the internet within their household (table 5.17). The overall majority, 87% of participants had internet access in the households for periods of years of four years or above. 45% of the overall sample have had the internet in their household for more than eight years. These findings show the older individuals have the access to the internet and therefore non-adoption of OSNs is factored by other elements of consideration. In terms of age it was found that the younger the participant, the longer internet access had been a household facility.

Duration	Age							Total
	50-55	56-60	61-65	66-70	71-75	76-80	81+	
1 year or less	1	2	2	4	6	4	0	19
1-2 Years	1	2	3	8	5	13	0	32
2-4 years	4	5	8	18	24	30	0	89
4-6 years	25	38	37	67	70	24	4	265
6-8 years	30	33	34	33	44	12	0	186
More than 8 years	123	104	90	80	63	23	6	489
<b>Total</b>	<b>184</b>	<b>184</b>	<b>174</b>	<b>210</b>	<b>212</b>	<b>106</b>	<b>10</b>	<b>1080</b>

The next analytical examination involved determining the range of devices available in the UK and being used for internet access. This research also identified which of these available devices participating older individuals are using for internet access and how the device chosen differs according to age (table 5.18). Laptop computers were clearly the most popular device applicable within all age groups. Desktop PCs were the next most popular device of choice. This was followed closely by smartphones; however

smartphone use was most prevalent within the age groups of 50-60 and the proportion declined as ages increased. PDAs such as Apple iPads, Amazon Kindle and Samsung Galaxy Note were also used for internet access by 18% of participants, thereby suggesting that that older individuals are adapting to more modern methods of internet access. PDA use was most popular within younger age groups.

Access Device	Age							Total
	50-55	56-60	61-65	66-70	71-75	76-80	81+	
Desktop (PC)	103	88	78	84	93	40	6	492
Laptop	170	156	140	163	154	69	5	857
Smartphone	140	104	83	52	39	6	1	425
TV Provider	8	11	7	7	6	3	1	43
PDA (3G)	12	5	7	1	4	0	0	29
PDA (Wi-Fi)	54	36	26	21	20	10	1	168
<b>Total</b>	<b>184</b>	<b>184</b>	<b>174</b>	<b>210</b>	<b>212</b>	<b>106</b>	<b>10</b>	<b>1080</b>

In order to understand the activities that older individuals partake in when using the internet within their households (table 5.20), participants were given the option to choose one or more from 15 popular internet activities. The most frequently cited activity for the entire sample was searching using Google, which suggests that older individuals are primarily accessing the internet in their households for information access and sharing. Internet shopping, both browsing and purchasing was the next most popular activity, followed by the internet for reading both general and leisure orientated literature, searching and purchasing insurance for car, pets and home, internet communication through e-mail, and managing personal finances through online banking services offered by all high street banks and the post office.

Older individuals used the internet for both local government (11%) and central government (41%) interaction and communication. This suggests that government online services such as tax rebates, council tax payments, benefits, TV licensing and government information access are being utilized by older internet users. Due to retirement those ages 76+ were not using the internet for paid or unpaid work. Streaming video media through services such as YouTube were cited predominately by those aged 70 and below. The least popular internet activities were internet for educational purposes and paid work.

Internet Activity	Age							Total
	50-55	56-60	61-65	66-70	71-75	76-80	81+	
E-mail	171	167	143	146	148	37	8	820
Searching Google	182	181	171	209	210	103	8	1064
Shopping (purchasing)	176	172	149	170	150	54	8	879
Shopping (browsing)	176	169	146	167	157	58	5	878
YouTube	110	78	52	62	52	13	2	369
Video Calling	56	37	20	28	26	6	5	178
Paid Work	46	36	21	10	3	0	1	117
Unpaid Work	26	21	30	25	35	10	2	149
Education	34	25	15	12	9	2	2	99
Leisure/ General Reading	157	153	139	163	165	68	5	850
Instant Messaging	92	73	55	59	54	6	0	339
Personal Finance	141	148	109	122	125	33	6	684
Purchase Insurances	160	156	113	143	149	44	5	770
Government (central)	113	104	64	81	63	22	5	452
Government (local)	29	26	28	16	11	5	2	117
<b>Total</b>	<b>184</b>	<b>184</b>	<b>174</b>	<b>210</b>	<b>212</b>	<b>106</b>	<b>10</b>	<b>1080</b>

All internet usage final phase data analysis can be found in appendix 5-8. Tabulated summaries of all final phase data analysis results can be found in appendix 5 - 9.

### 5.11 Hypotheses Testing

Earlier in chapter 2.1 twelve devised hypotheses guided the construction of the proposed MOSN. The table 5.21 below illustrates the hypotheses supported by the final data collected for this research. Conclusively hypotheses will be tested using the results from the entire sample, this allows reflection of results in consideration of all participating individuals including viewpoints of both OSN users and non-users (Table 5.21). The following sections interpret and discuss the findings of the hypotheses tests.

Table 5.20 Hypotheses Testing: Results						
Hypotheses	All Participants	Adopters	Non-Adopters	50-60	61-70	71+
HO $\rightarrow^+$ BI = H1	Supported	Supported			Supported	
UO $\rightarrow^+$ BI = H2				Supported		
RA $\rightarrow^+$ BI = H3	Supported			Supported		Supported
SO $\rightarrow^+$ BI = H4	Supported	Supported		Supported		Supported
PR $\rightarrow^-$ BI = H5	Supported	Supported	Supported		Supported	Supported
PI $\rightarrow^+$ BI = H6	Supported	Supported	Supported	Supported	Supported	Supported
SI $\rightarrow^-$ BI = H7						
RK $\rightarrow^-$ BI = H8						
TFC $\rightarrow^+$ BI = H9	Supported	Supported		Supported	Supported	Supported
RFC $\rightarrow^+$ BI = H10			Supported			
BI $\rightarrow^+$ AB = H11	Supported			Supported	Supported	Supported
AB $\rightarrow^+$ CI = H12	Supported			Supported	Supported	Supported

P\* <.05 P\*\* <.01 P\*\*\* <.001

### Hypothesis 1 – Supported

Hypothesis 1 predicted that association of fun and enjoyment with OSN adoption and use will have significant positive effects on BI. This hypothesis was supported by the data collected; thereby confirming that the theoretical construct Hedonic Outcomes (HO) is a motivational factor for older individuals when considering the OSN adoption decision process.

### Hypothesis 2 – Not Supported

Hypothesis 2 expected that perceived utilitarian benefits of OSN adoption such as assisting household activities will have a significant positive effect on BI. This theoretical construct was found not to have any significant effect on individuals BI when using OSNs. However, when this hypothesis was tested with the sample of participants aged 50-60 the hypothesis was supported. This result reveals that for those older individuals that are still in employment and not yet in the retirement phase, OSN use satisfies utilitarian needs, which increases OSNs perceived benefits.

### Hypothesis 3 – Supported

Hypothesis 3 anticipated that perceived Relative Advantage in the form of increased benefits of using OSNs and improved communication with ones contacts will have a significant positive effect on BI. This hypothesis was supported within the entire final sample and also with those participants aged 50-60.

### Hypothesis 4 – Supported

Hypothesis 4 forecasted that perceived social outcomes such as, an increased number of friends, a greater level of respect and an improvement of personal popularity will have a significant positive effect on BI. This hypothesis was supported by the entire final sample, all adopters, aged 50-60 and those aged 71+.

#### **Hypothesis 5 – Supported**

Hypothesis 5 predicted that aspects of risk pertaining to privacy such as a loss of control on one's personal information, personal information being used without permission and/or criminals using one's personal information will cause significant hesitation and abstinence to the use and adoption of OSNs. This hypothesis was supported within the entire final sample and all remaining sub samples; except for those aged 50-60. As the OSN adoption rate was largest among those aged 50-60 years, this result suggests that participants in this age bracket are less deterred to use OSNs due to the aspects of privacy.

#### **Hypothesis 6 – Supported**

Hypothesis 6 theorized that primary influence, that is, a positive influence from an older individual's friends, family and/or relatives will have a motivational effect on BI. This hypothesis was the only one to be supported by the entire sample and in all sub-samples.

#### **Hypothesis 7 – Not Supported**

Hypothesis 7 expected that secondary influence in the form of information channelled through the mass communication and media channels; TV, newspapers, films, advertising and radio, will significantly impede an older individual's decision to adopt and use OSNs. However, this hypotheses was not supported by the entire sample or any sub-samples.

#### **Hypothesis 8 – Not Supported**

Hypothesis 8 predicted that an older individual's experience, familiarity, ability and knowledge pertaining computer and internet use will have a significant negative effect on the BI to use OSNs. This was due to the inability to use computers and internet with some degree of proficiency factor. That is, a user felt that the pre mentioned factors made him/her feel incapable of adopting OSNs, even if the intention is present. This hypothesis was not supported within the entire sample or sub-samples.

#### **Hypothesis 9 – Supported**

Hypothesis 9 expected that significant positive effects will be observed through the availability of technologies that facilitate the use of OSNs within an older individual's household. This included issues such as, access and availability of an internet connection that is considered to be fast and reliable enough to use OSNs, in addition to access/ownership of internet capable device such as PC, laptop or tablet PC. This hypothesis was supported in the entire sample and all sub-samples except for those participating non-adopters. This result suggests that for those participating who did not at the time use OSNs, technology facilitating conditions may be an impeding factor.

**Hypothesis 10 – Not Supported**

For hypothesis 10 consideration was made of the resource of time an older individual must have available in order to use OSNs, the money required to pay for internet access/broadband subscription and purchasing an internet capable device. Therefore, hypothesis 10 predicted that resource-facilitating conditions will have a significant positive effect on the BI to adopt OSNs. This hypothesis was not supported for the entire sample.

**Hypothesis 11 – Supported**

Behavioral intention can be used as a proximal measure of behavior (Francis et al, 2004). For hypothesis 11 it was therefore predicted that there would be a significant positive effect between the intention to use OSNs and actual behavior when using OSNs. This hypothesis was supported by the entire sample and age divided sub-samples demonstrating that in the context of older individuals and OSN adoption, there is a significant relationship between behavioral intention and actual behavior. For example, the intention to use OSN is likely to materialize into actual use of an OSN.

**Hypothesis 12 – Supported**

Stemming from the minimal available literature that examined the relationship between technology adoption and continued use of the technology, hypothesis 12 expected a significant positive effect between actual use of OSNs and continued long-term use; thereby, confirming successful adoption. This hypothesis was supported within the entire sample and age divided sub samples, which demonstrated that there was a significant relationship with those participating older individuals who used OSNs and their intention to continue using OSNs.

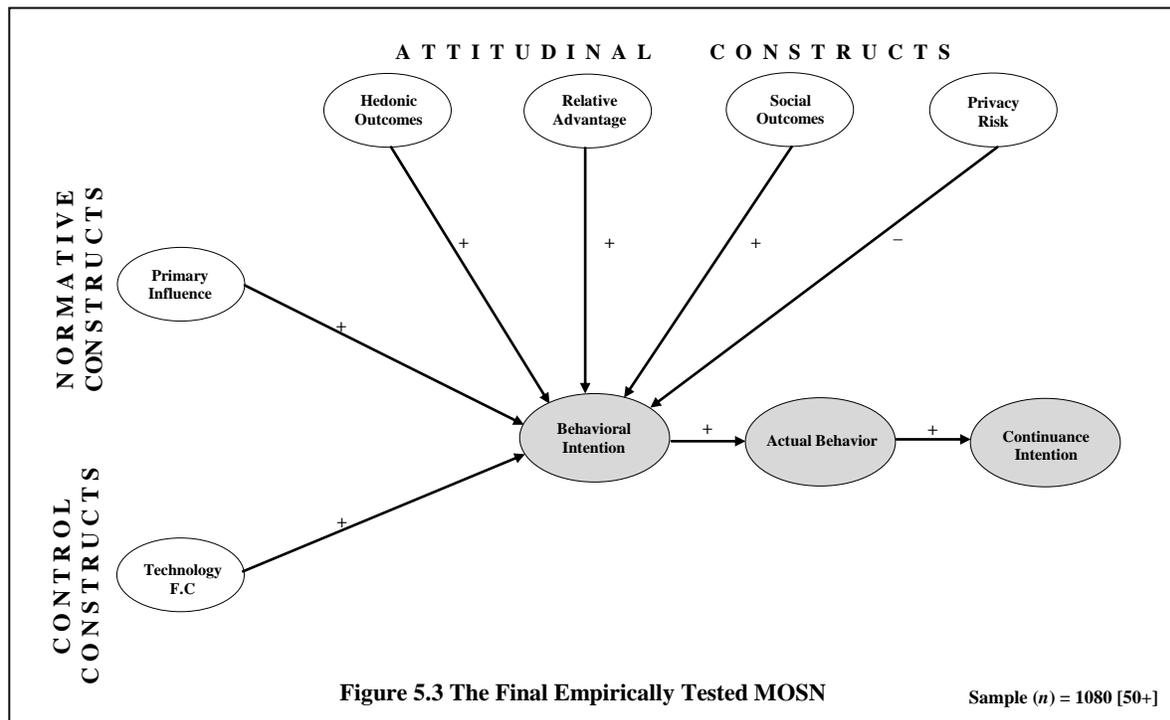
**5.12 Empirically Validated MOSN**

Simon (2009) Empirical research is described as research that goes beyond “merely” observing and describing, and is inextricably intertwined with explaining natural phenomena and making predictions about it (Simon, 2009). ‘Empirical knowledge is determined to be credible using empirical validation’ (Kenney, 2002 p.80). Therefore, for this research, the conceptual theoretical model of of MOSN is now empirically validated using primary data (figure 5.3).

For empirical analysis validation Carducci (2009) suggests three types of empirical data: 1) L-data that consists primarily of records of life events located in public places. 2) Q-data, which includes self-ratings on questionnaires or personality tests such as All ports values scale; and 3) T-data that involves observations of an individual.

Empirical testing means that ‘something’, in this case MOSN, has been examined against reality using data, as is often the case, survey data. In this case, statistics was applied to empirical data to test

formulated hypotheses (Zikmund et al, 2013). Therefore, when statistics are applied to empirical data empirical validation is obtained. For those unfamiliar to the term, empirical validation is ‘the process through which relevant model parameters are informed by and simulation findings are evaluated against empirical data’ (Squazzoni, 2012; p.151). In this research, SEM was applied to all the paths (parameters) within MOSN and tested using the empirical quantitative q-data gathered from the final phase, 1080 participating older individuals from Hertfordshire. The computations resulted in elimination of three hypotheses. The hypotheses were eliminated as they had negative results; hence, not supported. The final MOSN model that is a product of all the phases of this research is illustrated in figure 5.3.



### 5.13 Chapter Summary

This chapter presented the findings extracted from an analysis of empirical data collected from the final phase sample of 1080 participating older individuals. The chapter began by determining the overall response rate of 14.4%), discussed possible sources of survey error that could lead to biased results, and then an analysis of the demographic data to ascertain the societal groups that participated in this research. Also provided was a summary of the sampling method that was conducted for the data collection phase.

The first step of analysis computed the reliability and validity of construct measurements that were developed for the final survey instrument used for data collection. Upon validation of the developed construct measurements, a series of path analysis models were developed using eight sub-samples (all

participants, all males, all females, OSN adopters, OSN non-adopters, pre-seniors, young-old and older-old) in order to understand the significance and effect of each construct on a participant's behavioral intention when adopting and using OSNs.

For the 519 participants who were at the time of survey completion OSN adopters analysis on usage behavior was presented. This was accompanied by behavioral differences identified within sub-samples regarding the frequency of use, duration of use, technologies for OSN use and activities conducted when using OSNs.

Investigations and analysis pursuing the diffusion of OSNs was also calculated. Also within this chapter was determining the influence of mass communication, media channels on the intention to adopt OSN. This was determined using an interpretation of a series of diffusion path analysis models.

In addition to OSN usage behavior, cross-comparisons of all the sub-samples were conducted using the standpoint of internet usage of all participants. Diversity was found within sub-samples pertaining to frequency, duration and purpose of internet use.

Using the outcomes of the aforementioned analysis all twelve hypotheses developed earlier in chapter 2 were tested. It was found that nine of the twelve hypotheses were empirically valid. Finally the outcomes of hypotheses testing were used to identify and empirically validate the model MOSN.

The next chapter provides discussion of the findings from a standpoint of the literature review conducted in chapter 2. This is followed earlier by an evaluation of the final primary dataset using Nationally Representative Datasets (NRDs).

# Chapter 6

## Evaluation & Discussion

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### 6.1 Introduction

The previous chapter analyzed and interpreted research findings that were extracted from the final phase of the data collection. However, a question still remains about whether the acquired findings that are based upon theoretical aspects of the literature can be verified and evaluated in real life. This can be determined using evaluation. An evaluation determines whether the theoretical foundations of this research can be verified and validated. For this, secondary analysis of Nationally Representative Datasets (NRDs) was used in conjunction with the theoretical aspects and proffered in the second section of this chapter. The second part of this chapter contains the findings of this research being analyzed at a standpoint of the literature review in chapter 2. Including discussion and reflection of the conceptual framework and evaluation findings.

### 6.2 Evaluation (Validation)

In any research study where findings are derived utilizing modelling models or algorithms, validation of the results that are based on theoretical aspects becomes a question requiring answers. This process of validation ensures credibility of results and is an essential process of any research study (Panneerselvam, 2004). As the conclusions of this research are based on the inferences and conclusions of primary data that was acquired based upon a conceptual, theoretical framework, an evaluation phase of research was required in order to support and provide validity of findings. For this, initially a definition and selection of an evaluation method and its variations is provided. Second, a description of the methods available to conduct an evaluation and the reasoning for the choice undertaken is proffered, which is then followed by the empirical analysis that is analyzed using nationally represented datasets.

#### 6.2.1 Evaluation definitions

As evaluation is a new term to this research, and is an unfamiliar term a definition of evaluation is proffered. In social sciences terms evaluation is defined in terms of conceptualisation and the discipline itself: “evaluation research is the systematic application of social science research procedures in assessing the conceptualisation and design, implementation, and utility of utility of social intervention programs” (Rossi & Freeman 1982; p.20). This is also shown in the following definition where the worth or merit aspects are mentioned. Social scientists are also users of data that is in text or words format; therefore

determining its value is of importance as well. This is shown in the two following definitions. Evaluation is ‘the systematic assessment of the worth or merit of some object’ (Trochim & Donnelly, 2008; p.352). ‘Evaluation refers to the process of determining the merit, worth or value of something, or the product of that process’ (Stern, 2005 p.xxvi).

When identifying evaluation forms, there are two broad categories:

**Summative Evaluation:** This form of evaluation is an assessment of the outcome of a program. This means that summative research involves determining the goals that were actually reached by the completed program (Dane, 1990). In more recent times, the goals have been replaced with the words of outcomes as outputs have become clearer. Therefore, summative evaluations examine the effects or outcomes of a program of research (Trochim & Donnelly, 2008). Applying this to this research, this study is interested in examining the outcomes of this research.

**Formative Evaluation:** The second form of evaluation involves assessing the process of a program, which is also called process evaluation. In more in-depth terms, a formative evaluation involves judging the means by which a program is operating (Dane, 1990). A formative evaluation is conducted while conducted when the element under evaluation is still under development (Trochim & Donnelly, 2008). If considered in terms of this research, formative evaluation would involve considering the whole process that was conducted whilst collating data and also for the initial literature review

Having considered the two forms of evaluation it can be seen that a summative evaluation will be conducted at this point of the research study. This is because the research study has already determined some outcomes based upon theory, but using an alternative practice based on empirical data, verification and validation of the main aim of this research and aspects of this research can be considered. Further, the final phase of this research was curtailed to a limited area of England and verification of the theoretical framework was made. The UK is a large country and to ensure that this research study’s framework is applicable not only to Hertfordshire, nationally represented datasets were utilized. National Representative Datasets (NRDs) were selected on the basis that the datasets have been extensively verified using statistical measures and widely applied by industry and academics alike as credible sources of data.

### 6.3 Evaluation Approach

There are many widely accepted methods for conducting evaluation research including the acquisition of data through questionnaires, interviews, observations and documentary sources (Clarke, 1999). As the research under evaluation is quantitative, survey questionnaires are appropriate to evaluate using the data obtained through the same method. The data collected relates to Internet usage with specific focus on

Internet use for OSN practice. This choice is supported by this research as well as Trochim & Donnelly (2008) who suggest that secondary analysis is an acceptable quantitative method for a summative evaluation. Therefore this entails an evaluation conducted through the formal empirical re-analysis of existing datasets to address new questions or replication of prior results (Trochim & Donnelly, 2008). Datasets were also considered because, on the one hand, preferences are often very highly correlated over time. However, on the other hand, preferences can change in response to external events, such as income shocks, becoming unemployed, or experiencing an economic crisis (Stegmueller, 2013). Therefore the datasets show how preferences and attitudes towards OSNS have changed. Further, they demonstrate the application of the classic theories that the primary data also found, but that was at only a particular time. With the datasets we can explain time variations, which also matches or synchronises with the DOI, specifically the 'S-Shaped rate of adoption' (*see* Rogers, 2003 p.23).

In order to conduct a summative evaluation to support and provide validation of the final empirical findings, secondary data was drawn from Nationally Representative Datasets (NRDs): The Office of National Statistics (ONS) Omnibus survey and the Oxford Internet Survey (OXiS). In political analysis datasets are increasingly being used to identify individual preferences over time. The datasets exhibit past preferences influences on current preferences via a first-order Markov process. In an abstract setting, for example, if a system is moving through time that has  $n$  possible states, then that is a random process. Such a process is considered to be a first-order Markov process. Therefore, if the state at the next time period is only reliant on the current state of the system than a first order Markov process emerges. For example, we can model economic mobility in a society as a Markov process, where a person's probability that they will be in a certain economic class is only dependent on their background (e.g. parents' economic class). Further, by using datasets preferences changing over time are identified, which cross sectional studies do not reveal (Stegmueller, 2013). Second intangible attributes such as, motivation are not clearly observable, i.e. not visible and such attributes or individual characteristics may have a strong influence on attitudes or preferences (*ibid*). By using datasets, such information can be attained. Finally, preferences and attitudes could change over time as familiarity, awareness or infrastructure become available and mature. A cross sectional study taken at one point in time could ignore that. To avoid such situations and to illustrate the changes in preferences, datasets were used (*ibid*). The following sections provide background information and reasoning as to why these particular NRDs were used.

### **6.3.1 ONS Omnibus Survey**

As of January 2008 the ONS Omnibus Survey changed its name to the ONS Opinions Survey and became part of the Integrated Household Survey (IHS). The ONS survey was initiated originally to meet the needs of UK government departments for a survey that used short and simple sets of questions, had greater

statistical reliability than private sector omnibus surveys and is conducted using a properly designed random sampling method (ESDS, 2013). Due to its reliability and random sampling method an increasing number of academics are utilizing its potential as a valuable research tool (ESDS, 2013). This survey was selected due to its reliability and its representation of UK residents. Also, the survey questionnaires employed for ONS survey include suitable survey items investigating Internet usage of participating individuals.

### **ONS Omnibus Survey: Explanatory Variable Selection**

The ONS Omnibus Survey provides data for the years 2007, 2009 and 2010. ONS does not contain a variable for OSN use and therefore was used to further understand predictors of internet use for older adults. An understanding of internet is a precursor of understanding OSN use as the internet is the platform on which OSNs are delivered, thus without internet adoption and use, OSN adoption cannot occur. Key socio-economic variables when examining the demographics in social investigations include, factors such as age, gender, race, education, occupation and health (Burgess, 1986). Further, household income, age, education and occupational class location remain to be viewed as key demographic variables of differential Internet use (Willis & Tranter, 2006). Therefore, where available such socio-economic variables were used in the ONS evaluation analysis: ONS variables list appendix 6-2.

### **6.3.2 OXiS Survey**

Oxford Internet Survey (OXiS) research is designed to provide deeper insights into the influence of the Internet on everyday life in Britain, including Internet access, use and attitudes (OXiS, 2013). OXiS was launched in 2003 and is conducted every two years with the surveys viewed to be nationally representative of random samples of 2000 people in the UK. By comparing OXiS datasets over time, careful predictions can be made about how the Internet and web 2.0 is affecting society and was the reason that OXiS was selected for this research (OXiS, 2013).

### **OXiS Survey: Explanatory Variable Selection**

The OXiS Survey provides data for the years 2003, 2005, 2007 and 2009. For this research, OXiS provided the dependent variables of OSN use and Internet use.

A strong body of research can be found in relation to gender in technology adoption, OSN research and internet and computer technology usage (Fedorowicz, 2010; Grimes et al, 2007; Schumacher & Morahan-Martin, 2001; Best & Maier, 2007; Ono & Zavodny, 2005; Muscanell & Guadagno, 2012). Venkatesh et al (2003) found age to be a significant variable in the context of technology acceptance. Therefore existing research demonstrates the demographic variables have been found to predict OSN and

technology use, and consequently will be the explanatory variables used in this evaluation. All variables and categories used from the OXiS waves can be found in appendix 6.1 & 6.3.

## 6.4 Evaluation Analysis Method

When determining the method to pursue for this phase of the research, attention was paid to the suggestion that: ‘Any researcher faced with the need to analyse data requires a rationale for choosing a particular method of analysis’ (Kleinbaum et al, 2008; p.11). Regression is the method for describing the relationship between two or more variables. Regression estimates the impact of one variable on another (De vaus, 1996). ‘The aim of regression analysis is to construct mathematical models which describe or explain relationships that may exist between variables’ (Seber & Lee, 2003; p.2). As the purpose of this evaluation as the aim is to estimate the impact of explanatory variables (age, gender, or employment status) and predict the probability of an individual’s internet and OSN usage, regression analysis offers the most appropriate method for evaluation analysis.

Therefore until this point, this research has determined the aims, evaluation approach, identified variables and regression as the method to analyze data that will be used to undertake this summative evaluation phase of research. The next step involves deciding the regression analysis method that will be used to model the chosen variables (as many types exist). The previous section identified explanatory (independent variables), which are to be used from ONS and OXiS datasets. In order to choose the appropriate regression method for analysis dependent variables must be identified and assessed. The following section provides narratives of reasoning behind the regression method selection in light of the selected dependent variables.

### Dependent Variables

The ONS datasets contain one dependent variable of interest – namely “Frequency of internet use in the last three months” as shown in Table 6.1 below. This variable provides the perfect platform to test the adoption of the internet across Britain and how certain factors affect or influence the likelihood of adoption or frequency use. The dependent ONS variable is categorical and ordered (i.e, it takes on four ordered values) in nature. For this reason, an *Ordered Probit regression model* was viewed suitable and applied to this research study. Such a model is ‘an econometric model that can be used to deal with ordered categorical variables’ (Jones, 2007; p.22).

Table 6.1 ONS - Dependent Variables & Analysis Method			
Variable Description	Values	Variable Type> Analysis Method	Frequency
Frequency of internet use – last 3 months.	1 Less than once a month 2 At least once a month (but not every week) 3 At least once a week (but not every day) 4 Everyday, or almost everyday	Ordered/Categorical – Ordered Probit Regression	Year 2007 Year 2009 Year 2010

Further reasoning for using an ordered Probit model is that the OXiS dataset contains two dependent variables of interest – namely “Personal Use of Internet” and “How often use Internet to: social network site” (illustrated and explained in Table 6.2). These variables provide a platform to test the adoption of the internet and OSNs across Britain and how certain factors affect or influence the likelihood of adoption or frequency use. The dependent variable for internet use as shown in Table 6.2 is binary (i.e. takes on values zero: no or one: yes). This variable is also dichotomous. That is, a dichotomous variable is one that takes on one of only two possible values (Lewis-Beck et al, 2004). Due the dichotomous nature of this dependent variable (which is used as dependent variable in the model specifications) probit regression analysis was used. As mentioned earlier, probit was chosen due to it being ‘a technique used in regression analysis when the dependent variable is a dummy/dichotomous variable’ (Ruspini, 2002 p.117). Again, it can be seen as with the earlier dependent variable, “Frequency of internet use in the last three months” the variables “Personal Use of Internet” and “How often use Internet to: social network site” are categorical and ordered (e.g. a question asking: How often do you use the internet: social network site? takes on six ordered values); therefore ordered probit was used since it is the most appropriate regression method for analyzing OSN use in the OXiS dataset.

<b>Variable Description</b>	<b>Values</b>	<b>Variable Type &gt; Analysis Method</b>	<b>Frequency</b>
Personal Use of Internet	0 No 1 Yes	Dichotomous - Probit Regression Analysis	Year 2003 Year 2005 Year 2007 Year 2009
How often use Internet to: social network site	0 Never 1 Less than monthly 2 Monthly 3 Weekly 4 Daily 5 Several times a day	Ordered/Catagorical – Ordered Probit Regression	Year 2009

(Note: All the missing cases or cases with ‘peculiar’ data have been deleted resulting in a meaningful and pure sample of healthy sample sizes for each particular year). Variable specification for the following probit analysis can be found in appendix 6.1.

Conclusively, the aforementioned reasoning suggests the ordered probit and probit regression analysis methods are most appropriate given the data sets and nature of dependent variables available. The following sections discuss results of the ordered probit & probit regression analysis using the ONS and OXiS data. The findings will be concluded and discussed in light of existing literature and research findings (chapter 5) later within this chapter in section 6.7.

## 6.5 Evaluation Findings

The following sections provide and discuss the findings resulting from the analysis of the two chosen data sets and their associated dependent variables.

### ONS Findings: Internet Use Across Britain – An Ordered Probit Analysis

To understand the probability of using Internet based on demographics of age, gender, marital status, education, employment status, race and income, probit regression analysis was used. For this, analysis was completed using the three most recent waves of ONS data 2007, 2009, and 2010 that resulted in the following findings.

**Figure 6.1 -Ordered Probit Regression: ONS 2007 Wave**

Log likelihood = -470.18223	LR chi2(15) = 93.44
	Prob > chi2 = 0.0000
	Pseudo R2 = 0.0904

FREQ_INT	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
AGE2534	-.2066789	.2213026	-0.93	0.350	-.6404241	.2270663
AGE3549	-.487672	.2259584	-2.16	0.031	-.9305423	-.0448017
AGE5065	-.6189841	.2447408	-2.53	0.011	-1.098667	-.139301
<b>AGE66PLUS</b>	<b>-.9947883</b>	<b>.2954461</b>	<b>-3.37</b>	<b>0.001</b>	<b>-1.573852</b>	<b>-.4157247</b>
MALE	.1405369	.118885	1.18	0.237	-.0924735	.3735473
SINGLE	-.1737286	.1453712	-1.20	0.232	-.4586509	.1111937
DIV_WID	.0648029	.1492678	0.43	0.664	-.2277565	.3573623
O_LEVELS	-.0014016	.193301	-0.01	0.994	-.3802645	.3774613
A_LEVELS	.2040983	.2091183	0.98	0.329	-.205766	.6139626
HIEDUC	<b>.5940601</b>	<b>.1974138</b>	<b>3.01</b>	<b>0.003</b>	<b>.2071363</b>	<b>.980984</b>
OTHERQF	.7050513	.4195883	1.68	0.093	-.1173266	1.527429
MANAGER	.337409	.1923887	1.75	0.079	-.039666	.7144839
EMPLOYEE	.4861447	.1949192	2.49	0.013	.1041101	.8681793
WHITE	.2471993	.1835899	1.35	0.178	-.1126303	.6070289
<b>GROSSINC</b>	<b>.0368302</b>	<b>.0069059</b>	<b>5.33</b>	<b>0.000</b>	<b>.0232949</b>	<b>.0503656</b>
/cut1	-.9088193	.380553			-1.654689	-.1629492
/cut2	-.1089731	.3728654			-.8397759	.6218298
/cut3	.8179476	.3740891			.0847464	1.551149

n= 572

REF.CATEGORIES: - Age 16-24 -Female -Married -No Education -Self-Employed -Non-White  
(The same reference categories apply to the following ordered probit regressions)

From the ONS 2007 data wave at the stage of life when older adults are 66+, the probability of older adults using OSNs is significantly decreased (figure 6.1). Hence, the higher the education level of an individual, there is a significantly increased probability of using the Internet. Gross income was found to be a highly significant (<0.001) predictor of Internet use, where it was determined that the greater the gross income the greater the probability of using Internet.

**Figure 6.2 - Ordered Probit Regression: ONS 2009 Wave**

FREQ_INT	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
AGE2534	-.5558487	.144892	-3.84	0.000	-.8398319 -.2718655
AGE3549	-.7210251	.1455658	-4.95	0.000	-1.006329 -.4357214
<b>AGE5065</b>	<b>-.8458492</b>	<b>.1536573</b>	<b>-5.50</b>	<b>0.000</b>	<b>-1.147012</b> <b>-.5446865</b>
<b>AGE66PLUS</b>	<b>-1.139255</b>	<b>.1673239</b>	<b>-6.81</b>	<b>0.000</b>	<b>-1.467204</b> <b>-.8113064</b>
<b>MALE</b>	<b>.1336944</b>	<b>.0666367</b>	<b>2.01</b>	<b>0.045</b>	<b>.003089</b> <b>.2642999</b>
SINGLE	-.099931	.0827088	-1.21	0.227	-.2620373 .0621752
DIV WID	-.0622949	.0788892	-0.79	0.430	-.2169149 .0923251
O_LEVELS	.1219239	.1028395	1.19	0.236	-.0796379 .3234856
<b>A_LEVELS</b>	<b>.3541791</b>	<b>.1137966</b>	<b>3.11</b>	<b>0.002</b>	<b>.1311418</b> <b>.5772163</b>
<b>HIEDUC</b>	<b>.5269952</b>	<b>.1036741</b>	<b>5.08</b>	<b>0.000</b>	<b>.3237977</b> <b>.7301926</b>
OTHERQF	.203142	.1195301	1.70	0.089	-.0311326 .4374166
MANAGER	-.080571	.1012617	-0.80	0.426	-.2790402 .1178982
EMPLOYEE	-.0937847	.0966309	-0.97	0.332	-.2831777 .0956083
WHITE	.0583991	.1210234	0.48	0.629	-.1788024 .2956007
<b>GROSSINC</b>	<b>.018742</b>	<b>.0040726</b>	<b>4.60</b>	<b>0.000</b>	<b>.0107598</b> <b>.0267242</b>
/cut1	-2.096198	.2296441			-2.546292 -1.646104
/cut2	-1.531259	.2248462			-1.971949 -1.090568
/cut3	-.5934909	.2226875			-1.02995 -1.1570315

n=1841

As mentioned, datasets allow the formation of the development of preferences and attitudes to be developed, so an analysis of the same dataset wave using a much larger sample of  $n=1841$  from the 2009 wave was performed (figure 6.2). This resulted in confirming that the older adults aged 50+ have a highly significant probability of not being Internet users. From the overall sample, individuals educated up to A-level and above had an increased probability to be Internet users. Therefore, the greater an individual's gross income and education level are, the greater the probability of being an internet user.

**Figure 6.3 - Ordered Probit Regression: ONS 2010 Wave (Test 1)**

Log likelihood = -1601.7224		LR chi2(15) = 213.61	Prob > chi2 = 0.0000	Pseudo R2 = 0.0625	
FREQ_INT	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
AGE2534	.0111545	.1249872	0.09	0.929	-.233816 .256125
AGE3549	-.2429479	.1236769	-1.96	0.049	-.4853502 -.0005457
<b>AGE5065</b>	<b>-.4828643</b>	<b>.1301823</b>	<b>-3.71</b>	<b>0.000</b>	<b>-.7380169 -.2277118</b>
<b>AGE66PLUS</b>	<b>-.8479858</b>	<b>.144054</b>	<b>-5.89</b>	<b>0.000</b>	<b>-1.130326 -.5656452</b>
MALE	.0700678	.0606717	1.15	0.248	-.0488465 .1889822
SINGLE	-.1689281	.0772358	-2.19	0.029	-.3203075 -.0175487
DIV_WID	-.1123123	.0716266	-1.57	0.117	-.2526979 .0280733
O_LEVELS	.2031776	.0982086	2.07	0.039	.0106922 .395663
A_LEVELS	.2462527	.1067697	2.31	0.021	.0369879 .4555175
<b>HIEDUC</b>	<b>.449075</b>	<b>.0964227</b>	<b>4.66</b>	<b>0.000</b>	<b>.26009 .6380601</b>
OTHERQF	-.0463759	.106751	-0.43	0.664	-.255604 .1628522
MANAGER	-.2361265	.099926	-2.36	0.018	-.4319778 -.0402751
<b>EMPLOYEE</b>	<b>-.2725006</b>	<b>.0965385</b>	<b>-2.82</b>	<b>0.005</b>	<b>-.4617126 -.0832886</b>
WHITE	.0402705	.1098429	0.37	0.714	-.1750177 .2555587
<b>GROSSINC</b>	<b>.0184408</b>	<b>.0038034</b>	<b>4.85</b>	<b>0.000</b>	<b>.0109862 .0258954</b>
/cut1	-2.25466	.2147373			-2.675538 -1.833783
/cut2	-1.601962	.2065683			-2.006828 -1.197095
/cut3	-.6388444	.2035211			-1.037738 -.2399503

**n=2398**

An analysis of the ONS 2010 wave dataset found that the older adults aged 50+ was found to have a significantly lower probability of using the Internet (figure 6.3). As with the 2009 wave, the 2010 results showed that the higher the education level and the greater the gross income of an individual, the higher the probability there was of being an Internet user. In this case, the 2010 dataset was diverse to the 2009 results where employment status was found to be a significant predictor of internet use.

**Figure 6.4 - Ordered probit regression: ONS 2010 Wave (Test 2)**

Log likelihood = -1598.37		LR chi2(17) = 219.22	Prob > chi2 = 0.0000	Pseudo R2 = 0.0642	
FREQ_INT	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
AGE2534	.0232437	.1261199	0.18	0.854	-.2239468 .2704343
AGE3549	-.2205834	.1257419	-1.75	0.079	-.4670331 .0258663
<b>AGE5065</b>	<b>-.4588839</b>	<b>.1406957</b>	<b>-3.26</b>	<b>0.001</b>	<b>-.7346424 -.1831254</b>
<b>AGE66PLUS</b>	<b>-.8119149</b>	<b>.1572465</b>	<b>-5.16</b>	<b>0.000</b>	<b>-1.120112 -.5037175</b>
MALE	.0811289	.0610488	1.33	0.184	-.0385246 .2007825
SINGLE	-.170132	.0854408	-1.99	0.046	-.3375929 -.0026711
DIV_WID	-.1152276	.0785665	-1.47	0.142	-.2692151 .03876
O_LEVELS	.1875415	.0985281	1.90	0.057	-.00557 .380653
A_LEVELS	.22746	.1071484	2.12	0.034	.0174529 .4374671
<b>HIEDUC</b>	<b>.4260501</b>	<b>.0970454</b>	<b>4.39</b>	<b>0.000</b>	<b>.2358446 .6162557</b>
OTHERQF	-.0671711	.1070889	-0.63	0.530	-.2770615 .1427193
MANAGER	-.2323962	.1001103	-2.32	0.020	-.4286088 -.0361837
<b>EMPLOYEE</b>	<b>-.2706383</b>	<b>.0966943</b>	<b>-2.80</b>	<b>0.005</b>	<b>-.4601556 -.0811209</b>
WHITE	.0387593	.109946	0.35	0.724	-.1767309 .2542496
<b>GROSSINC</b>	<b>.0170806</b>	<b>.0038561</b>	<b>4.43</b>	<b>0.000</b>	<b>.0095228 .0246384</b>
HHSIZE	-.0104594	.0289927	-0.36	0.718	-.0672842 .0463653
<b>GOODHEALTH</b>	<b>.0746354</b>	<b>.0333861</b>	<b>2.24</b>	<b>0.025</b>	<b>.0091998 .140071</b>
/cut1	-1.993654	.2856015			-2.553423 -1.433885
/cut2	-1.339172	.2798168			-1.887603 -.7907409
/cut3	-.3737381	.2779996			-.9186074 .1711312

**n=2396**

To identify any further differences or similarities, the ONS 2010 data wave set was re-tested by including two new variables; namely Household Size and Health (figure 6.4). Good Health was found to increase the probability of using the internet on a daily basis. However, the Household Size factor does not appear to be significant, although a sizeable household decreases the likelihood of intense Internet usage.

Having analyzed the ONS data, the following section analyses the OXiS data in order to reexamine internet use and OSN use.

### **OXiS Findings: Predicting Internet Use Across Britain – A Probit Analysis**

The 2003 dataset wave observed that the probability of using the internet is significantly reduced if a participating individual is above the age of 50. This was similar to the results obtained in the ONS findings. Individuals of a retired or unemployed status were also found to be significantly less likely to use the internet. This suggests that monetary barriers are likely to exist when considering internet use due to the associated subscription costs. Educated individuals were found to have an increased probability to be internet users. Individuals of the ‘out of labor force’ status were also found to have a lower probability

of using the internet. As shown in figure 6.5 it was also learnt that those individuals educated to O-level standard were significantly more likely to use the internet.

**Figure 6.5 - OxIS 2003 Wave Probit Regression (Internet)**

Log likelihood = -960.02484	LR chi2(18) = 707.94	
	Prob > chi2 = 0.0000	
	Pseudo R2 = 0.2694	

INTERNET_USER	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
AGE1924	-.0737526	.1746311	-0.42	0.673	-.4160233 .2685181
AGE2534	-.1052871	.1597664	-0.66	0.510	-.4184235 .2078493
AGE3549	-.0256256	.1506663	-0.17	0.865	-.3209261 .2696748
<b>AGE5065  </b>	<b>-.4614373</b>	<b>.1580133</b>	<b>-2.92</b>	<b>0.003</b>	<b>-.7711378 -.1517369</b>
<b>AGE66PLUS  </b>	<b>-.6929723</b>	<b>.1992787</b>	<b>-3.48</b>	<b>0.001</b>	<b>-1.083551 -.3023932</b>
NORTH	.0858501	.0740306	1.16	0.246	-.0592472 .2309475
SCOTLAND	.0535096	.1062021	0.50	0.614	-.1546427 .2616619
WALES	-.1504872	.1415603	-1.06	0.288	-.4279402 .1269659
MALE	.1383878	.0718956	1.92	0.054	-.0025251 .2793007
PTEMPL	-.2439389	.1009391	-2.42	0.016	-.4417758 -.0461019
<b>UNEMPL  </b>	<b>-1.029856</b>	<b>.1341371</b>	<b>-7.68</b>	<b>0.000</b>	<b>-1.29276 -.7669521</b>
<b>STUDENT  </b>	<b>.8373252</b>	<b>.2223487</b>	<b>3.77</b>	<b>0.000</b>	<b>.4015297 1.273121</b>
<b>RETIRED  </b>	<b>-1.050207</b>	<b>.1316977</b>	<b>-7.97</b>	<b>0.000</b>	<b>-1.30833 -.7920847</b>
OLF	-.9020772	.1063991	-8.48	0.000	-1.110616 -.6935388
<b>OLEVELS  </b>	<b>.3155468</b>	<b>.0822976</b>	<b>3.83</b>	<b>0.000</b>	<b>.1542465 .4768471</b>
VOCQF	.1640776	.1090928	1.50	0.133	-.0497403 .3778955
<b>ALEVELS  </b>	<b>.9566648</b>	<b>.1318587</b>	<b>7.26</b>	<b>0.000</b>	<b>.6982265 1.215103</b>
<b>HIEDUC  </b>	<b>1.372404</b>	<b>.1498895</b>	<b>9.16</b>	<b>0.000</b>	<b>1.078626 1.666182</b>
_cons	.4332425	.167984	2.58	0.010	.1039999 .7624851

Dependent Variable: Internet user (Yes/No) n=1947  
Reference categories: (i) AGE14-18, (ii) SOUTH (the respondent resides in the South of England, (iii) FEMALE, (iv) FTEMPL (Full Time Employment) and (v) NOEDUC (No Formal Qualifications).

When analysing the 2005 dataset wave a new variable was inserted for analysis purposes: Marital Status. The results in this case revealed that those individuals who were divorced or widowed had a significantly lower probability of using the internet (figure 6.6). As with the 2003 sample, older adults of the 50 years and above age range were found to have a lower probability of using the Internet. Interestingly, participating individuals aged between the years of 19-34 were found to have a lower probability of using the internet. A possible explanation is that in 2005 broadband diffusion was still in its emerging stages, with costs and access to and availability of the infrastructure being barriers to overcome; therefore, younger adults were less likely to have easy access to the Internet and Internet enabled devices. The variable of education was again found to be a significant predictor of internet usage.

**Figure 6.6 - OxIS 2005 Wave Probit Regression (Internet)**

		LR chi2(19)	=	425.78	
		Prob > chi2	=	0.0000	
		Pseudo R2	=	0.1499	
Log likelihood = -1207.5761					
INTERNET_U~R	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
AGE1924	-.4902083	.1807026	-2.71	0.007	-.8443789 -.1360377
AGE2534	-.5400082	.185183	-2.92	0.004	-.9029603 -.1770561
AGE3549	-.3844741	.1859453	-2.07	0.039	-.7489202 -.020028
AGE5065	-.5508442	.1929741	-2.85	0.004	-.9290666 -.1726219
AGE66PLUS	-1.031722	.2235006	-4.62	0.000	-1.469775 -.5936688
NORTH	-.0062713	.0684518	-0.09	0.927	-.1404344 .1278917
SCOTLAND	.0229245	.0827413	0.28	0.782	-.1392453 .1850944
WALES	.1687836	.1556856	1.08	0.278	-.1363546 .4739217
MALE	.0614042	.068009	0.90	0.367	-.071891 .1946994
PTEMPL	-.1374161	.0912067	-1.51	0.132	-.316178 .0413458
UNEMPL	-.4966735	.1509708	-3.29	0.001	-.7925708 -.2007762
STUDENT	.5227926	.1703097	3.07	0.002	.1889918 .8565935
RETIRED	-.4325756	.1198542	-3.61	0.000	-.6674855 -.1976657
OLF	-.3857198	.0989332	-3.90	0.000	-.5796252 -.1918143
O_A_LEVELS~F	.6473505	.0788792	8.21	0.000	.4927502 .8019508
HIEDUC	1.234189	.1122269	11.00	0.000	1.014229 1.45415
OTHER	.6489902	.1708673	3.80	0.000	.3140963 .983884
SINGLE	-.5201928	.0877563	-5.93	0.000	-.6921921 -.3481936
DIV_WID	-.4174338	.0872477	-4.78	0.000	-.5884362 -.2464315
_cons	.5789862	.2084284	2.78	0.005	.1704741 .9874982

Dependent Variable: Internet user (Yes/No) n=2161  
Reference categories: (i) AGE14-18, (ii) SOUTH (the respondent resides in the South of England), (iii) FEMALE, (iv) FTEMPL (Full Time Employment), (v) NOEDUC (No Formal Qualifications) and (vi) MARRIED (if the respondent is married).

The probit model using the 2007 data wave was identical to the probit model that was run in 2005 (figure 6.7). The 2007 analysis learnt that the least number of significant predictors were evident. It was found that only those aged 66 years and above were the only age band to be significantly less likely to use the internet. Education, marital status and labour force status were again found to be significant predictors of internet usage. In 2007 participants in the out of labour forces or retired categories were found to have a significantly lower probability of using the internet.

**Figure 6.7 - OxIS 2007 Wave Probit Regression (Internet)**

INTERNET_U~R	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
AGE1924	-.1753646	.1822568	-0.96	0.336	-.5325814 .1818522
AGE2534	-.2572696	.1809805	-1.42	0.155	-.6119849 .0974457
AGE3549	-.1084774	.1787305	-0.61	0.544	-.4587827 .241828
AGE5065	-.4357045	.1834023	-2.38	0.018	-.7951664 -.0762426
<b>AGE66PLUS</b>	<b>-.7329252</b>	<b>.2003618</b>	<b>-3.66</b>	<b>0.000</b>	<b>-1.125627</b> <b>-.3402232</b>
NORTH	-.0412537	.0647505	-0.64	0.524	-.1681623 .0856549
SCOTLAND	.0487885	.1067524	0.46	0.648	-.1604424 .2580193
WALES	.0293644	.1347657	0.22	0.828	-.2347715 .2935004
MALE	-.0763506	.0651426	-1.17	0.241	-.2040278 .0513266
PTEMPL	-.101841	.0941525	-1.08	0.279	-.2863765 .0826945
UNEMPL	-.8646005	.1235383	-7.00	0.000	-1.106731 -.6224699
STUDENT	.4887224	.1634367	2.99	0.003	.1683923 .8090525
RETIRED	-.8275181	.1091001	-7.58	0.000	-1.04135 -.6136858
OLF	-.5360835	.1001823	-5.35	0.000	-.7324371 -.3397298
O_A_LEVELS~F	.3027914	.1447475	2.09	0.036	.0190915 .5864913
HIEDUC	.8995234	.1644647	5.47	0.000	.5771784 1.221868
OTHER	.4349018	.4083441	1.07	0.287	-.3654379 1.235241
SINGLE	-.39697	.0828139	-4.79	0.000	-.5592822 -.2346577
DIV_WID	-.4934876	.0824653	-5.98	0.000	-.6551167 -.3318585
_cons	.9301838	.2388385	3.89	0.000	.462069 1.398299

Log likelihood = -1199.7616

LR chi2(19) = 522.36  
 Prob > chi2 = 0.0000  
 Pseudo R2 = 0.1788

Dependent Variable: Internet user (Yes/No) n=2338  
 Reference categories: (i) AGE14-18, (ii) SOUTH (the respondent resides in the South of England, (iii) FEMALE, (iv) FTEMPL (Full Time Employment), (v) NOEDUC (No Formal Qualifications) and (vi) MARRIED (if the respondent is married).

To ensure that the results will be symmetrical or uniform, the probit model that was run for the 2005 and 2007 OXiS waves was again run using the 2009 data wave (figure 6.8). The 2009 analysis revealed that in addition to the previously found predictors, there was an additional predictor, that of race or ethnicity. It was found that those individuals who were of white racial origin, were significantly more likely to use the internet. With this result it must also be considered that the proportion of white individuals residing in Britain far outweighs any other race. Computer outputs for OXiS regression models can be found below.

**Figure 6.8 - OxIS 2009 Wave Probit Regression (Internet)**

Log likelihood = -858.34988	LR chi2(18) = 755.11
	Prob > chi2 = 0.0000
	Pseudo R2 = 0.3055

INTERNET_U~R	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
AGE1924	.2204066	.2714666	0.81	0.417	-.3116582 .7524713
AGE2534	.3015848	.2667769	1.13	0.258	-.2212883 .8244579
AGE3549	.136117	.2578508	0.53	0.598	-.3692613 .6414953
AGE5065	<b>-.3470392</b>	<b>.2643127</b>	<b>-1.31</b>	<b>0.189</b>	<b>-.8650825 .1710041</b>
AGE66PLUS	<b>-.6741248</b>	<b>.2852077</b>	<b>-2.36</b>	<b>0.018</b>	<b>-1.233122 -.1151279</b>
NORTH	-.1400131	.0753602	-1.86	0.063	-.2877164 .0076902
SCOTLAND	-.2077065	.1251649	-1.66	0.097	-.4530252 .0376121
WALES	-.0350941	.1761168	-0.20	0.842	-.3802766 .3100884
MALE	.0861518	.0762507	1.13	0.259	-.0632969 .2356005
PTEMPL	-.0624522	.1169733	-0.53	0.593	-.2917156 .1668111
UNEMPL	<b>-.6789615</b>	<b>.1325675</b>	<b>-5.12</b>	<b>0.000</b>	<b>-.9387891 -.4191339</b>
RETIRED	<b>-.7093582</b>	<b>.1275011</b>	<b>-5.56</b>	<b>0.000</b>	<b>-.9592557 -.4594607</b>
OLF	<b>-.5279643</b>	<b>.1177655</b>	<b>-4.48</b>	<b>0.000</b>	<b>-.7587804 -.2971482</b>
O_A_LEVELS~F	<b>.4776461</b>	<b>.0820809</b>	<b>5.82</b>	<b>0.000</b>	<b>.3167705 .6385217</b>
HIEDUC	<b>1.235921</b>	<b>.1067158</b>	<b>11.58</b>	<b>0.000</b>	<b>1.026762 1.44508</b>
SINGLE	<b>-.441917</b>	<b>.1022095</b>	<b>-4.32</b>	<b>0.000</b>	<b>-.6422439 -.24159</b>
DIV_WID	<b>-.6192084</b>	<b>.0883686</b>	<b>-7.01</b>	<b>0.000</b>	<b>-.7924076 -.4460092</b>
WHITE	<b>.35254</b>	<b>.1537555</b>	<b>2.29</b>	<b>0.022</b>	<b>.0511847 .6538953</b>
_cons	.3742491	.3078552	1.22	0.224	-.229136 .9776343

Dependent Variable: Internet user (Yes/No) n=1879  
 Reference categories: (i) AGE14-18, (ii) SOUTH (the respondent resides in the South of England, (iii) FEMALE, (iv) FTEMPL (Full Time Employment), (v) NOEDUC (No Formal Qualifications), (vi) MARRIED (if the respondent is married) and (vii) NON-WHITE

**Figure 6.9 - OxIS 2009 Wave - Ordered Probit (OSN)**

Log likelihood = -1372.896	LR chi2(21) = 356.84
	Prob > chi2 = 0.0000
	Pseudo R2 = 0.1150

SN_FREQ	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
AGE1924	-.0756029	.1715287	-0.44	0.659	-.4117929 .2605871
AGE2534	-.0826402	.1827756	-0.45	0.651	-.4408737 .2755934
AGE3549	-.4136945	.1838298	-2.25	0.024	-.7739944 -.0533946
AGE5065	<b>-1.139553</b>	<b>.210341</b>	<b>-5.42</b>	<b>0.000</b>	<b>-1.551814 -.7272927</b>
AGE66PLUS	<b>-1.387978</b>	<b>.2825917</b>	<b>-4.91</b>	<b>0.000</b>	<b>-1.941848 -.8341087</b>
NORTH	-.01151	.0797474	-0.14	0.885	-.167812 .1447921
SCOTLAND	<b>-.4213437</b>	<b>.1275904</b>	<b>-3.30</b>	<b>0.001</b>	<b>-.6714164 -.1712711</b>
WALES	-.1011351	.2032811	-0.50	0.619	-.4995587 .2972885
MALE	-.1855358	.0794795	-2.33	0.020	-.3413127 -.0297588
PTEMPL	.0079366	.1097976	0.07	0.942	-.2072628 .2231359
UNEMPL	.1227957	.1544287	0.80	0.427	-.179879 .4254703
STUDENT	.2039963	.1540462	1.32	0.185	-.0979287 .5059214
RETIRED	<b>.1859025</b>	<b>.2092589</b>	<b>0.89</b>	<b>0.374</b>	<b>-.2242373 .5960423</b>
OLF	-.0795165	.1307055	-0.61	0.543	-.3356946 .1766616
O_A_LEVELS~F	.1149418	.1203512	0.96	0.340	-.1209423 .3508258
HIEDUC	.119679	.1301723	0.92	0.358	-.135454 .3748119
SINGLE	<b>.2350369</b>	<b>.0968827</b>	<b>2.43</b>	<b>0.015</b>	<b>.0451503 .4249234</b>
DIV_WID	.0688494	.1318487	0.52	0.602	-.1895694 .3272681
WHITE	.2601381	.138913	1.87	0.061	-.0121263 .5324025
SN_MEET	<b>.7784716</b>	<b>.0835686</b>	<b>9.32</b>	<b>0.000</b>	<b>.6146801 .942263</b>
SN_DISTR	.02827	.0431632	0.65	0.512	-.0563284 .1128683

Dependent Variable: How often do you use the internet to use social networking site? 0 -Never 1- Less than monthly 2- Monthly 3- Weekly 4- Daily 5 - Several times a day n=1013

### **OXiS Findings: Predicting OSN Use Across Britain – An Ordered Probit Analysis**

As OSNs are the main application of interest to this research, the OXiS datasets were further analysed to predict OSN adoption. This was due to these datasets including a dependent variable that allowed for predictive analysis of demographics as an explanatory variable of OSN use.

Analysis of the OxIS 2009 data (figure 6.9) wave confirmed that the UK's older population of 50 years and above had a significantly decreased probability of using OSNs. Individuals randomly selected from Scotland were also found to have a significantly decreased probability of using OSNs. This finding suggests that OSN rejection, adoption attitudes and decision-making may be region specific; thus, environmental and cultural factors should be explored in future OSN adoption research. With regards to marital status, participating individuals who were of 'single' status were found to have a significantly higher probability of being an OSN user. This is likely to be the result of OSNs serving as effective online platforms for match making and meeting new people. Also normative influence (peer/co-worker/superior) may be affecting those currently in a relationship or married and OSN use; thereby preventing OSN adoption and use for these individuals. Retired participants were observed to be significantly less probable to use OSNs. Race (white) was also included in this analysis, but no significant effect was observed.

The regression model was re-run including two available survey items pertinent to OSN use. These were: SN\_MEET= Met someone through: Social network sites (Yes/No) SN\_DISTR= How distracting are: Social networking applications (Facebook, Bebo, LinkedIn)? For this, the answers were of the following scale and once again, categorical and ordered: 1. Not at all distracting; 2. Not distracting; 3. Distracting; 4 Very distracting.

The results showed that if you meet someone through OSNs, then you have a very high probability of using the OSN. This finding suggests that those OSN users who have met someone using OSNs continue to communicate using OSNs.

The regression model was re-run including survey items that can be interpreted as the construct Technology F.Cs in the form of household technologies facilitating internet access and use (figure 6.10). INTACC\_TEL: Household access to Internet via: Telephone line INTACC\_CABLETV: Household access to Internet via: Cable TV INTACC\_COMPWIFI: Household access to Internet via: Wireless INTACC\_DTV: Household access to Internet via: Digital TV INTACC\_MOBPPDA : Household access to Internet via: Handheld device.

**Figure 6.10 - OxIS 2009 Wave - Ordered Probit (OSN FC's)**

SN_FREQ	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
AGE1924	-.0846576	.1867735	-0.45	0.650	-.4507268 .2814117
AGE2534	.0239375	.2009273	0.12	0.905	-.3698727 .4177477
AGE3549	-.2797198	.2013529	-1.39	0.165	-.6743642 .1149246
<b>AGE5065</b>	<b>-.9909398</b>	<b>.2279794</b>	<b>-4.35</b>	<b>0.000</b>	<b>-1.437771</b> <b>-.5441083</b>
<b>AGE66PLUS</b>	<b>-1.209324</b>	<b>.3136281</b>	<b>-3.86</b>	<b>0.000</b>	<b>-1.824024</b> <b>-.5946241</b>
NORTH	-.1466131	.0901062	-1.63	0.104	-.323218 .0299919
SCOTLAND	-.4647455	.1425249	-3.26	0.001	-.7440893 -.1854018
WALES	-.1379717	.2309663	-0.60	0.550	-.5906573 .3147139
MALE	-.2165575	.0864522	-2.50	0.012	-.3860007 -.0471144
PTEMPL	-.0153817	.118097	-0.13	0.896	-.2468476 .2160843
UNEMPL	.1405475	.1814422	0.77	0.439	-.2150726 .4961677
STUDENT	.2305551	.1699031	1.36	0.175	-.102449 .5635591
RETIRED	.211159	.229459	0.92	0.357	-.2385723 .6608904
OLF	.0475006	.1459361	0.33	0.745	-.238529 .3335301
O_A_LEVELS~F	.2458586	.1380658	1.78	0.075	-.0247454 .5164625
HIEDUC	.2371276	.1479353	1.60	0.109	-.0528202 .5270755
<b>SINGLE</b>	<b>.3103155</b>	<b>.1044577</b>	<b>2.97</b>	<b>0.003</b>	<b>.1055822</b> <b>.5150488</b>
DIV_WID	.0446509	.1454482	0.31	0.759	-.2404224 .3297241
WHITE	.2895814	.1548431	1.87	0.061	-.0139055 .5930684
<b>SN_MEET</b>	<b>.7997382</b>	<b>.0902881</b>	<b>8.86</b>	<b>0.000</b>	<b>.6227768</b> <b>.9766996</b>
SN_DISTR	.0365286	.0468905	0.78	0.436	-.0553752 .1284324
INTACC_TEL	-.0016383	.0978678	-0.02	0.987	-.1934557 .1901791
<b>INTACC_CAB~V</b>	<b>.2140624</b>	<b>.1059005</b>	<b>2.02</b>	<b>0.043</b>	<b>.0065011</b> <b>.4216237</b>
<b>INTACC_COM~I</b>	<b>.3377972</b>	<b>.0882882</b>	<b>3.83</b>	<b>0.000</b>	<b>.1647555</b> <b>.5108388</b>
INTACC_DTV	.0433476	.1078654	0.40	0.688	-.1680647 .25476
<b>INTACC_MOB~A</b>	<b>.253399</b>	<b>.0940929</b>	<b>2.69</b>	<b>0.007</b>	<b>.0689803</b> <b>.4378178</b>

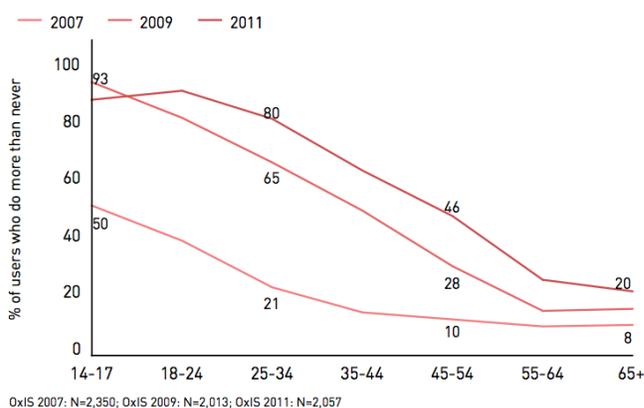
n-892

The findings revealed that those individuals who have household internet access via cable TV and handheld internet access are likely to use OSNs. However, it was found that if internet access is provided through Wireless connectivity than there is likely to be a highly significant probability of using OSNs. These findings confirm Technology F.C is a significant construct in the household adoption of OSNs, as found in the final findings.

### OSN Usage: A Longitudinal view

A benefit of datasets is that they can provide a holistic or longitudinal view of a subject of interest; in this case OSN use. For this purpose, all three waves of OXiS data were pursued and figure 6.2 illustrates OSN use from the three waves of OXiS (2007, 2009 & 2011). Further explanations reveal that dramatic growth in OSN use can be observed from 2007 to 2009, where use increased among the young by almost 50 percentage points. OSN use is also most prevalent within the young, and in 2011 it seems to have peaked to a plateau at around 90% within individuals aged 24 or less. (Dutton & Blank, 2011). The younger population groups are not the primary source of growth from 2009-2011. In this case, the older age groups (from age 25 to 65) are approximately 10 percentage points higher in 2011 than in 2009. Since these users are the bulk of the employed, growth in these ages is consistent with most of the rise in social

networking taking place among employed people (Dutton & Blank, 2011). However, it can be noted that use of social networking within the older age groups, aged 65 years and above is quite low, at around 20%. Further trends to be noted are that although OSN use within older age groups has doubled since 2007, it has grown from a very small base (Dutton & Blank, 2011). This suggests that on a nationally representative level when compared to the younger population, the older population in the UK is still not taking part in the uptake of OSNs and continues to demonstrate reluctance and diversity toward adopting and using OSNs.



**Figure 6.11 Use of Social Networking By Age – 2011 (Dutton & Blank, 2011 p.36)**

## 6.6 Final Hypotheses Testing

In chapter 5, the final phase, there was completion of an empirical analysis of the sample population collated from the primary data of 1080 older individuals aged fifty and above. This chapter also included hypotheses testing using SEM - MOSN constructs, which were modelled as explanatory variables of the dependent variable BI.

The structural model produced from the entire dataset revealed eight hypotheses to be supported by the conceptual theory of MOSN. The final phase findings supported or unsupported the following hypothesis.

Initially, hypothesis one was supported. This hypothesis suggested that Hedonic Outcomes (fun and enjoyment) is a motivational factor for older individuals in the OSN adoption decision process. Hypothesis three was also supported; thereby confirming that older adults are more inclined to adopt OSNs due to OSN use providing additional benefits to internet use. Another hypothesis, the fourth one was supported that revealed that an increase in number of friends, a greater level of respect and an improvement of personal popularity are motivational perceptions of OSN use by the older population. Hypothesis five aimed to determine the influence of privacy risk in the OSN adoption decision of older adults. Loss of control of one's personal information, personal information being used without permission

and/or criminals using one's personal information were therefore found to cause significant hesitation and abstinence to use and adoption of OSNs by older adults. Hypothesis nine predicted that those older adults who have a reliable internet connection and internet able device (technologies required to facilitate OSN use) will have a higher probability of using OSNs, this was supported by the empirical data.

Two further hypotheses were tested in the final phase. Hypothesis eleven predicted a positive significant relationship between an older adult's intention to adopt and use OSNs (if it exists) and their actual behavior (actually adopting and using OSNs). This hypothesis was supported; hence demonstrating that the probability that an older adult's intention to use OSNs is significantly likely to lead to actual adoption use. These findings suggest that in order to drive OSN use in the older population, focus must be placed on creating intention to use OSNs within the older adult population. This hypothesis therefore supported the findings of Kijisanayotin et al (2009) who also found a significant relationship with behavioral Intention and Actual Use.

Hypothesis eleven predicted that actual behavior would have a significant positive effect on continuance intention. This was supported within the final phase where it was revealed that those who used OSNs at the time of the survey are also significantly likely to continue using them in the future. This is considered to be an important point to determine as 'long-term viability of an IS and its eventual success depend on its *continued* use rather than *first-time* use' (Bhattacharjee, 2001 p351-352).

### 6.6.1 Evaluation Hypothesis Testing

As datasets contain several diverse questions, not all the hypothesis of this research could be verified; thereby not being able to confirm and test MOSN constructs. However, from the datasets, it was possible to test two hypotheses:

#### **Hypothesis 4 (Supported\*)**

Hypothesis four predicated that **Social outcomes will have a positive significant influence on an older adult's behavioural intention to adopt and use OSNs**. OXiS contained a variable SN-MEET, which asked participants if they had met someone through OSNs. This was based on the assumption that meeting someone through an OSN is a social outcome of OSN use. It was viewed that this variable is, to an extent, symbolic of the meaning of the construct SO. This variable was found to have a significant positive effect on OSN use; thereby supporting hypothesis four at a nationally represented level.

### Hypothesis 9 (Supported\*)

Hypothesis nine predicted that **Technology F.Cs will have a significant positive influence on an older adult's behavioral intention to adopt and use OSNs.** The technologies required to facilitate OSN use in the household is viewed possible due to cable TV and handheld internet enabled devices. It was found that older adults are likely to use OSNs and the results were found to provide a significantly positive effect on OSN use. Thus on a nationally represented level hypothesis nine was supported by the evaluation phase of research.

Hypotheses	Evaluation
HO → <sup>+</sup> BI = H1	*N.A
UO → <sup>+</sup> BI = H2	*N.A
RA → <sup>+</sup> BI = H3	*N.A
SO → <sup>+</sup> BI = H4	Supported
PR → <sup>-</sup> BI = H5	*N.A
PI → <sup>+</sup> BI = H6	*N.A
SI → <sup>-</sup> BI = H7	*N.A
RK → <sup>-</sup> BI = H8	*N.A
TFC → <sup>+</sup> BI = H9	Supported
RFC → <sup>+</sup> BI = H10	*N.A
BI → <sup>+</sup> AB = H11	*N.A
AB → <sup>+</sup> CI = H12	*N.A

\* N.A = Variables not available to test hypotheses

\*NOTE: These aforementioned hypothesis were originally and theoretically formed to predict the behaviour of older individuals and their intention to accept and use OSNs. The evaluation hypothesis results are representative of individuals aged nineteen and above; hence predicting actual OSN use and *not* intention.

### 6.6.2 Evaluation Discussion

The purpose of the summative research evaluation was to provide support, verification and validation for the outcomes and findings of this thesis. This was possible using the information drawn from the secondary analysis of nationally represented datasets. Having analyzed OSN and internet use using the primary data collected within the final and pilot phase, the NRDs were used to obtain findings pertinent to this research and are representative of the British nation. By correlating the evaluation findings with those resulting from the primary research undertaken in chapters 4 and 5 and the reviewed literature, a confirmation of findings emerged in addition to entirely new findings. These outcomes are now discussed.

From this evaluation phase, age was found to be a significant negative predictor of internet use. Therefore the older an individual is, the lower the probability of using the internet. This supports the research problem that motivated this research and was confirmed from the datasets analysis in the evaluation phase. This result also confirmed the findings of Venkatesh et al (2003) & Morris Venkatesh (2000) who found that age is a significant predictor of technology use. Chang (2003) found evidence that marital status influences the adoption of Internet banking, whilst, Kolodinsky et al (2004) found marital status to be associated with the adoption of e-banking technologies. In this research it was also confirmed from the datasets that an individual's marital status is a significant positive effect on OSN use. This was confirmed by OXiS 2009 analysis. This evaluation also contributes evidence that marital status do significantly influence the technology adoption decision process.

Another revelation in this evaluation phase is that in the OXiS 2009 wave a finding suggested that the higher the education level an individual has, the greater the probability of using the Internet. This result supported the findings of Teo et al (1999) who found that education levels appeared to negatively affect daily Internet usage, but positively affected the diversity of Internet usage. Facilitating conditions within the household such as internet access and internet capable devices was also found to have a significant positive effect on OSN use. This was confirmed by the OXiS 2009 analysis. Therefore, the findings of this evaluation align with the work of Nagle & Schmidt (2012) who found that facilitating conditions are significant predictors of computer use and intention within the older population.

Due to the age factor and the older population being of utmost interest to this research study, the health conditions of individuals was also tested as a demographic predictor of OSN use. For participants of the age 71 years and above,  $n=328$ , health was found to be a significant negative predictor. In terms of Internet adoption for participants' aged 61-70 ( $n=384$ ) health was also found to be a significant negative predictor. Within the evaluation analysis based on the NRDs it was revealed that good health increases the probability of using the Internet on a daily basis. Primary findings from the pilot phase of analysis, when examining all the ages found age groups with participants of 51 years and above had significant negative effects on OSN use and facilitating conditions to have a positive significant effect on OSN use. These findings were all confirmed within the evaluation phase using NRDs.

The evaluation also provided confirmation of the pilot findings where age, education, facilitating conditions, employment status, out of labour force status were found to be predictors of OSN use.

### **6.6.3 Summary of Evaluating Datasets**

Conclusively, the purpose of this evaluation phase was to provide evidence to support the outcomes (findings) of this thesis. NRDs unarguably representative of the British nation were identified and a small

number of variables within each NRD were used to model Internet and OSN adoption. As a result a number of primary research findings were supported using this externally sourced national perspective. Age, marital status, education level, health were found to be predictors of Internet usage across Britain. The area that an individual resides within was found to affect OSN usage, as Scottish residents were found to significantly be less likely to use OSNs. Marital status was also found to be a predictor of OSN use with single individuals more likely to use OSNs. Facilitating conditions within the household were found to be predictors of OSN use. As those individuals who have household Internet access via cable TV, wireless connectivity, and handheld internet access are significantly more likely to use OSNs. These findings will be discussed in light of primary findings and the literature review conducted in chapter 2 later within this chapter.

Having evaluated and verified that the conceptual framework can be applied across the country, the final phase of this research involved determining the similarities and differences to other research studies that this research project has. This is provided in the next section of the discussion.

## **6.7 Discussion**

The intention of this research was to identify and explain factors influencing older adults' adoption and use of OSNs. The exploratory, pilot and final phases of research yielded several important, interesting and valuable insights. These insights are discussed and synthesized in light of the existing research and literature that was previously reviewed and consulted. By doing so, this research also demonstrates the gaps of research that it is intending to overcome.

### **6.7.1 Older Adults**

The research within this thesis was 'older adult centric'. Thorough literature investigations were made towards understanding the factors that influence older adults' technology use and behavior in terms of social media platforms in the form of OSNs. Older adults were argued to be an important demographic group to examine due to a significant proportion of adults aged 50+ in the UK arising in the UK due to advances in medicine and the quality of life. These advances have led to an ageing UK population, and with an innovation as defined by Rogers (1983) being a product or idea, the ability for the internet and associated technologies is viewed to be pertinent for the current lifestyles that individuals pursue. By adopting this innovation, older adults will be able to assist and benefit themselves by becoming independent and able to independently procure required and important information. Particularly, information to procure health related information is seen as important. Currently, OSNs that are enabled by the internet are emerging as an e-patient tool to assist older adults' patient care (Thackeray et al, 2013).

To position the research contributions of this research study, the earlier literature review of older adults and technology adoption and use was employed to inform and identify similarities or differences to other research studies. Lam & Lee (2006) found internet self-efficacy was significantly related to usage intention, however research findings did not align as requisite knowledge (OSN self-efficacy) had no significant effect on intention. Hill et al, (2008) found that older adults' Internet use was limited to less sophisticated purposes such as e-mail and information retrieval, but sometimes incorporated more sophisticated uses such as online shopping. Internet usage findings confirm this as a majority of older participants were using the Internet for the same purposes.

Existing work also addressed older adults' adoption and use of devices that deliver Internet use such as computers and PCs (Carpenter & Buday, 2007; Nagle & Schmidt, 2012; Slegers et al, 2012). Carpenter & Buday (2007) showed that barriers to more frequent use included cost, diverse to final findings which found considerations of resources; time and money to have not significant impact on older adults OSN decision making. Nagle & Schmidt (2012) found facilitating conditions and social influence to significantly correlate with computer intention and computer use. These results are supported by primary research findings as constructs; Technology F.C and Social Outcomes were found to significantly correlate with OSN intention and use. Slegers et al (2012) found in younger adults education was a predictor of computer use. Within the pilot phase of research age education was not found to predict OSN use in younger participants, however education was a predictor of OSN use among the older participants.

More closely associated with the aims of this research were previous studies that investigated OSN use and adoption by older adults (Stellefson et al 2013; Thackeray et al, 2013; Chakraborty et al, 2013; Braun, 2013). Thackeray et al (2013) and Stellefson et al (2013) both highlighted the importance and potential OSNs have for older adults in terms of aiding health related information acquisition. All OSN adopters (n=519) within the final phase were asked if they had used OSNs for health related purposes: Eighteen participants between the ages of 50-75 cited that they use OSNs for health related purposes. This suggests that in the UK OSN use for health related issues is emerging but the uptake is still marginal. Chakraborty et al (2013) investigated peer- influence on privacy-preservation practices. Although no direct relationship was examined in this research. Peer-influence was found to be significant motivation for older adults to use OSNs and privacy risk was found to deter OSN use in the older population. Braun (2013) investigated predictors of older adults OSN use, it was found that frequency of internet use was a predictor of OSN use. The final primary findings confirm and support this as it was found that the greater the intensity of internet use the greater the probability of being an OSN user.

This array of previously mentioned articles portrays the image that the research arena of OSNs and older adults has been well investigated; however this is not the case when examined more closely as many

research gaps still exist. Existing research in the field utilizes 'lean' samples not representative of any such area and applied theoretical frameworks such as TAM e.g. Braun (2013) & Wu et al (2008).

The reviewed literature also revealed that older adults research is very much concentrated upon understanding computer adoption and use e.g. Slegers et al (2012), Lee et al (2011), Wagner et al (2010), Carpenter & Buday (2007). Existing research on older adults examining internet acceptance and use was also rife e.g. Cotton et al (2012), Pan & Jordan-Marsh (2010), Hill et al, 2008 and Lam & Lee, (2006).

In terms of existing literature examining social media, particularly OSNs and with them having a massive impact on the internet and society in general, few examples were found. This led this research project researcher to identify a contributing gap of missing knowledge in the field. Therefore, this research will make a contribution by using original empirical findings that will provide an understanding the factors influencing older adults' decision making with regards to OSN adoption and use. This has also led to, as we identify, the development of a valid and generalizable framework that can be used to identify, understand and explain the adoption, use and diffusion of OSNs.

When attempting to place this research in terms of the diffusion theory Brown et al (2007) revealed the importance of W.O.M for OSN diffusion. This research also investigated the use of word of mouth and the impact of W.O.M upon the diffusion of OSNs. Consistent with Brown et al (2007) messages conveyed through W.O.M were found to positively influence older adults intention to use OSNs. Choudhury et al (2010) examined information diffusion in social media, however the samples used would not allow extrapolation of results to any societal group or geographic area, but displayed the use of the diffusion theory when examining the topic of social media. These few studies illustrate that there is an existing gap for examining the adoption, use and diffusion of OSNs. From this research, the gap has been reduced by showing that communication channels also specified in Rogers (1983) DoI theory are applicable to modern times research.

In terms of OSN usage behaviour studies have been conducted on this issue, conducted with any rigour available work addresses the younger and student populations e.g. Kalpidou et al (2011), Tonsun (2012), Bicen & Cavus (2012) and Pempek et al (2009). Therefore any understanding of how often, for how long, on which device(s), which location(s) and activities undertaken when older adults use OSNs remains a mildly ventured research terrain. This research project presented usage behavior on three counts; younger population, older population (small sample) and older population (large sample), strongly supporting the contribution of research presented in this research.

The research context of this research project is UK. However, this project has been novel in two ways. First, a small area of England was used to show that the theoretically formed conceptual framework can

be applied and to a feasible extent generalized to the UK. The second novelty arises in the use of datasets drawn from the UK population to empirically test the theoretically formed framework and achieve OSN adoption, use and diffusion findings from a *UK perspective*. The claims of novelty have arisen due to the following articles investigating OSNs in term of adoption and use from national regions around the globe, but not from a UK perspective:

In Germany, Maier et al (2011) sought to understand the theoretical factors that can predict OSN use in older adults. Supported by primary, final phase findings normative influence had a significant positive effect on intention. The United States of America and South Korea were examined in terms of motivational factors for OSN use. It was found that seeking friends, social support, entertainment, information, and convenience – are similar motivational factors between the two countries (Kim et al, 2011). This research suggested that Social support in the form of the construct Social Outcomes (SO) was a motivation for using OSNs in the final phase of research. Moradabadi et al (2012) examined Iranian individual's motivation for using OSNs where their findings showed that motivational factors were, information sharing, freedom of communication, free flow of information, control of information, principles of equality and required for information and entertainment. Entertaining in the form of Hedonic Outcomes (HO) was found to be a motivational factor toward OSN use within the final phase of this research. Investigating Eastern Mediterranean's motivations for using Facebook, Dogruer et al (2011) found that participants did not use Facebook to check photos/videos, to add new photos, or to belong to a group. This is contradictory to this research's final primary findings as 34% added new photos 55% viewed photos and 17% used OSNs to form/belong to a group. However, similarly only 6% of participants viewed photos. Examining privacy concerns towards OSN adoption and use in the Malaysian population, Mohamed & Ahmad (2012) findings suggested that OSN users' perception of negative consequences of threats affects their information privacy concerns. Supporting these findings the final phase, primary findings showed that OSN users perception of privacy risk was found to have a significant negative effect. When understanding the OSN adoption behaviour of Australian adults, Ryan & Xenos (2011) found that OSN users tend to be more socially lonely than the non-users. Social Outcomes pertaining to increased popularity and improved social were found to be a motivational reason to use OSNs within this research study's final primary findings. The interrelation of these findings suggest that individuals using OSNs due to social loneliness', do so with the perception that OSN use may improve their social circumstances. Investigating OSN adoption in China, Chang & Zhu (2011) found subjective normative influences to have a positive effect on OSN adoption intention and entertainment was found to have a significant positive effect on attitude. This research's primary data from the final phase also found normative influences (friends, family & co-workers) to have a significant positive effect on intention thus

supporting findings. Entertainment (hedonic outcomes) was also found to significant positive effect however, this effect was found predict intention *not* attitude.

What is also learnt from these studies is that studies of the UK adoption, use and diffusion in terms of OSNs are rare; thereby proffering a new aspect to the research area of the adoption, use and diffusion of OSNs. However, it must be acknowledged that research into OSNs usage, from the representation of Britain does exist, which has been possible due to the OXiS data (Dutton & Blank, 2011). The difference in the OXiS research and this research project is that the datasets are analysed using diverse statistical measures. This research has provided a novelty by associating theory with practice.

### **6.7.2 The Digital Divide**

When introducing this research project positioning of this research was also made in terms of the digital divide. Issues of the digital divide generate great interest for academic discussion, research and policy-making (Leigh, 2011). In the context of this research - great interest is generated as new technologies such as OSNs could contribute to social digital exclusion for those who do not take part in OSN use (Maier et al, 2011). As older adults are not taking part in OSN use, the issue of older adults and OSN adoption and use has therefore arose within the digital divide arena.

The first study focused on USA noting that a class-based digital divide exists in terms of OSN adoption (Schredie, 2011). The second study from the USA found a digital divide was prevalent between instructors and students in terms of OSN use (Vie, 2008). It must also be noted that rare studies on the digital divide in UK arose, which once again indicates a novel aspect and a contribution that this research project will make.

Hwang (2006) stated that the digital divide generally refers to ‘uneven diffusion’ between different socio-economic levels in terms of technology use. This is pertinent to the investigation undertaken in this thesis, as demonstrated in chapter one there is unarguably uneven diffusion of OSN use in the UK and therefore can be interpreted as a possible digital divide.

Researching the digital divide phenomena further it was found that one significant component of the digital divide is age (Klotz, 2004). Consequently this research aimed to examine the age-related notion associated with the digital divide also described as the ‘digital natives’ versus ‘digital immigrants’ phenomenon (Sofka et al, 2012). The rapid diffusion and adoption of OSNs has impacted the means by which so many individuals communicate, in most cases younger individuals. Chadwick-Dias et al (2007) suggested that the boom of social media could potentially aid in reducing the digital divide between young and old. The findings of this research support this suggestion since the findings of the evaluation phase clearly demonstrate a massive age related divide in OSN use between young and old. Thus,

increasing older adults use OSNs is likely to bridge the divide in the diverse methods of Internet communication that have been identified between young and old. Schradie (2011) concluded that the growth social media could contribute to digital exclusion. These findings suggest the potential for OSN adoption and use to influence the age related digital divide. Importantly Maier et al (2011) suggested that OSN use by older adults could reduce the digital divide. In response to this notion this thesis confirmed that there is currently massive diversity in OSN use between young and older in the UK. The pilot phase showed that only 35% of older participants using OSNs opposed to 82% of younger participants.

Another significant component of the digital divide is that of 'technology access'. 'A digital divide is marked not only by physical access to computers and connectivity but also by access to the additional resources that allow people to use a technology well' (Warschauer, 2003 p.6). Additional resources that allow an older adult to use OSNs include physical resources such as Internet capable devices (PC, laptop, smartphone or tablet), availability of internet service, and access to these available internet services.

Physical access to these resources was measured through the construct Technology F.Cs. It was revealed that 96.6% of older adults agreed they had physical access to the Internet whenever they would like to. 97.1% of older adults agreed to have to Internet capable device (PC, laptop, smartphone or tablet) whenever they would like to. 90.1% of older adults agreed to have a household internet connection which is considered to be fast and reliable enough to use OSNs. When testing the statistical significance of the construct technology F.C in the OSN adoption decision-making process, it was found that an older adults probability of using OSNs is significantly increased if technology F.Cs are available. These findings appear to suggest that physical access to internet capable devices and additional resources such as internet service are considerations when older adults evaluate if they are pursue or engage in OSN use. However with such a large proportion of the sample agreeing to have access only 48% had adopted OSNs suggesting that in the UK a technology access digital divide does not exist, instead older adults are *choosing* and are not *unable* to use OSNs for other reasons.

What could be determined within the pilot phase of primary empirical research is that the factors influencing OSN adoption impact both sides of the 'OSN age divide'; both younger and older populations. Factors significantly influencing the younger participants were found to be social motivation, influence of peers, access to internet devices, fun and enjoyment and OSNs ability to support work related activities. Comparatively, factors motivating the older participants to use OSNs were enjoyment and entertainment and the OSNs ability to support work related activities. Knowledge on how to use OSNs was found to be an impediment during the pilot phase of this research. However this suggestion was quashed by the final phase of research that utilized a larger sample population. The findings showed the both sides of the divide use OSNs for enjoyment, entertaining, peer- influence and social motivations and

work. Where differences emerged between younger and older became apparent with privacy issues, disclosure of personal information and a fear of increasing ones susceptibility of becoming a victim of identity theft or fraudulence. It is therefore suggested that OSN providers invest in strategies to increase the older populations assurance that the likelihood of such circumstances is minimal.

In light of all research outcomes and a theoretical and empirical appreciation of the digital divide phenomena, this thesis puts forward the view that based on the analyzed empirical data, a ‘generational age related digital divide’ does exist in terms of OSNs; hence a digital divide between UKs young and old in the adoption and use of OSN Internet technologies exists. Findings suggested that this is accountable to the older adults inherent insecurities with publicising personal information on the internet - a requirement previously uncharted by many older adults experiences with internet use. One such requirement that many older adults will not relinquish to, as the motivational perceived benefits of OSN use do not outweigh the impeding perceived risks. Information about OSNs carried through mass media was also found to significantly deter older adults from using OSNs

To summarise the findings of the literature review with this research study’s findings and to position this research, Table 6.4 has been formed and presented below.

<b>Table 6.4 DISCUSSION SUMMARY – Similarities/Differences to Existing Literature</b>	
<b>Existing Literature Findings</b>	<b>Similarities/Differences</b>
<b><u>Maier et al (2011)</u></b> Found MATH constructs to be predictors of older adult OSN adoption	<b>Similar ✓</b> Three of the six MATH constructs applied were found to be significant. This suggests that MATH is an appropriate model for older adults’ technology research.
<b><u>Niehaves &amp; Plattfaut (2011)</u></b> Found MATH highly effective in predicting intention - especially among the elderly (60+)	<b>Similar ✓</b> When analyzing MOSN using the sample of only participants 60-69, three of the six MATH constructs were still found to predict internet intention; therefore it is agreed that MATH is highly effective in predicting elderly adults intention.
<b><u>Nagle &amp; Schmidt (2012)</u></b> FC’s found to be predictors of computer use and intention within the older population	<b>Similar ✓</b> The final primary findings and evaluation findings found the FCs of internet access and internet able devices to be predictors of OSN intention within the older population
<b><u>Courtney (2008)</u></b> Found privacy concerns to be barriers to older adults adoption of technologies	<b>Similar ✓</b> The final primary findings found privacy risk to be a barrier to OSN adoption among older adults.
<b><u>Fogel &amp; Nehmed (2009)</u></b> Found privacy concerns to influence OSN decision making	<b>Similar ✓</b> The primary final phase findings found privacy risk to impede older adults OSN decision making.

<p><b>Thackeray et al (2013) &amp; Braun (2013)</b> Found perceived benefits and advantages to be significant predictors of OSN adoption in older adults</p>	<p><b>Similar ✓</b> The benefits and advantages of OSN use in the form of a theoretical construct, Relative Advantage, were found to be a significant predictor of OSN adoption in older adults.</p>
<p><b>Venkatesh &amp; Brown (2001)</b> Found mass media to influence technology adoption</p>	<p><b>Similar ✓</b> The mass media communication channels of TV, newspapers and magazines were found to significantly negatively influence OSN adoption. W.O.M., Internet and Radio were found to significantly positively effect OSN adoption.</p>
<p><b>Rogers (2003)</b> Suggests that the technology characteristic of Relative Advantage can be used to understand innovation adoption</p>	<p><b>Similar ✓</b> Findings support this suggestion as RA was found to have a highly significant positive effect on OSN adoption among participating older adults.</p>
<p><b>Sledgianowski &amp; Kulviwat (2009)</b> Found hedonistic factors to be predictors of OSN adoption</p>	<p><b>Similar ✓</b> Hedonic outcome factors of entertainment, enjoyment and fun in the form of the theoretical construct HO, were found to significantly predict OSN adoption.</p>
<p><b>Conci et al (2009)</b> Found utilitarian motives play a role within older adults adoption decision-making process.</p>	<p><b>Different □</b> Findings conflicted - as utilitarian motives in the form of; applications for work at home, for paid work and personal reasons were not found to predict OSN adoption among older adults.</p>
<p><b>Glass &amp; Li (2010)</b> Found social influence to have a positive significant effect on IM adoption</p>	<p><b>Similar ✓</b> The theoretical construct Social Outcomes was found to have a significant effect on older adults OSN adoption.</p>
<p><b>Sajad et al (2009)</b> Found social influence to have a positive significant effect on intention to use computers</p>	<p><b>Similar ✓</b> Social influence in the form of the construct Primary influence (friends, family and co-workers) was found to have a positive significant effect on OSN adoption in older adults.</p>
<p><b>Featherman &amp; Pavlou (2004)</b> Found privacy risk to be a significant influential factor in e-services adoption</p>	<p><b>Similar ✓</b> The construct privacy risk was found to have significant negative effect on older adults OSN adoption.</p>
<p><b>Brown &amp; Venkatesh (2005)</b> Found UO attributes; utility for personal use and utility for work related use to significantly explain household PC adoption</p>	<p><b>Different ✗</b> These results cannot be supported as the same UO attributes were found to have no explanatory power when investigating OSN adoption in older adults.</p>
<p><b>Brown &amp; Venkatesh (2005)</b> Found the construct Requisite Knowledge to have no significant effect in understand PC adoption intention</p>	<p><b>Similar ✓</b> The construct RK was found to have no significant effect when empirically examining OSN adoption intention in older adults.</p>
<p><b>Brown &amp; Venkatesh (2005)</b> Found construct Primary Influence to significantly explain household PC adoption</p>	<p><b>Similar ✓</b> Within the final phase, primary data findings revealed that the construct PI does significantly explain the household OSN adoption process in older adults.</p>
<p><b>Brown &amp; Venkatesh (2005)</b> Found secondary source influence in the form of TV and newspapers to significantly influence household PC adoption</p>	<p><b>Similar ✓</b> The construct Secondary Source Influence (SI) was found not to have a significant effect on OSN intention. When examining the influence of TV and newspapers, both were found to have a significant influence on OSN intention.</p>
<p><b>Venkatesh et al (2003)</b> Found age to be as significant variable on the context of technology acceptance</p>	<p><b>Similar ✓</b> As within the evaluation phase of research, age was found to be a significant predictor of both Internet and OSN use.</p>

<b><u>Morris &amp; Venkatesh (2000)</u></b> Found age differences in individuals to explain technology acceptance behavior	<b>Similar ✓</b> As within the evaluation phase of research, age was found to be a significant predictor of both Internet and OSN use.
<b><u>Grimes et al (2007)</u></b> Found age to be a significant predictor when investigating e-mail spam within end users.	<b>Similar ✓</b> As within the evaluation phase of research, age was found to be a significant predictor of both Internet and OSN use.
<b><u>Teo et al (1999)</u></b> Found education level to negatively affect daily Internet usage but positively affected the diversity of Internet usage	<b>Similar ✓</b> As within the evaluation phase of research, age was found to be a significant predictor of Internet usage.
<b><u>Dogruer et al (2011)</u></b> Identified that factors relating to personal status and entertainment were found to be the motivations for Facebook use	<b>Similar ✓</b> Entertainment in the form of the construct HO, and personal status in the form of construct SO were both found to be motivational factors for older adults to adopt OSNs.
<b><u>Moradabadi et al (2012)</u></b> Found entertainment as a motivational factor for Facebook use by Iranian students.	<b>Similar ✓</b> Entertainment in the form of HO was found to be a motivational factor for OSN use in UKs older population.
<b><u>Dwivedi &amp; Choudrie (2006)</u></b> When investigating factors influencing broadband adoption found attitudinal factors; of advantages, enjoyment, entertainment to predict participants behaviour.	<b>Similar ✓</b> As attitudinal factors, advantages in the form of RA and entertainment in the construct of HO were found to predict older participants OSN adoption behavior.
<b><u>Karaca-Mandic (2011)</u></b> Found when investigating DVD player adoption found race and income to predict adoption behaviour	<b>Similar ✓</b> Similar to evaluation research, ethnicity, or race (white) and gross income were found to predict internet usage behavior
<b><u>Coughlin et al (2007)</u></b> When investigating factors influencing household technology adoption behaviour found privacy to be a primary concern for participating individuals	<b>Similar ✓</b> As within the final primary findings privacy of one's personal information was found to be a significant impediment of older adults OSN adoption.
<b><u>Carpenter &amp; Buday (2007)</u></b> Found that cost was a barrier to older adults computer use.	<b>Different ✗</b> As cost was measured using the factor Resource F.C but was found to have no significant negative effect on older adults decision to adopt and use OSNs.
<b><u>Pan &amp; Jordan-Marsh (2010)</u></b> Examined internet adoption and use of older Chinese adults Facilitating Conditions (FCs) were found to be significant predictors of internet use intention	<b>Similar ✓</b> As facilitating conditions, reliable internet access and internet able device(s) were found also to be significant predictors of older adults OSN adoption intention.
<b><u>Ryu et al (2009)</u></b> Investigated 50+ individuals adoption of Video User-Created Content (video UCC). Findings showed that participating older adults 'intention to participate' was significantly predicted by the constructs Perceived Benefits (PB) and Perceived Enjoyment (PE).	<b>Similar ✓</b> Perceived benefits were measured in the construct RA and perceived enjoyment was measured in the construct HO. Both constructs were found to significantly predict older adults OSN intention behavior.
<b><u>Nagle &amp; Schmidt (2012)</u></b> Investigated computer acceptance among older adults (50+) using UTAUT. It was found that facilitating conditions showed the strongest correlation with use as well as with intention.	<b>Similar ✓</b> The theoretical construct Facilitating Conditions (FCs) was found to have a strong correlation with OSN intention within participating older adults.
<b><u>Slegers et al (2012)</u></b> Examined predictors of computers in older adults. Computer use was predicated by age and sex.	<b>Similar ✓</b> Within the evaluation phase research findings revealed that age and gender were both found to be predictors of internet usage in the older UK population.

## **6.8 Chapter Summary**

Chapter 6 began with the summative evaluation – a research process used to determine and evaluate the research outcomes of this thesis. To do so NRDs of Britain were analyzed (ONS & OXiS) using demographics predictors as explanatory variables of Internet and OSN usage. A number of these predictors were found to be significant and the findings of the evaluation phase were then discussed in light of the existing literature. Thereafter, a discussion of the similarities and differences between this research and other adoption, use studies was conducted. Having conducted the planned phases of this research, the next chapter concludes this research, identifies the limitations, and future directions as well as the implications of this research.

# Chapter 7

## Conclusions

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### 7.1 Introduction

Having completed all phases of this research project from inception and research design to data collection and presentation of research findings, this final chapter draws this thesis to a close. This chapter begins with an overview of the undertaken research followed by the underlying conclusions. Implications of the research findings are then discussed in terms of academia, policy makers and industry. All the limitations of this research are clearly identified followed by a discussion of future directions. This has paved the way for further research within the communities. By doing so, the communities can address and consider in the future. This can also allow further value of the research efforts to be obtained. A final word from the researcher than brings this doctoral thesis and research endeavor to an end.

### 7.2 Thesis Overview & Summary

As with every research endeavour an introduction is required. Chapter one began by introducing the research project with an explanation of the identified OSN research phenomena. For this, initially OSN usage statistics were used to compile a case that unarguably demonstrated that the older population (50+) of UK has not embraced OSN use in light of the fact there is significant proportion of the UKs older population has access and use of the Internet. This led to the motivation and formation of the research aim and questions that will be used to retain a focus throughout this research endeavor. The aim of this research was formed to be: *To identify and understand the factors driving or inhibiting the adoption, use and diffusion of OSNs within the older population (50+) population in UK households.* A brief description of the research approach employed to achieve the defined research aims, the research scope and an outline were provided in chapter 1.

Chapter two of this thesis provided a rigorous review of existing research issues and phenomena that have been addressed to date with regards to OSN adoption, older individuals technology use, digital divide and technology adoption in the households. The review suggested a number of theoretical models, theories and constructs that demonstrate suitability for the chosen research endeavour. Therefore conceptual development was undertaken and guided by the outcomes of the literature review. Four theories and models that would be useful for this research were identified. The theories to be applied in the formation of the conceptual framework were: DOI, DTPB, MATH, and the E-Services adoption model. Ten sub-components in the form of the attitudinal, normative and control theoretical constructs were extracted. The factors to be used for this research project are: Hedonic Outcomes (HO), Utilitarian Outcomes (UO),

Relative Advantage (RA), Social Outcomes (SO), Privacy Risk (PR), Primary Influence (PI), Secondary Influence (SI), Requisite Knowledge (RK), Technology F.C (TFC) and Resource F.C (RFC). Within this model, the key dependent variable was considered to be Behavioural Intention (BI), for which aforementioned constructs would serve as explanatory variables. All the constructs were interlinked with linear one-way causal paths. The paths in turn, represented the research hypotheses to be applied in this research project. Hypotheses development was conducted by rationalising and theoretical reasoning the constructs would explain the OSN intention of UK's population. The outcome of chapter 2 was the conceptual framework that was also referred to as the Model of Online Social Networking (MOSN) and the newly formed hypothesis.

Chapter three provided explanations, rationales and reasoning for the procedures, processes and decision making that was undertaken in order to operationalize and validate MOSN. Prior to determining the research approach to be pursued within this research project, a range of qualitative and quantitative methods were considered. This allowed the researcher to make the decision that a quantitative online survey questionnaire would be most suitable. This was due to the need for quantitative data to validate MOSN and for such goals the survey approach is the most utilised and preferred for IS investigations. The pilot tested questionnaire was then amended, improved and utilised in the final stage of the methodology, for which a multi-stage random sampling method was employed. This sampling method provided an acceptable representation of the chosen research site, Hertfordshire. Hertfordshire is an affluent and well developed area of the UK. Following the final phase an evaluation was conducted using datasets to determine whether the empirical conclusions can be validated and verified.

Also included within chapter three was the demonstration of the validity and validation of research instruments and statistical findings. This is pertinent for IS research as this represents a mark of integrity for IS research. Therefore throughout the phases of the research methodology survey instrument validity processes were employed. After a review validation method undertaken in IS research (*see* Boudreau et al, 2001) it was decided five validation procedures would be employed. These were identified as: (1) Survey questionnaire items being subjected to expert panel content validation using Lawshe (1975) method. (2) The survey questionnaire being pilot tested with a convenience sample. (3) Following application of the pilot test outcomes, the resulting final survey questionnaire was pre-tested using a panel of industry and academic experts. (4) The post final survey data collection construct validation was conducted on all construct measurements to demonstrate divergent and convergent validity according to Trochim & Donnelly (2006). (5) Using the Cronbachs alpha test reliability was used to demonstrate reproducibility or stability of data collected through the developed survey questionnaire.

Chapter four provided Dillman's (2007) principles of survey design to produce an online pilot survey questionnaire instrument. The results of the content validation process undertaken on survey items were also presented and the resulting items that were removed were also provided. This process resulted in a

survey questionnaire that was pilot tested on a sample of 252 participants. This chapter proffered the analysis and findings as well as improvements that were made to the pilot questionnaire in order to acquire a large response rate. The changes were made due to the opinions of an expert panel at the pre-test level once again. A number of refinements to the pilot questionnaire emerged, which were applied accordingly producing the final survey questionnaire. The amendments also included correcting the construct measures used within the original theories being contextually amended and included within the final survey research instrument, which was placed online.

Chapter five presented the main research findings from the final phase of this research where testing of the research hypotheses, an empirical validation of the newly formed MOSN was achieved and findings were obtained in terms of the UKs older population adoption, use and diffusion of OSNs. This chapter also presents the analysis of the final survey's results emerging from 1080 valid responses across a diverse range of demographics and ages ranged from 50 years and above. For the analysis, path analysis was utilised to reveal that MOSN explained and accounted for 90.2% of the older participants behavioural intention of OSN adoption. HO, RA, SO, PR, PI and TFC were all found to be highly significant explanatory variables of OSN intention. Overall, the identified and applied constructs demonstrated construct validation, measurement reliability composite reliability and Average Variance Extracted values providing assurance of results.

Chapter five also includes the production of a structural equation model that operationalized the diffusional element of this research. Diffusion was understood in terms of the communication channel of first, mass media channels: TV, radio, newspaper, Internet, Word of mouth & magazines. These channels were hypothesised to be the fundamental communication channels of OSN diffusion, which following analysis showed that all the communication channels significantly affect the intention to use OSNs. Popular classic diffusion channels and assumed to be employed most often by the older adult population, TV, newspapers and radio, were found to negatively impact OSN decision making. However, the Internet, word of mouth and magazines were found to have a positive effect on OSN diffusion within the older population.

To ensure that the findings of this research project can be verified and validated, an evaluation phase was also included. For this, analysis of datasets acquired from the Oxford Internet Institute and Office of National Statistics were analysed and certain hypothesis were then verified and validated. This displayed that summative evaluation where the outcome of a research project can be proven is possible. In research terms, this also implies that the theoretical conceptual framework can be applied to a wider scale; thereby being generalizable. The second half of chapter 6 then described and explained similarities to the adoption, use, diffusion and digital divide previous studies. By doing so, a contribution to the research project was proffered. Finally chapter 7 drew the research project to a close. This was initiated with an overall summary of the chapters. This then led to the answering of the research project aim and research

questions, followed by the conclusions. Thereafter, the implications, limitations and future directions of this research project were provided.

### **7.3 Reflecting on the Research Questions**

The aim of this research is to identify and understand the adoption, use and diffusion of OSNs within UK's older population. For this, two phases of primary investigation and one phase of secondary investigation were conducted. With the final primary sample population involving 1,080 individuals living in the UK of the age of 50 years and above. In order to provide an overall set of conclusions for the undertaken investigation, research questions posed prior to conducting the empirical aspect of this research will now be addressed in the following sections.

#### ***Research Question 1: What attitudinal, normative and control factors significantly influence an older individual to adopt or not adopt OSN?***

In order to answer the first research question theoretical factors were drawn from existing theories including; Hedonic Outcomes, Social Outcomes, Relative Advantage, Privacy Risk, Technology F.Cs, Resource F.Cs, Secondary Influence, Primary Influence, Requisite Knowledge and Behavioral Intention. Selection was based on existing empirical findings that suggested their explanatory value within the chosen OSN context (see chapter 2). Using path analysis factors were then tested using sample of primary survey data gathered from the older population of Hertfordshire, UK. The results showed that five factors significantly influenced older individuals intention to adopt OSNs, which are:(1) The pleasure and enjoyment perceived and associated with OSN use. (2) The extent to which OSNs are perceived to better than existing internet communication services such as e-mail, telephone and text messaging (SMS). (3) The perception that OSN adoption improves social status and results in socially orientated benefits. (4) The influence, suggestion, motivation or recommendation by friends, family and co-workers to use OSNs. (5) The anytime access to an internet service considered to be fast and reliable enough to support the use of OSNs in addition to access of a device to use the internet.

Only one factor was found to significantly impede the adoption of OSN within older individuals. This factor was one of perceived 'privacy risk'. It was found that older individuals were deterred from using OSNs due to three concerns of privacy, which are: (1) OSN use could lead to the loss of control over their personal privacy and personal information. (2) OSN use could lead to personal information being used with the expressed permission or knowledge of the respective user. (3) A user's personal information may be used for criminal purposes such as identity theft.

#### ***Research Question 2: For those members of the older population who have partaken in OSN use, what purposes are OSNs being used for?***

To answer the second research question participating older individuals OSN adopters were surveyed. These participants were offered the choice of 21 possible activities which leading OSN platforms facilitate. As shown in table in chapter 5 all the activities were selected by a diverse number of OSN adopters. Seven activities were found to be significantly more popular and undertaken by the majority of participating older OSN users. These are: (1) Adding individuals they know to their online social networking profile. (2) Leaving comments on pictures of individuals they have added to their OSN. (3) Sending text based messages to other members within their OSNs. (4) Viewing photos of other members on their OSN. (5) Using OSNs to procure information about popular events e.g. the Olympics, or Chelsea flower show. Many event management teams are including social media as a channel for their campaigns. This finding demonstrates that this is a successful endeavor and older adults are being reached through such methods. (6) Using OSNs to procure information about the media. (7) Posting messages to other members OSN profile pages. Different from sending text based messages. Older adults are posting messages that perhaps in some cases unknowingly will be publicly available for other members of both parties OSNs to see.

Comparatively the top five most popular OSN activities for the younger population were found to be: 1. Friending /Adding those they know in real life 2. Messaging 3. Viewing photos 4. Picture comments 5. Uploading photos. When comparing the activities undertaken on OSNs by older adults and younger adult's findings were not massively diverse. However, this comparison does clearly illustrate the older adults are utilizing OSNs primarily for communication but also using OSNs as means of procuring information.

***Research Questions 3 & 4: Are mass media channels influencing the diffusion of OSNs within the older population? If so, what is the impact that they have on the older population?***

Diffusion was also important for this research. The third research question pertained to the influence of communication channels within the older adult population. This aspect emerged from with Rogers (2003) DOI theory. Rogers (2003) posited that mass media channels that form part of the communication channels, usually provide the most rapid and efficient means of informing potential adopters about the existence of an innovation. Therefore all existing mass media communication channels- TV, newspaper, magazines, internet, radio, and W.O.M were tested to see their influence on older individuals.

After path analysis the results showed that all the tested communication channels were found to significantly influence the older adult population's intention to use OSNs. However, three mass media channels were found to decrease the diffusion of OSNs, hence the adoption and use of OSNs, which are TV, newspapers and/or magazines. In recent times, newspapers and magazine headlines have frequently

reported on the criminal use of OSNs such as internet grooming, prowling and a source for identity theft and could influence an adopter's decision.

Contrastingly mass media channels in the forms of the Internet, radio and word of mouth were found to positively influence the older adults' intention to use OSNs. Internet and radio campaigning and advertising appears to have penetrated the older population and positively influenced views, attitudes, opinions and intention to adopt and use OSNs.

From the answers to these research questions it can be concluded that the adoption, use and diffusion aspects of OSNs are important and warrant an understanding. From this research project it was found that there were certain factors and theories of importance that can provide better understanding of the factors and their influences on the adoption, use and diffusion of OSNs within the older adult population. From the theories and factors a framework was formed that was then validated and verified in practice. This was achieved using empirical data obtained by disseminating online survey questionnaires. The analysis and evaluation of the data has now, it is suggested, proffered a valid and generalizable framework specific to the adoption, use and diffusion of OSNs within older adults in the UK.

## **7.4 Implications**

The outcomes and findings of this research bring with them a number of implications. These implications are discussed in terms of industry, academia and policy makers in the following sections.

### **7.4.1 Industry**

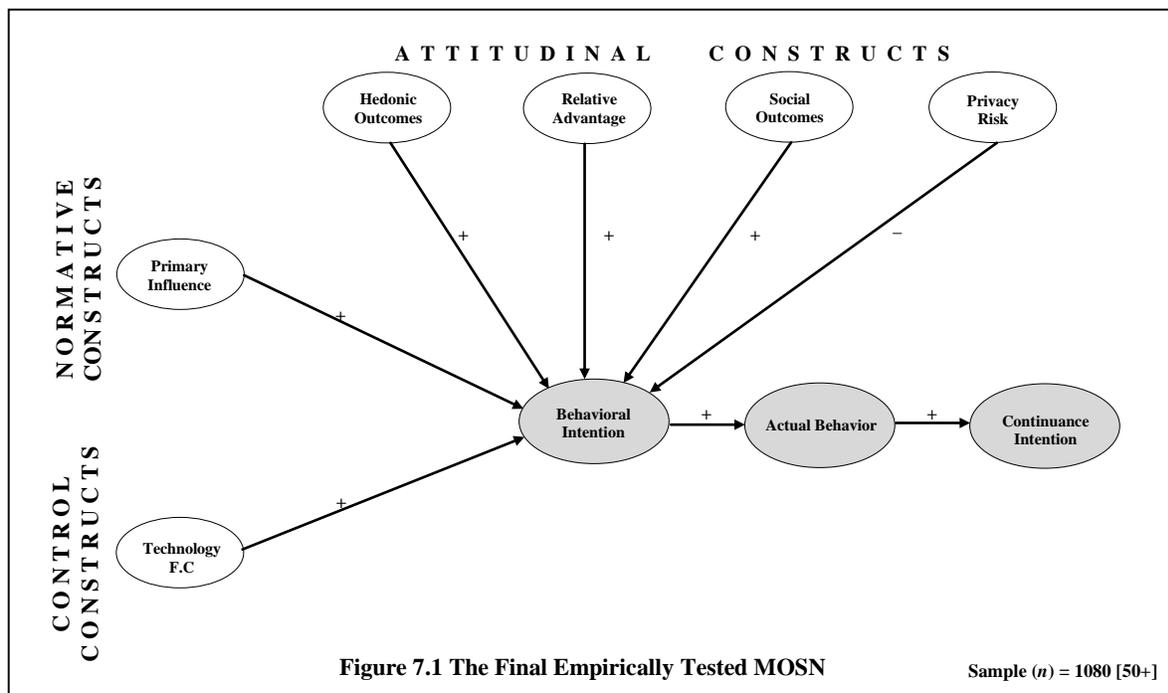
For industry practitioners, e.g. Internet Service Providers (ISPs), or marketing departments of organizations seeking to provide OSNs, the findings of OSN diffusion suggest that to increase wider OSN penetration campaigns, information and advertising should be transmitted using the internet, radio and word of mouth. This research also provides an implication of a better understanding of issues related with demographics that marketing and Internet Service Providers could find useful in promoting products and Internet services in the future.

A fundamental outcome of this research is the understanding that the older population is concerned with privacy invasion, curious of where their personal information is stored and the purposes their information may be used. These perceptions and views were to be found within a large number of the sample population found to be caused by insufficient knowledge regarding regulated practices of information security such as, the data protection act. These findings suggest that Internet service providers, Internet application developers and OSN providers should invest more resources and strategies in providing assurance and obtaining confidence as this age group is of immense importance.

### 7.4.2 Academia

Implications of the research findings for academia is that theoretical models used for explaining and understanding the adoption, use and diffusion of innovations such as, OSNs could proffer extensions to existing internet adoption and use understanding, something amiss until this point. This claim can be proven from the empirical analysis conducted within this research project. The empirically validated MOSN framework (figure 7.1) is of immense value to the academics and researchers alike as it has empirically demonstrated its value as a research framework for the examination of OSN technology adoption. MOSN demonstrated a strong conceptual value as a framework for understanding the technology adoption behavior of the older population.

### 7.4.3 Policy Makers



The research findings also provide evidence that OSNs are being utilized not only for social purposes, but also for government interaction. This suggests for policymakers that efforts should be made to increase e-government functionality within the leading OSNs of Twitter, Facebook and LinkedIn since these were found to be most popular for older individuals in the UK.

For policymakers this research provides an understanding of demographics that are important to emphasize when considering increasing adoption and users. As mentioned governments such as, UK are using funds to advertise on Facebook. Findings of this research can assist decision makers in directing those funds to obtain the most value from such advertising. This study identifies groups that require more attention than others; hence providing policymakers with unbiased important and interesting information.

## 7.5 Limitations

As with any research endeavor limitations exist and must be identified in order to extrapolate findings appropriate for the research purpose. This research encountered several limitations, which are discussed and detailed below.

It must be understood that although this research presents findings from a UK perspective this claim is based on the participation of residents living in England. Moreover, the research findings are not nationally representative of the UK. This posed to be a limitation as it would have strengthened the assumptions and deductions made in this research project. Having said that, the final research findings are viewed to represent the views of older adults living in the Hertfordshire area of the UK. This was due to the pursued random sampling method, large sample size and wide geographic dispersion of responses.

The pilot research findings in this thesis are based upon samples obtained through convenience sampling. Convenience sampling is the most commonly used sampling method in behavioral science research. However, this is a method considered weak due to the lack of representativeness of the population of interest and therefore can *potentially* hold bias (Gravetter & Forzano, 2011).

Household income remains as one key demographic variable of differential in terms of Internet use (Willis & Tranter, 2006). However as an outcome of content validation carried out during the exploratory phase, it was found that participating experts advised against the inclusion of survey items enquiring of household and personal income. As a result this research was limited in determining if household or personal income can serve as a significant explanatory and/or predictive variable of household OSN adoption.

‘A survey, no matter how complex or sophisticated, provides only a snapshot of the phenomena’ (Mcnabb, 2010 p.105). This research provided a series of these snapshot or cross-sectional survey findings. That is, the surveys used for this research or any research project gather the views and opinions of a wide range of participants at one point in time (Moore, 2001). Therefore for this research, this method produced a representation of the older population, representative of the phenomena only at that particular period of time, essentially a snapshot of the research period. It did not proffer a longitudinal aspect and reflect the changes in behaviour over period of time. As individual’s behavior regarding the adoption and use of OSNs is subject to change of over time it can therefore be argued that this research is limited in terms of longitudinal research. Longitudinal surveys are conducted on the same participants over long periods of time (years); thereby, providing a clear, moving image of the changes in attitudes and views regarding the chosen phenomenon (Moore, 2001) and would have allowed a deeper understanding that this research could not provide.

## 7.6 Future Directions

Having assessed the limitations of this research, if this research was conducted in the future, the following recommendations would be suggested. This research project should include qualitative aspects such as interviews, observations or focus groups. By doing so, there would be richer, deeper understandings that could allow a wider diffusion, adoption and use of OSNs within older individuals.

Based on the gradual changes in OSN adoption amongst the younger population, it is likely that individuals in the older population will also change in time. Using this reasoning this research calls for other researchers to conduct longitudinal studies in the area of OSN and social media adoption, use and diffusion in order to provide different and equally valuable perspectives on OSN phenomena.

This research strictly sought findings representative of UK residents. As the UK is a democratic, developed, technologically and industrially advanced country, the findings should be extrapolated accordingly. This research therefore suggests that the MOSN conceptual theoretical framework should be empirically validated in other regions of the world, perhaps in those less developed or communist nations and the findings being compared to these ones. By doing so, a more global, holistic understanding of older populations attitudes, views and behaviour towards OSN adoption, use and diffusion can emerge.

## 7.7 Recommendations

As a result of the undertaken research and the derived findings a number of recommendations are offered: OSNs providers are highly recommended to focus efforts in providing assurance and confidence to the older population when considering information security and personal privacy. The older population must be made aware of the options that OSN providers offer in order to protect and control who may see their personal information and photos, as this was found absent and can be a major impediment of OSN adoption and use. Software and web developers of other internet categories such as health related services, e-mail providers and online grocery services may also apply these findings within design phases in order to increase the likelihood of older adults becoming prospective consumers.

For academics it is recommended that further extensions of MOSN should be undertaken. This claim is being made on the basis that the sample populations eagerness and replies showed, there is potential for research in this area. Privacy is another aspect of importance and conceptual development in the arena of perceived personal risk evaluation should be completed. This will allow a better understanding and reasoning for the importance of privacy to be shown.

As the older populations has been introduced to IT and the Internet at much later stages of their life, many in their retirement years, such individuals have not had the opportunity to become internet literate through work based training. Therefore, strategies and resources must be made available for older adults to be trained in confidently searching for useful and important information using the web, making web

purchases and to understand how to troubleshoot. Increased confidence and skills are integral in allowing older adults to draw value from the Internet and potentially improve quality of life.

## 7.8 Thesis Conclusions

Globally, the adoption and daily use of OSNs has been vast and rapid amongst and within most demographic groups of society; thereby leading to a unique and highly coveted Internet phenomenon with over one billion individuals actively using OSNs. Using previous research and recent datasets and media sources, this research identified that older adults (aged 50+) are viewed to be an important group of society. This was attributed to their wealth holding and wealth creation abilities and yet, the rapidly ageing population groups have not partaken in the Internet revolution. This is despite many older adults being and becoming competent at using the internet and internet related products and services; hence becoming active internet users. Internet services such as OSNs have potential in society to be used as e-tools in order to provide essential medical information and patient collaboration, as well as promoting further future income growth due to the revenues earned by advertising income for sponsors. If the OSNs are not widely adopted and used than the potential to further widen the digital divide between the younger and older populations exists. Using these points as motivation the aim of this thesis was to identify factors inhibiting or motivation the adoption, use and diffusion of OSNs in the older population of the UK.

From the rigorous literature review surrounding the background and aim of this thesis, it was revealed that a research gap in the form of research regarding OSN adoption, use and diffusion from a UK perspective exists. Existing literature also suggested that a quantitative survey approach would be most valuable and appropriate in order to provide a representative set of findings and conclusions, which would contribute to a currently sparse and uncharted field of Information Systems (IS) technology adoption research.

To examine this neglected research area and to achieve the aim a theoretical conceptual framework was formulated that comprised ten theoretical constructs drawn from leading classic IS theories; MATH, DOI, DTPB & the e-services adoption model. It was also recognised that the aforementioned theoretical constructs have previously demonstrated their value in understanding general older adults and/or OSN technology adoption behaviour.

The literature review also led to the formation of hypotheses that was followed by three phases of rigorous and scientifically sound quantitative research. The findings of this research showed that the mass media diffusion channels of TV, newspapers and radio, were found to negatively impact older adults OSN decision-making. However, the Internet, word of mouth and magazines were found to have a positive

effect on OSN diffusion within the older population. These findings demonstrated the need for IS researchers to consider the influence of mass media on technology adoption decision-making.

In terms of adoption older adults were found to be motivated toward OSN use by the influence of their peers, family and co-workers. The benefits of OSNs were found to range from enjoyment and entertainment, to social benefits and additional advantages to internet use that are otherwise unavailable in the current means of internet communication services. Contrastingly, it was learnt that older adults not partaking in the OSN use phenomenon are doing so due to significant concerns of the issue of personal privacy. That is, OSN use was being perceived as a threat and cause of vulnerability when engaging in internet activity. Also many older adults actively do not use OSNs out of concern of the OSN providers own agendas. That is, older adults were sceptical of the providers stating that OSN services are 'free' and yet, from previous experience and reflections, there was nothing 'free' in life.

For those older adults currently using the diverse OSNs, the more prominent OSNs of Facebook, LinkedIn and Twitter were found to be the most popular OSNs. The OSNs were accessed from home and work locations using internet devices such as PCs, laptops, smartphones and tablets. Older adults were found to use OSNs to add individuals they know, comment on pictures, view photos and send messages. However, the research findings revealed that many older adults have a far more passive role within the OSN community of their choice when compared to the younger adults of the UK.

From the overall research and current media publicity, it can be concluded that OSN adoption could be reaching saturation levels within younger adults, but there is still a gap that exists within society when considering the older population. This population group is immensely important to society and the economy as a whole; therefore consideration of the adoption and use needs of this society need to be emphasized and attended to. This research study also found that although the older adults are seeking and using OSNs, there is also scepticism and reservations towards adopting and using OSNs and such inhibitions need to be reduced. This could also be a trend that emerges when considering the adoption and use of innovative technologies within the older population, but this is a question that remains to be determined and investigated in time as novel technologies are introduced and penetrated within society. It is hoped that findings such as those provided by this research study will illustrate to OSN providers seeking to penetrate the older adults' internet consumer market that following intensive investigations, factors promoting and inhibiting OSNs exist, are important and should not be dismissed. Governments can also refer to this research as the factors promoting or not promoting OSNs adoption and use are identified. This can assist Governments particularly when strategies to target older adults through social media for political campaigns are made. Academics can apply these findings to provide an initial insight

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towards further work for understanding the OSN adoption and non-adoption behaviour of older adults, an important and under researched group of an ever ageing techno-dependent society.

### **7.8 Chapter Summary**

This chapter draws this research project that investigates and understands the adoption, use and diffusion of OSNs. The chapter began with an overall summary of the research thesis, followed by a conclusion, limitations, future directions and recommendations. It is hoped and intended that future researchers can refer to this research thesis for a better understanding of the factors and theories that can be used to understand the adoption, use and diffusion of OSNs in the older adult population.

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# Appendices

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Technology Adoption/Usage/Diffusion -Literature Review					
Publication	Year	Author(s)	Vol/No/Pages	Article Title	Aims/Method/Findings
Socio-Economic Planning Sciences	2012	Weiner.M.D Puniello.O.T Noland.R.B Ciemnecki.D Turakhia.C	Vol.46 p.183-193	Consider the Non-Adopter: Developing a Prediction Model for the Adoption of Household-Level Broadband Access	Extending MATH with a moderating control variable, this research explores the decision process for the household-level adoption of broadband internet access. Using survey questionnaire data collected from 3101 New Jersey households under the National Telecommunications and Information Administration's nationwide Broadband Technology Opportunity Program. Findings revealed that the strongest facilitator for adoption is computer use by the household decision-maker. Also, the strongest barrier to adoption is lack of resources.
Journal of Theoretical and Applied Electronic Commerce Research	2011	Carter.L Campbell.R	Vol.6 Issue.3 p.28-42	The Impact of Trust and Relative Advantage on Internet Voting Diffusion	This study assesses the impact of trust and relative advantage on internet voting diffusion. Presenting a model of internet voting empirically tested using survey data collected from 372 citizens. Results indicated that relative advantage, Internet trust, and e-government information utilization have a significant impact on intention to use Internet voting.
Journal of the Association for Information Systems	2011	Li.X Troutt.M.D Brandyberry.A Wang.T	Vol.12 Issue.1 p.1-31	Decision Factors for the Adoption and Continued Use of Online Direct Sales Channels Among SMEs	This study investigates critical factors responsible for the initial adoption and continued user of Online Direct Sales Channels (ODSC) among SMEs. Innovation adoption decision framework classifying three dimensions; decision entity factors, decision object factors and context factors was developed and utilized. After administering a survey to 2,004 U.S. SMEs 213 responses were used for analysis. Results showed that SMEs' intention to adopt ODSCs is significantly correlated with perceived relative advantage, perceived competitive pressure, and risk propensity. Intention to continue with an ODSC use is significantly correlated only with perceived ease of use.
Journal of Internet Banking and Commerce	2011	Al-Majali.M Mat.N.K.N	Vol.16 No.1	Modeling the antecedents of internet banking service adoption (IBSA) in Jordan: A Structural Equation Modeling (SEM) approach	Empirically investigating success factors that predict the adoption of banking services in Jordan. Using the diffusion of innovations theory and survey sample of 532, this study found that perceived usefulness, perceived ease of use, compatibility, trialability, trust and awareness to be significant factors that affect successful internet banking services adoption (IBSA).
Journal of Internet Banking and Commerce	2011	Luqman.A Abdullah.N.K	Vol.16 No.2	E-business Adoption amongst SMEs: A Structural Equation Modeling Approach	Exploring the adoption of e-business within SMEs in the state of Terengganu, Malaysia. This study developed a theoretical model using DOI innovation characteristics, which was empirically tested using a sample of 337 SMEs. Compatibility was found to be a significant factor that leads to adoption of e-business.
Journal of Computer Information Systems	2011	Barnes.S.J Bohringer.M	Vol.51 Issue.4 p.1-10	Modelling Use Continuance Behaviour in Micro blogging Services: The Case of Twitter	Investigating the theoretical dependent variable 'continuance usage intention' this research conducts a web survey of 131 Twitter users and analysis the data using a SEM approach. The results showed that continued use intention is strongly determined by constructs perceived usefulness, satisfaction and habit (R2=0.454), which together provide a strong explanation for Twitter user behavior.
International Conference on Innovation, Management & Service	2011	Liao.Y Wang.Y	Vol.14 p.119-124	Investigating the Factors Affecting Students' Continuance Intention to Use Business Simulation Games in the Context of Digital Learning	Adopting the flow theory, expectation confirmation theory, and theories of motivation as its theoretical premise. This research examined business simulation games in digital learning contexts. An internet survey questionnaire was conducted resulting in 381 respondents from Taiwan. The empirically tested model illustrated significant relationships between perceived learning performance > learning confirmation, Learning confirmation> learning satisfaction and learning satisfaction > continuance intention.
Government Information Quarterly	2011	Ozkan.S Kanat.I.E	Vol.28 p.503-513	E-Government Adoption Model Based on Theory of Planned Behavior: Empirical Validation	This research developed a research model explaining e-government adoption. The theory of planned behaviour (TPB) was extended to fit the requirements of e- Government context. A survey method was used using 216 responses. Results showed that perceived behavioral control (PBC) had a direct effect on intentions. The role of trust was partially mediated over attitudes.
Journal of Computer Information Systems	2011	Quazi.A Talukder.M	Vol.52 Issue.1 p.34-47	Demographic Determinants of Adoption of Technological Innovation	This research examines the impact of demographic variables and adoption of technological innovations in Australian workplaces. Using TRA and TAM to construct a research model and an online survey of 275 respondents. Training emerged as the strongest predictor of both perception and usage of innovation, followed by the educational level of employees.
The Built & Human Environment Review	2010	Abukhzam.M Lee.A	Vol.3 p.60-71	Workforce Attitude on Technology Adoption and Diffusion	With the aim of understanding workforce perceptions and attitudes towards technology adoption. This study found that if the new technology will decrease the work time/process and adopting the technology will not affect their work position, successful adoption would take place.

Journal of Computer Information Systems	2010	Glass.R Li.S	Vol.51 Issue.2 p.24-30	Social Influence and Instant Messaging Adoption	This research empirically tests TAM constructs, social influence factors and demographic factors on Instant Messaging (IM) adoption in the workplace context. A survey questionnaire was distributed to MBA students who were currently working full time. Based on 93 responses analysis revealed subjective norm and critical mass might have varying influences in different settings and contexts.
Communications of the Association for Information Systems	2010	Fedorowicz.J Vilvovsky.S.G Golibersuch.A.J	Vol.27 Article.3	Gender Differences in Teenagers' Elective Use of Computer Technology	The purpose of this research was to examine teenagers' technology-based perceptions, habits and interests with regards to technology access in their homes. Based on 300 survey responses, results revealed both similarities and differences in male and female elective technology use. Also, significant differences in gender based usage patterns and perspective on computers were found.
China-USA Business Review	2010	Al-Majali.M.M Mat.N.K.N	Vol.9 No.12	Applications of Planned Behaviour Theory on Internet Banking Services adoption in Jordan: Structural Equation Modelling Approach	Empirically investigating success factors that predict the adoption of banking services in Jordan. Using the Theory of Planned Behaviour (TPB) and survey sample of 517 Jordanian public university employees. Results of the study demonstrate significant and positive direct relationships between attitude, subjective norm, perceived behavior control and behavior intention. Similarly, direct significant and positive linkages between attitude, subjective norm, perceived behavior control, behavior intention and IBSA were observed
International Journal of Medical Informatics	2009	Kijsanayotin.B Pannarunothai.S Speedie.S.M	Vol.78 p.404-416	Factors Influencing Health Information Technology Adoption in Thailand's Community Health Centers: Applying UTAUT	Utilising UTAUT to identify factors influencing health IT adoption in Thai community health centers. This research used an observational research design sample of 1607 community health care centers using cross-sectional survey by means of a self-administered questionnaire. The results suggest that IT acceptance is influenced by performance expectancy, effort expectancy, social influence and voluntariness.
International Journal of Information Management	2009	Lean.O.K Zailani.S Ramayah.T Fernando.Y	Vol.29 p.458-475	Factors Influencing Intention to Use E-Government Services Among Citizens in Malaysia	This exploratory research study exercises TAM and a survey questionnaire sample of 150 participants to explore citizen's intention to use e-government services. The results revealed that trust, perceived usefulness, perceived relative advantage and perceived image, respectively, have direct positive significant influence on intention to use e-government service and perceived complexity has a significant negative influence on intention to use e-government service.
International Journal of Information Management	2009	Park.N Roman.R Lee.S Chung.J.E	Vol.29 p.196-209	User Acceptance of a Digital Library System in Developing Countries: An Application of the Technology Acceptance Model	This research tests the applicability of TAM to examine factors that influence an individual's adoption and use of a digital library system. Using survey sample of 1082 collected from 16 institutions in Africa, Asia, and Central/Latin America. This research showed that experience in computer use, domain knowledge and English literacy are significant determinants of ease of use. Interest in publishing and relevance are significant determinants of usefulness.
European Conference of Information Systems	2009	Barnes.S.J Bohringer.M	17 <sup>th</sup> Proceedings	Continuance Usage Intention in Micro-blogging Services: The Case of Twitter	Investigating the theoretical dependent variable 'continuance usage intention' this research conducts a web survey of 131 Twitter users and analysis the data using a SEM approach. The results showed that continued use intention is strongly determined by constructs perceived usefulness, satisfaction and habit (R <sup>2</sup> =0.454), which together provide a strong explanation for Twitter user behavior.
American Journal of Scientific Research	2009	Sajjad.M Saif.M.I Humayoun.A.A	Issue.3 p.81-89	Adoption of Information Technology: Measuring Social Influence for Senior Executive's	Extending TAM using the construct of social influence, survey data of 431 responses was collected from Senior Executives (SE) of public and private sectors. After testing the theoretical framework the results indicate that perceived usefulness and perceived ease of use are important factors, which influence the use of computers by SE's in the environment of Pakistan. Also, social factors have strong and positive influence on acceptance and use of IT.
Journal of Universal Computer Science	2008	Biljon.J.V Kotze.P	Vol.14 No.16 p.2650-2679	Cultural Factors in a Mobile Phone Adoption and Usage Model	Investigating the demographic, social, cultural and contextual factors that complicate the understanding of mobile phone use. Using the data from interviews and two surveys. This research concluded that cultural dimensions do influence mobile phone adoption and usage.
Journal of Strategic Information Systems	2008	Belanger.F Carter.L	Vol.17 p.165-176	Trust and Risk In E-Government Adoption	Investigating the widespread adoption of e-government services. This study examines the impact of trust and risk perceptions on willingness to adopt such services. The results produced from a citizen survey sample of 214, showed that disposition to trust positively affects trust of the Internet (TOI) and trust of the government (TOG) which in turn affect intentions to use an e-government service.

<b>Issues in Information Systems</b>	2008	Cardon.P.W Marshall.B.A	No.2 p.103-110	<b>National Culture and Technology Acceptance: The Impact of Uncertainty Avoidance</b>	This research conducted a meta-analysis based on 342 reviewed TAM articles. Combining the results from 95 articles utilizing TAM in order to examine the impact of uncertainty avoidance on national culture and technology acceptance. Results observed high- level uncertainly avoidance practices (UAP) confidence intervals were significantly lower than for the medium-level and low-level UAP groups for each of the TAM construct correlations.
<b>International Conference of Information Systems</b>	2008	Dimoka.A Davis.F.D	2008 Proceedings	<b>Where Does TAM Reside in the Brain? The Neural Mechanisms Underlying Technology Adoption</b>	This research study demonstrates how functional neuroimaging tools can enhance the understanding of IS theories. These methods were used to determine which areas of the brain are stimulated with regards to TAM construct perceived usefulness. Results found that high levels of perceived usefulness activated the caudate nucleus and the anterior cingulate cortex, while low levels of perceived usefulness activated the insular cortex.
<b>Information Systems Frontiers</b>	2008	Brown.S.A	Vol.10 p.397-402	<b>Household Technology Adoption, Use, and Impacts; Past, Present and Future</b>	This study explores three themes of research of household adoption literature in terms of adoption, use and impact. Existing literature from these themes is discussed and recommendations for future research are offered. Recommendations ranged from investigating adoption issues associated with the digital divide to understanding the impacts of new technology and social networking sites on individuals and families
<b>European Conference of Information Systems</b>	2008	Harindranath.G Dyerson.R Barnes.D	16 <sup>th</sup> Proceedings	<b>ICT in Small Firms: Factors Affecting the Adoption and Use of ICT in South-East England SMEs</b>	This research explores patterns of adoption and use of ICTs by SMEs. Analysing a survey sample consisting of 400 SMEs in industrial sectors of food processing, transport and logistics, media and internet services. Results showed that a number of key factors inhibit the widespread adoption and use of ICT, including the cost of technology, uncertainty over the business benefits and impacts, and the lack of relevant internal ICT expertise.
<b>Proceedings of the 29th Annual International Conference of the IEEE EMBS</b>	2007	Coughlin.J.F D'Ambrosio.L.A Reimer.B Pratt.M.R	29 <sup>th</sup> Proceedings	<b>Older Adult Perceptions of Smart Home Technologies: Implications for Research, Policy &amp; Market Innovations in Healthcare</b>	Understanding that smart home technologies support the health, safety and independence older adults. Coughlin et al (2007) undertake technology adoption research in context of households using a focus group approach. Findings showed that participants expressed support of technological advance along with a variety of concerns towards technology adoption that included usability, reliability, trust, privacy, stigma, accessibility and affordability.
<b>The Electronic Journal on Information Systems in Developing Countries</b>	2007	Wahid.F	Vol.32 Issue.6 p.1-8	<b>Using the Technology Adoption Model to Analyse Internet Adoption and Use Among Men and Women in Indonesia.</b>	Using TAM this research Investigates factors affecting internet adoption and differences in internet usage patterns between men and women in Indonesia. Using survey questionnaire data from 714 students, this research found that Internet adoption among women is affected by perceived ease of use rather than perceived usefulness. Contrastingly Internet adoption among men is affected by perceived usefulness rather than perceived ease of use.
<b>Information Systems Journal</b>	2007	Chan.S.C.H Ngai.E.W.T	Vol.17 p.289-315	<b>The Qualitative Study of Information Technology Adoption: How Ten Organisation Adopted Web-based Training</b>	This research investigates the adoption of web-based training in an organizational context. This study used evidence from 10 organisations in Hong-Kong to identify factors effecting adoption. Three key factors were found to significantly affect the adoption of WBT in Hong Kong: (1) the perceived benefits/costs of WBT, (2) organizational readiness, and (3) external pressures.
<b>Information &amp; Management</b>	2007	Al-Gahtani.S.S Hubona.G.S Wang.J	Vol.44 p.681-691	<b>Information Technology (IT) in Saudi Arabia: Culture and the Acceptance and Use of IT</b>	Using UTAUT to investigate culture and the acceptance and use of IT. A survey research sample of 722 knowledge workers using desktop PC application on a voluntary basis Saudi Arabia. This study found that the model explained 39.1% of intention to use variance, and 42.1% of usage variance.
<b>Gender, Technology and Development</b>	2007	Best.M.L Maier.S.G	Vol.11 No.2 p.137-155	<b>Gender, Culture and ICT Use in Rural South India</b>	Exploring how women use and perceive information technology in five selected villages in rural Tamil Nadu, India. This research utilizes the interview research methodology 17 internet kiosk-users and 22 women who have never used the internet. Results showed that (1) rural women in this study find ICTs useful; (2) there are gender-specific usage patterns and perceptions of ICTs; (3) obstacles to ICT use are generally structural (time, location, illiteracy) and not personal (for example, a prohibition from a relative); and (4) manifestations of gender awareness correlate with perceptions of obstacles to ICT use.

<b>The Information Society</b>	2006	<b>Brown.S.A Venkatesh.V Bala.H</b>	<b>Vol.22 p.205-218</b>	<b>Household Technology Use: Integrating Household Life Cycle and the Model of Adoption of Technology In Households</b>	This study applies MATH to examine PC use, using a survey research method. Based on survey data collected from 370 households that owned at least one PC the results demonstrated that the belief structure for household PC use is different from that of household PC adoption. Also, household life cycle is an important consideration for household technology adoption research.
<b>Hawaii International Conference on System Sciences</b>	2006	<b>Carlsson.C Carlsson.J Hyvonen.K Puhakainen.J Walden.P</b>	<b>39<sup>th</sup> Proceedings</b>	<b>Adoption of Mobile Devices/Services – Searching for Answers with the UTAUT</b>	Examining diverse adoption rates of new mobile phone services such SMS, ringtones, icons and logos. This research examines this adoption issue using UTAUT to explain the acceptance of mobile devices/services. Based on evidence provided from a survey conducted in Finland. UTAUT can be used to an extent as starting point to provide some explanations for the adoption of mobile devices/services. Constructs; performance expectancy and effort expectancy could be found as explanations for behavioral intention, but that social influence could not be used as such for explanations.
<b>Computers and Electronics In Agriculture</b>	2006	<b>Alvarez.J Nuthall.P</b>	<b>Vol.50 p.58-60</b>	<b>Adoption of computer based information systems The case of dairy farmers in Canterbury, NZ, and Florida, Uruguay</b>	With the aim of examining computer uptake and use, this study comparatively examines two farming communities (Canterbury, NZ & Florida, Uruguay). Using a mail survey and interview survey data results shows that attributes of the farmers including objectives, personality, education, skills, current information management processes, learning style are associated with the use of computerized information systems.
<b>Journal of Business Research</b>	2006	<b>Porter.C.E Donthu.N</b>	<b>Vol.59 p.999-1007</b>	<b>Using the Technology Acceptance Model to Explain how Attitudes Determine Internet Usage: The Role of Perceived Access Barriers and Demographics</b>	This research developed a TAM based research framework to examine demographics and access as perceived barriers to internet usage. A survey questionnaire was used to collect 539 responses. Results showed that perceived access barriers help to explain demographic-based differences in Internet use. Also, extensions of TAM are useful research models for the investigation of adoption and usage phenomena, regarding the internet.
<b>Sociological Perspectives</b>	2005	<b>Ono.H Zavodny.M</b>	<b>Vol.48 Issue.1 p.105-133</b>	<b>Gender Differences in Information Technology Usage: A U.S. – Japan Comparison</b>	Examining if there are differences in men’s and woman’s use of computers and internet in the U.S and Japan. Using micro data from several surveys conducted during 1997-2001. This research found that there were significant gender differences in computer and Internet usage in both countries during the mid-1990s.
<b>MIS Quarterly</b>	2005	<b>Brown.S.A Venkatesh.V</b>	<b>Vol.29 No.3 p399 - 426</b>	<b>Model of Adoption of Technology in Households: Baseline Model Test and Extension Incorporating Household Life Cycle</b>	Theoretically extending baseline MATH by integrating the household life cycle and using survey data collected from 746 U.S households. The resulting empirically tested integrated model explained 74% of the variance in an individual’s intention to adopt a PC for home use. This was an increase over the baseline MATH model that explained 50% variance.
<b>Information Systems Journal</b>	2005	<b>Carter.L Belanger.F</b>	<b>Vol.15 p.5-25</b>	<b>The Utilization of E-Government Services; Citizen Trust, Innovation and Acceptance Factors</b>	Investigating factors of citizen trust, TAM factors and DOI characteristics in relation to citizen adoption use of e-government services. Using a sample of 105 citizens from a broad range of backgrounds. The findings indicate that perceived ease of use, compatibility and trustworthiness are significant predictors of citizen’s intention to use e-government services.
<b>European Conference of Information Systems</b>	2005	<b>Choudrie.J Dwivedi.Y.K</b>	<b>13<sup>th</sup> Proceedings</b>	<b>Investigating Broadband Diffusion in the Household: Towards Content Validity and Pre-test of the Survey Instrument</b>	This research in progress papers employed content validity and pretest validity procedures on a survey instrument developed to investigate broadband diffusion in the household context. This research paper demonstrated these are appropriate and useful validation methods for survey instruments investigating such research issues.
<b>Small Business Economics</b>	2004	<b>Lucchetti.R Sterlacchini.A</b>	<b>Vol.23 p.151-168</b>	<b>The Adoption of ICT Among SMEs: Evidence from an Italian Survey</b>	This study conducts an econometric analysis on the adoption and use of ICTs among a sample of 168 Italian firms. It was found that adoption depend on types of ICT which, in fact, require different amounts of financial resources as well as technical skills internal to the firms and also depends on different firm characteristics.
<b>MIS Quarterly</b>	2004	<b>Bhattacharjee.A Premkumar.G</b>	<b>Vol.28 No.2 p.229.254</b>	<b>Understanding Changes in Belief and Attitude Toward Information Technology Usage: A Theoretical and Longitudinal Test</b>	This study draws on expectation-disconfirmation theory and IT usage literature to examine how beliefs and attitudes change during the course of an individual’s IT usage. Student data from two longitudinal studies in end user computing showed that factors such as disconfirmation and satisfaction are critical to understanding changes in IT users’ beliefs and attitudes.

<b>Journal of Interactive Marketing</b>	2004	Pagani.M	Vol.18 No.3 p.46-59	<b>Determinants of Adoption of Third Generation Mobile Multimedia Services</b>	This study developed a research model using TAM and DOI to examine the consumer adoption of third generation mobile multi-media services. A qualitative approach involving 24 focus groups was used. Perceived usefulness, ease of use, price, and speed of use were found to be the most important determinants of the adoption of multimedia mobile services.
<b>Family Medicine</b>	2004	Chew.F Grant.W Tote.R	Vol.36 Issue.8 p.645-650	<b>Doctors On-Line: Using Diffusion of Innovations Theory to Understand Internet Use</b>	Utilizing the Diffusion of Innovation Theory by conducting a mail survey of 58 family physicians in a midsized Northeastern metropolitan area in the United States. The aims of this research were to assess internet use and determine sources from which physicians obtain medical information. This research found Internet use is instigated when physicians are not constrained by a heavy patient volume and are able to learn about and observe the benefits of Internet use.
<b>European Conference of Information Systems</b>	2004	Choudrie.J Dwivedi.Y.K	12 <sup>th</sup> Proceedings	<b>Analysing the Factors of Broadband Adoption in the Household</b>	This research empirically investigates the adoption rates and factors of household broadband adoption in community in London, UK. Using a mail survey approach and a sample of 172 household broadband consumers. The main factors for non-adoption were found to be high costs and a lack of the need for broadband in participant's households.
<b>Computers &amp; Education</b>	2004	Martins.C.B.M.J Steil.A.V Todesco.J.L	Vol.42 p.353-374	<b>Factors Influencing the Adoption of the Internet as a Teaching Tool at Foreign Language Schools</b>	In order to identify factors that influence internet adoption in the educational context. This research utilised DOI innovation characteristics. Based on survey data collected from 75 pedagogical managers representing 92 different school addresses. This research verified that a little more than half (55.43%) of the schools researched use the Internet as a teaching tool. Suggesting that Southern Brazilian language schools are slowly shifting from the position of mere observers of Internet applications with cautious interest to effective internet adoption.
<b>Annual Conference: Southern Association of Information Systems</b>	2004	Anderson.J.E Schwager.P.H	7 <sup>th</sup> Proceedings	<b>SME Adoption of Wireless LAN Technology: Applying the UTAUT Model</b>	This study utilises UTAUT to further validate the model in order to examine the SME adoption of wireless technologies. This research-in-progress paper outlines a quantitative survey methodology, framework and hypotheses proposed to examine the issue in question.
<b>Telematics and Informatics</b>	2003	Choi.H Choi.M Kim.J Yu.H	Vol.20 p.161-183	<b>An Empirical Study on the Adoption of Information Appliances with a Focus on Interactive TV</b>	In order to examine the technology adoption of interactive TV and information appliances a large scale nationwide online survey of 2591 participants was conducted. Results showed that three factors influencing behavioral intention were attitude, subjective norm and perceived behavioral control. Also, perceived behavioral control was influenced by control belief, which could be measured by rapidity of change in technology, cost and ease of use.
<b>MIS Quarterly</b>	2003	Venkatesh.V Morris.M.G Davis.G.B Davis.F.D	Vol.27 No.3 p.425-478	<b>User Acceptance of Information Technology: Towards a Unified View</b>	Combining facets from leading acceptance models in the field of IS- Theory of Reasoned Action (TRA), Technology Acceptance Model (TAM), Motivational Model (MM), Theory of Planned Behaviour (TPB) and Combined TAM and TPB (C-TAM-TPB), Model of PC Utilisation (MPCU), Diffusion of Innovation Theory (DOI), Social Cognitive Theory (SCT) and Technology Acceptance Model 2 (TAM2). The resulting model - Unified Theory of Acceptance and Use of Technology (UTAUT) explained 70% of the variation in behavioural intention.
<b>International Journal of Information Management</b>	2003	Brown.I Cajee.Z Davies.D Stroebel.S	Vol.23 p.381-394	<b>Cell Phone Banking: Predictors of Adoption in South Africa – An Exploratory Study</b>	Acknowledging massive cell phone usage in South Africa and the availability of cell phone banking services from major retail banks. This research examines the reluctance to use such services. Factors; relative advantage, trialability, and consumer banking needs, with perceived risk were found to have a major negative influence on the decision to adopt cell phone internet banking services.
<b>International Journal Human-Computer Studies</b>	2003	Featherman.M.S Pavlou.P.A	Vol.59 p.451-474	<b>Predicting E-Services Adoption: A Perceived Risk Facets Perspective</b>	Diverse to previous research examining positive or motivating factors of e-services adoption. This research examines negative (potential losses) with respect to e-service adoption. Perceived Risk Theory (PRT) was integrated with TAM. Results show that performance risk, financial risk, privacy risk and time risk are significant determinants of perceived risk.
<b>Electronic Commerce Research and Applications</b>	2003	Hung.S Ku.C Chang.C	Vol.2 p.42-60	<b>Critical Factors of WAP Services Adoption: An Empirical Study</b>	With the aim of understanding the adoption of WAP services. This research employed the Theory of Planned Behavior (TPB) and a survey research method using 267 respondents. The results indicate influencing factors include connection speed, service costs, users satisfaction, personal innovativeness, peer influence and facilitating conditions.

American Conference on Information Systems	2003	Bagchi.K Cerveny.R Hart.P Peterson.M	AMCIS 2003 Proceedings	The Influence of National Culture in Information Technology Product Adoption	Using IT product adoption data from thirty nations over a ten-year period, this study investigates the influence of national culture on IT product adoption. The results confirmed that even after controlling for economic and other significant national indicators, national cultural dimensions play a statistically significant role in most IT product adoptions. Including computers, PC, telephone, cell phone, face and internet pagers.
MIS Quarterly	2001	Bhattacharjee.A	Vol.25 No.3 p.351-370	Understanding Information Systems Continuance: An Expectation- Confirmation Model	This study examines cognitive beliefs and affect influencing ones continuance intention of information systems. Expectation-confirmation theory combined with existing empirical research to form the model of IS continuance. The results suggest that users continuance intention to use an IS is determined by their satisfaction with IS use and perceived usefulness of continued IS use.
MIS Quarterly	2001	Venkatesh.V Brown.S.A	Vol.25 No.1 p.71-102	A Longitudinal Investigation of Personal Computers in Homes: Adoption Determinants and Emerging Challenges	This research develops and introduces the Model of Adoption of Technology in Households (MATH). Theoretically building on the Theory of Planned Behaviour (TPB) using constructs utilitarian outcomes, hedonic outcomes, social outcomes, social influences and barriers. A qualitative approach using telephone interviews was employed. Results found adopters were driven by utilitarian outcomes and hedonic outcomes. Non-adopters were influenced by rapid changes in the technology and the fear of obsolescence.
Information Systems Research	2000	Venkatesh.V	Vol.11 No.4 p342-365	Determinants of Perceived Ease of Use: Integrating Control, Intrinsic Motivation, and Emotion into the Technology Acceptance Model	This research extends TAM by including six new determinants of perceived ease of use; computer self-efficacy, perceptions of external control, computer anxiety, computer playfulness, perceived enjoyment and objective usability. Empirically testing the framework in three different organizations among 246 employees using three measurements taken over a three-month period. The resulting model explained up to 60% of the variance in system-specific perceived ease of use.

Digital Divide/E-Government -Literature Review					
Journal/ Conference	Year	Author(s)	Vol/Issue/ Pages	Article Title	Findings
Telecommunications Policy	2011	Vicente.M.R Lopez.A.J	Vol.35 p.220-237	Assessing the Regional Digital Divide Across the European Union-27	With the aim of measuring the digital divide across the regions of the 27 Member States. Using data collected by the National Statistical Institutes or Ministries of each member state through face-to-face or telephone interviews. Results show that the regional digital divide reflects to an extent the income gap.
Poetics	2011	Schradie.J	Vol.39 p.145-168	The Digital Production Gap: The Digital Divide and Web 2.0 Collide	Using survey data and logit analysis of 41,602 American adults (2000-2008) use of websites and web 2.0 blogs, forums and social media sites. The aims of this research were to examine who is creating digital content for the public sphere. The results show that a class-based digital production gap exists, even among people who are online.
Technology In Society	2011	Kyriakidou.V Michalakelis.C Sphicopoulos.T	Vol.33 p.265-270	Digital Divide Gap Convergence in Europe	Investigating the diffusion rates of broadband between European countries. The aim of this study was to determine the level of the digital divide between European countries and forecast the time of digital convergence. Using a secondary dataset (2001-2009) full convergence among countries is expected by 2018.
International Journal Human-Computer Studies	2011	Brandtzaeg.P.B Heim.J Karahasanovic.A	Vol.69 p.123-138	Understanding the new Digital Divide – A Typology of Internet Users in Europe	With the aim of providing a better understanding of digital divide through identification of a variety of ways in which people in Europe use the Internet. Clusters analysis of survey data collected from 12,666. Sourced by Eurostat on internet usage in Norway, Sweden, Austria, UK, and Spain, showed that on a cross-national level age and Internet access are the most salient predictors.

<b>Electronic Government, An International Journal</b>	2010	Choudrie.J Grey.S Tsitsianis.N	Vol.7 No.2 p.148-167	<b>Evaluating the Digital Divide: The Silver Surfer's Perspective</b>	Employing an Information Systems perspective evaluation framework to determine factors that drive the adoption and use of online products and services (broadband), specifically in the silver surfer age group. Data collected through e-mail, interviews and an online survey of 123 silver surfers demonstrated that technical factors are not a priority and non-technical factors need to be considered when motivating silver surfers to interact online.
<b>Technology in Society</b>	2010	Wijers.G.D.M	Vol.32 p.336-341	<b>Determinants of the Digital Divide: A Study on IT Development in Cambodia</b>	Using an ethnographic case study on the situation in the Cambodian ministry of environment. This study illustrates the way in which determinants of the digital divide interact in post-conflict Cambodia. This research concludes that determinants of the digital divide will benefit more from qualitative research in order to achieve an understanding of these complex research issues.
<b>Computers &amp; Education</b>	2010	Waycott.J Bennett.S Kennedy.G Dalgarno.B Gray.K	Vol.54 p.1202-1211	<b>Digital Divides? Student and Staff Perceptions of Information and Communication Technologies</b>	This study conducts qualitative research in order to investigate Australian university staff and student's perceptions and use of emerging technologies in daily life. 46 first-year students and 31 teaching and support staff from three Australian universities took part in interviews and focus groups. This research concludes that a better understanding of student and staff perspectives will allow for more informed decisions towards the implementation of educational technologies in current higher education institutions.
<b>Journal of Computer Information Systems</b>	2010	Peng.G	Vol.50 Issue.3 p.63-71	<b>Critical Mass, Diffusion Channels, and Digital Divide</b>	This research aims to understand the influence of critical mass and diffusion channels on the adoption of computer applications in the household. Data was used from the Current Population Surveys (CPS) administered by the U.S. Census. Using a sample of 45,272 households who already owned computers. Analysis confirmed that critical mass has a stronger influence on general applications in early stages. Thereafter, exerts a stronger impact on specialized applications in late stages of the diffusion process.
<b>Government Information Quarterly</b>	2009	Helbig.N Gil-Garcia.R Ferro.E	Vol.26 p.89-97	<b>Understanding the Complexity of Electronic Government: Implications from the Digital Divide Literature</b>	Examining the issues related to digital divide phenomena and e-government. This study reviews literature of digital divide research in order to understand the relationship between these issues. The review determines that e-government may be able to facilitate greater citizen-participation in government decisions. However, problems of citizen's technology access and use diminish this potential.
<b>Government Information Quarterly</b>	2009	Cilan.C.A Bolat.B.A Coskun.E	Vol.26 p.98-105	<b>Analysing the Digital Divide Within and Between Member and Candidate Countries of European Union</b>	The aim of this research was to analyse whether a digital divide exists among EU members, new members and candidate countries. To achieve this aim these countries are classified into three groups. MANOVA (Multivariate Analysis of Variance) was used to analyse the data. Results show that there has been a digital divide between the EU15 countries and the countries, which are candidate of EU in 2004 (Romania, Bulgaria, and Turkey).
<b>Computers and Composition</b>	2008	Vie.S	Vol.25 p.9-23	<b>Digital Divide 2.0: "Generation M" and Online Social Networking Sites in the Composition Classroom</b>	Generation M refers to individuals born between 1980s-1990s who are highly comfortable with technology. Focusing on digital literacy and online social networking use this research identifies that instructors in the classroom context need to keep up with Gen M in order to incorporate such technologies within classroom teaching and utilise them as tools to assist teaching. A digital divide is therefore prevalent between instructors and students.
<b>Information Economics &amp; Policy</b>	2008	Prieger.JE Hu.W	Vol.20 p.150-167	<b>The Broadband Digital Divide and Nexus of Race, Competition, and Quality</b>	This research examined the gap in broadband access to the Internet between minority groups and white households, using geographically defined data of DSL subscriptions. The empirical results indicated that race and ethnicity are independently pertinent factors of other related factors such as income and education in the demand for DSL broadband Internet connection.
<b>Information Economics and Policy</b>	2008	Goldfarb.A Prince.J	Vol.20 p.2-15	<b>Internet Adoption and Usage Patterns are Different: Implications for the Digital Divide</b>	This research aims to understand the correlation between internet adoption and use, and the effect these phenomena have on the digital divide. Using a sub sample of the Forrester data (2001) containing information of 18,439 American households. This research found that high-income, educated people were more likely to have adopted the internet by December 2001. However, conditional on adoption, low-income, less-educated people spend more time online

Social Problems	2007	Martin.S.P Robinson.J.P	Vol.54 No.1 p.1-22	The Income Digital Divide: Trends and Predictions for Levels of Internet Use	With the aims of examining family income as a determinant of Internet diffusion in U.S households. Using secondary data from the Current Population Surveys (CPS) for October 1997, December 1998, August 2000, September 2001, and October 2003 (U.S. Census Bureau 1998, 1999, 2000, 2001, 2004). This research found that income is relatively distinctive as a source of increasing inequality in the odds of internet use.
Poetics	2006	Dijk.J.A.G.M.V	Vol.34 p.221-235	Digital Divide Research, Achievements and Shortcomings	This study reviews an inventory of digital divide research covering a five-year period (2000-2005). With the aim of determining where current digital divide literature lacks and where future focus should be applied. The outcome showed that reviewed research suffers from a 'lack of theory' and a lack of 'conceptual elaboration and definition' of digital divide.
Poetics	2006	Broos.A Roe.K	Vol.34 p.306-317	The Digital Divide in the Playstation Generation: Self-efficacy, Locus of Control and ICT Adoption Among Adolescents	Employing the Social Cognitive Theory (SCT) and self-efficacy theory, using questionnaire data (n=1145) representative of Flemish adolescents. The results indicate that computer locus of control and ICT self-efficacy does supplement socio-demographic explanations of the digital divide, which are otherwise most commonly investigated in digital divide research.
Medical Care	2005	Todd.H Wagner.M Bundorf.K Singer.S.J Baker.L.C	Vol.43 No.4 p.415-420	Free Internet Access, the Digital Divide, and Health Information	Examining free internet access with regards to digital divide and health information. This research conducts a survey questionnaire of 8,935 individuals (21+) between 2001-2002. Respondents were provided with free internet access conditional of research participation. Comparing respondents with and without prior internet access. This research found that access helps explain the digital divide, although most people given free access do not use the Internet for health information.
Telematics & Informatics	2005	Rao.S.S	Vol.22 p.361-375	Bridging Digital Divide: Efforts in India	Despite a strong and fast growing IT industry in India, access to ICTs remains low. This research therefore examines the digital divide in India. This research concludes that the digital divide can never be isolated but the efforts have to be multi-dimensional and multi-pronged. Also, ICTs are one of the enabling tools to bridge digital divide.
Social Forces	2005	Gullien.M.F Suarez.S.L	Vol.84 No.2 p.681-708	Explaining the Global Digital Divide: Economic, Political and Sociological Drivers of Cross-National Internet Use	The aim of this research was to explain reasons for identified global digital divides; this research uses data sourced from the International Telecommunication Union (118 countries 1997-2001). The study found that the global digital divide could be measured using cross-national differences in internet use. Also, the growth of the Internet worldwide is driven not just by socio-economic status, cost or accessibility, but also by regulatory political, sociological variables.
Management Science	2005	Forman.C	Vol.51 No.4 p.641-654	The Corporate Digital Divide: Determinants of Internet Adoption	Using a corporate work based perspective; this study examines the internet adoption decisions of organisations. Using data collected over 1996-1998 from Harter Hank Computer Intelligence (CI) technology database. This research found that participating organisations which benefited most from decreases in communication cost due to internet technologies, were most likely to adopt internet technologies for use within the workplace setting.
Telecommunications Policy	2004	Wareham.J Levy.A Shi.W	Vol.28 p.439-457	Wireless Diffusion and Mobile Computing: Implications for the Digital Divide	Investigating gaps of digital inclusion within the American economy, from a standpoint of 2G voice centric mobile telecommunications. Using data collected from two cross-sectional surveys of households (1) 1994: 8,700 (2) 1998: 16,000. This research found that mobile telephone adoption is positively correlated with income and metropolitan area size, as well as strongly correlated with occupation especially with sales and executive professionals.
British Medical Journal	2003	Smith.R	Vol.326 No.7383 p.238	Closing The Digital Divide: Remarkable Progress Is Being Made	Acknowledging that access to information is essential for the development and improvement of health services. This article reviews progress made in terms of the internet digital divide. A campaign to supply 68 countries with free access to 1400 journals is also detailed and discussed.
Telecommunications Policy	2003	Rice.R.E Katz.J.E	Vol.27 p.597-623	Comparing Internet and Mobile Phone Usage: Digital Divides of Usage, Adoption and Dropouts	In order to compare internet and mobile phone adoption and usage. Using a national probability telephone survey of 1305 conducted in March (2000). The data showed that Internet and mobile phone usage rates were quite similar. However considerable divergence exists, including divides in terms users vs nonusers, veteran vs recent users and dropout vs current users.

<b>Older Adults/Age Related Studies -Literature Review</b>					
<b>Journal/ Conference</b>	<b>Year</b>	<b>Author(s)</b>	<b>Vol/Issue/ Pages</b>	<b>Article Title</b>	<b>Findings</b>
Journal of Medical Internet Research	2013	Thackeray.R Crookston.B.T West.J.H	Vol.15 No.1	Correlates of Health-Related Social Media Use Among Adults	Thackeray et al (2013) aimed to understand online health related activities and how social media facilitated adults to conduct such activities. A telephone survey using 1745 was conducted. Findings revealed that people are using social media for seeking health information. However, individuals are more likely to consume information than they are to contribute to the dialog of information online. This research therefore demonstrates that social media is assisting adults in terms of health- related issues.
Computers In Human Behavior	2013	Braun.M.T	Vol.29 p.673-680	Obstacles To Social Networking Website Use Among Older Adults	With the aim of understanding factors that encourage and dis-courage OSN use among older adults (60-90). Braun (2013) empirically tested TAM using the data collected from 124 internet-using older adults. The tested framework revealed significant predictors of OSN adoption include perceived usefulness; trust in SNS, and frequency of internet use.
Journal of Medical Internet Research	2013	Stellefson.M Chaney.B Barry.A.E Chavarria.E Tennant.B Walsh-Childers.K Sriram.O.S Zagroa.J	Vol.15 Issue.2	Web 2.0 Chronic Disease Self-Management for Older Adults: A Systematic Review	There has been observed growth in social media interventions/tools has led to e-patient communication tools that enable older adults to (1) locate and share disease management information and (2) receive interactive healthcare advice. Also, no review articles have examined the planning, implementation, and evaluation of Web 2.0 chronic disease self-management interventions for older adults. Therefore Stellefson et al (2013) conducted a systematic literature of pertinent articles. Reviewed literature indicated that Web 2.0 participants felt greater self-efficacy for managing their disease(s) and benefitted from communicating with health care providers and/or website moderators to receive feedback and social support.
Computers in Human Behavior	2012	Cotton.S.R Ford.G Ford.S Hale.T.M	Vol.28 p.496-499	Internet Use and Depression Among Older Adults	This research examined the link between depression and internet use of Americans aged 50+. Using data from the 2006 Health and Retirement Study (HRS) (7,839 responses). The results indicated a positive correlation between Internet use and mental well being of retired older adults. Internet use was found to reduce the probability of a depression categorization for older participants by about 20–28%.
IOS Press	2012	Nagle.S Schmidt.L	p.3541-3548	Computer Acceptance of Older Adults	Nagle & Schmidt (2012) investigated computer acceptance among older adults (50+) using UTAUT as the guiding theoretical framework. Next to performance expectancy, facilitating conditions showed the strongest correlation with use as well as with intention. Effort expectancy showed no significant correlation with the intention of older adults to use a computer.
Computers In Human Behavior	2012	Slegers.K Boxtel.M.P.J.V Jolles.J	Vol.28 p 1-10	Computer Use In Older Adults: Determinants and the Relationship With Cognitive Change over a 6 Year Episode	Slegers et al (2012) aimed to determine predictors of computer use for older adults (50+) and also to understand the relationship between computer use and changes and cognitive abilities. 1823 normal aging adults participated over a 9-year period. This research found that older participants computer use was also predicted by age, sex and feelings of loneliness. Changes in cognitive ability were small, which suggests that promotion of computer activities in older adults to prevent cognitive decline may not be an efficient approach.
Wirtschaftsinformatik	2011	Maier.C Laumer.S Eckhardt.A	2011 Proceedings Paper.25	Technology Adoption by Elderly People – An Empirical Analysis of Adopters and Non-Adopters of Social Networking Sites	Examining the impact of attitudinal, normative and belief factors on the intention to use online social networks by individuals over 50 years. Using MATH theory and survey responses from 53 non-adopters and 115 adopters. This research found that fear-of-technology has a strong influencing effect for non-adopters to not use OSNs.
Wirtschaftsinformatik	2011	Niehaves.B Plattfaut.R	2011 Proceedings Paper.23	The MATH of Internet Adoption: Comparing Different Age-Groups	Acknowledging the rapidly ageing population and older adults exclusion from the benefits of IT-enabled service delivery. Using MATH model and the survey data of 501 participants split <39 (186) 40-59 (199) and 60+ (116). This research found that self-efficacy is very high among all age groups. Also, the young age group believed strongly that the internet offers applications for fun.

Journal of Computer Information Systems	2011	McMurtrey.M.E Downey.J.P Zeltmann.S.M McGaughey.R.E	Vol.51 Issue.4 p.22-30	Seniors and Technology: Results from a Field Study	With the aim of examining the interaction between senior citizens and information technology, and the digital divide between the young and the old. A mail survey was conducted resulting in 173 responses (67+ years). This research found evidence to suggest that the young and old digital divide is diminishing. Over 90% reported they do not use a computer for any social networking.
Computers in Human Behavior	2011	Lee.B Chen.Y Hewitt.L	Vol.27 p.1231-1237	Age Differences in Constraints Encountered by Seniors in their use of Computers and the Internet	This research examined the perceived barriers of older adults information technology and internet usage. Using a survey questionnaire of 243 older adults (50+). This research analyzed results in terms of pre-senior, young-old and older-old. The results showed that participating senior technology users might face diverse barriers at different age stages.
Computers in Human Behaviour	2010	Mitzner.T.L, Boron.J.B Fausset.C.B ,Adams.A.E Charness.N, Czaja.S.J Dijkstra.K, Fisk.A.D Rogers.W.A, Sharit.J	Vol.26 p.1710-1721	Older Adults Talk Technology: Technology Usage and Attitudes	Examining older adults use and attitudes about technology in context of home, work and healthcare. Using a focus group approach of 113 older adults. This research found that positive views outweigh the negative views towards technology use. Positive attitudes were most frequently related to how the technology supported activities, enhanced convenience, and contained useful features.
Interacting With Computers	2010	Hanson.V.L	Vol.22 p.502-509	Influencing Technology Adoption by Older Adults	Identifying a trend of disinterest in new technologies by older adults Hanson (2010). To examine this issue experiments testing online searching capability were carried out using groups of both older and younger adults. The older adults were found to sometimes take longer to complete tasks. However they did not necessarily take view more pages to arrive at the solution. Older adults (ages 50–69) spent more time viewing nearly all Web pages than did the younger participants (ages 20–39).
Computers in Human Behaviour	2010	Wagner.N Hassanein.K Head.M	Vol.26 p.870-882	Computer Use by Older Adults: A Multi-Disciplinary Review	Identifying fast growing computer and internet use in the personal and workplace context, by older adults. This research examines the differences in the needs and concerns of older adults compared to younger adult computer users. By reviewing literature of 151 articles covering the period 1990–2008 through the perspective of the Social Cognitive Theory (SCT). This research suggests future directions in older adults technology research.
Computers in Human Behavior	2010	Pan.S Jordan-Marsh.M	Vol.26 p.1111-1119	Internet Use Intention and Adoption Among Chinese Older Adults: From the Expanded Technology Acceptance Model Perspective	Investigating Internet adoption and usage of Chinese older adults 50-81 years. This research developed and employed an extension of TAM. Using a survey questionnaire of 374 participants. This research revealed that PU, PEU, and SN were significant predictors of Internet adoption among Chinese older participants, and PU, SN, and FC were significant predictors of Internet use intention.
European Conference on Information Systems	2009	Jorg.B Bjorn.N Kevin.O	17 <sup>th</sup> Proceedings	Does the Answer Lie in Collaboration? – A Case Study on E-Government and Societal Ageing	Employing a single exploratory case study and interview data analysis, in order to understand research issues regarding e-government and societal ageing. This research concludes that depopulation affects rural and structurally weak areas as well as cities that are subject to deindustrialization.
Computers In Human Behaviour	2009	Pfeil.U Arjan.R Zaphiris.P	Vol.25 p.643-654	Age Differences in Online Social Networking – A Study of User Profiles and the Social Capital Divide Among Teenagers and Older Users in MySpace	The aim of this research was to identify age differences and similarities in the use of the OSN MySpace. Comparing users between 13 - 19 years and 60+ years. WebCrawler's were used to collect data from MySpace user profile pages. Using content analysis it was revealed that the majority of teenage users' friends are in their own age range (age ± 2 years), whilst older people's networks of friends tend to have a more diverse age distribution.
Computers In Human Behaviour	2009	Ryu.M Kim.S Lee.E	Vol.25 p.619-632	Understanding the Factors Affecting Online Elderly User's Participation in Video UCC Services	Investigating elderly peoples adoption of Video User-Created Content (video UCC). This study introduces elderly-specific constructs: perceived physical condition (physical age), life course events (psycho-social age), perceived user resources, prior similar experience, and computer anxiety, each reflecting the complex aging process. In addition to TAM, DOI and Motivation Theory constructs. Using data collected from 290 online users the results showed that elderly people are not highly resistant to change and will adopt video UCC if some conditions are satisfied.

<b>Current Directions In Psychological Science</b>	2009	<b>Charness.N Boot.W.R</b>	<b>Vol.18 No.5</b>	<b>Aging and Information Technology Use</b>	In efforts to understand why older adults are reluctant to adopt new technologies Charness & Boot (2009) examine attitudinal barriers, privacy concerns and cognitive barriers to technology use. It was concluded that as Internet use lags would diminish over time as current young users age. However, it is reasonable to assume that technology will continue to advance rapidly and therefore continuous efforts must be made to ensure the older age groups are driven to use the latest technologies.
<b>Information Technology &amp; People</b>	2008	<b>Hill.R Beynon-Davies.P Williams.M.D</b>	<b>Vol.21 No.3 p.244-266</b>	<b>Older People and Internet Engagement - Acknowledging social moderators of internet adoption, access and use</b>	This research aims to investigate internet adoption, access and use by older adults. Due to the likelihood of internet engagement rapidly decreasing with age. A qualitative method comprised of observation and interviews was employed. Results showed that levels of adoption acceptance were high compared to the results of other research into older peoples' internet access and use in Wales.
<b>Internet Technology &amp; People</b>	2008	<b>Hill.R Beynon-Davies.P Williams.M.D</b>	<b>Vol.21 Issue.3 p.244-266</b>	<b>Older People and Internet Engagement: Acknowledging Social Moderators of Internet Adoption, Access and Use</b>	This research investigated older individuals and internet engagement. 293 participated in workshops comprised of qualitative observation and interviews (majority 50+). The results led to the development of the model of internet engagement, which considers factors of perception, culture, interpersonal relationships and operation skills.
<b>Computers In Human Behaviour</b>	2007	<b>Arning,K Ziefle.M</b>	<b>Vol.23 p.2904-2927</b>	<b>Understanding Age Differences in PDA Acceptance and Performance</b>	Using TAM constructs perceived ease of use and usefulness, this research examined attitudes and behaviour regarding computer simulated PDA devices, using an age perspective. Moderating variables such as age, gender, subjective technical confidence and computer expertise were also examined. Based on survey results from 16 (18-27s) and 16 (50-59s) this research found that significant associations between performance and TAM factors. This interrelation was much stronger for the older group, especially between performance and the ease of use.
<b>Computers in Human Behaviour</b>	2007	<b>Carpenter.B.D Buday.S</b>	<b>Vol.23 p.3012-3024</b>	<b>Computer Use Among Older Adults in a Naturally Occurring Retirement Community</b>	Acknowledging older adults computer use is relatively low compared to other age groups, this study examined patterns and barriers to computer use, among 324 residents living in a suburban naturally occurring retirement community (NORC). Using interviews - questions were administered to over 65s. Results showed that barriers to more frequent use included cost, complexity, ergonomic impediments, and a lack of interest.
<b>Universal Access In Human Computer Interaction</b>	2007	<b>Chadwick-Dias.A Bergel.M Tuillis.T.S</b>	<b>Vol.4554 p.868-876</b>	<b>Senior Surfers 2.0: A Re-examination of the Older Web User and the Dynamic Web</b>	Examining digital divide that exists between older and younger web users, this article aims to determine if web 2.0 technologies are able to help bridge this gap. This article also defines and explains the transition and differences between web 1.0 and web 2.0 web based technologies.
<b>Computers in Human Behaviour</b>	2007	<b>Grimes.G.A Hough.M.G Signorella.M.L</b>	<b>Vol.23 p.318-332</b>	<b>E-mail End Users and Spam: Relations of Gender and Age Group to Attitudes and Actions</b>	Investigating the increase of e-mail spam, this research examines users attitudes towards and experience with spam with focus of gender and age. University students (205) were recruited to take part. Data was divided into three age groups representing traditional college age (<23), working age (24-60), and retirement age (>60). The results showed that the vast majority of email users strongly dislike spam. Age effects were more prominent and included the finding that the oldest male participants were lower in self-reported expertise than the working age men.
<b>Journal of Management Information Systems</b>	2006	<b>Lam.J.C.Y Lee.M.K.O</b>	<b>Vol.22 Issue.4 p.177-206</b>	<b>Digital Inclusiveness—Longitudinal Study of Internet Adoption by Older Adults</b>	This research examines digital inclusiveness of older adults (55+) and internet adoption, with a special focus on internet self-efficacy and usage intention. This research conducted a longitudinal research approach totaling almost 1000 participants. The results showed that in study 1 and 2 internet self-efficacy was significantly related to usage intention, however not in study 3.
<b>IEEE Transactions On Engineering Management</b>	2005	<b>Morris.M.G Venkatesh.V Ackerman.P.L</b>	<b>Vol.52 No.1 p.69-84</b>	<b>Gender and Age Differences in Employee Decisions About New Technology: An Extension to the Theory of Planned Behavior</b>	Extending TPB with age and gender moderators regarding user perceptions and continued use of technology in the workplace. 342 workers reactions and use behavior were studied over a six-month period. The results indicated that gender and age together moderated key TPB relationships, such as gender differences, which were more pronounced with increasing age. Also, the relationships posited by the TPB can benefit from the inclusion of moderators.

<b>Educational Gerontology</b>	<b>2004</b>	<b>Saunders.E.J</b>	<b>Vol.30 p.573-585</b>	<b>Maximising Computer Use Among the Elderly in Rural Senior Centers</b>	Acknowledging the ageing population, and the increased reliance on computers. This research conducts qualitative focus groups in order to understand views towards computer use. The results showed that older people obtain most of their information regarding the value of computers from family members, older persons feel overwhelmed with regards to learning how to use computers and older people believe they will benefit more from personal instruction in using computers, rather than from manuals.
<b>Journal of Aging Studies</b>	<b>2004</b>	<b>Selwyn.N</b>	<b>Vol.18 p.369-384</b>	<b>The Information Aged: A Qualitative Study of Older Adults' Use of Information and Communication Technology</b>	With the aim of understanding reasons and motivations underlying older adults' adoption or non-adoption of ICTs. Using data collected from in-depth interviews from 35 individuals aged over 60 years. This research found that older adults who were using computers were mainly doing so for specific purposes including word processing, keeping in contact with others and generally teaching themselves about using the computer. It was not apparent that older adults are not making use of computers because they are alienated from or incapable to use new technologies.
<b>The American Journal of Psychology</b>	<b>2003</b>	<b>Wood.A</b>	<b>Vol.116 No.3 p.477-483</b>	<b>Silver Surfers: Creating Space for Geriatric Internet Studies</b>	This book review illustrates views and information regarding the gap of internet studies and older adults. This article notes that in consideration of the rapid advancements (over 25 years) in technology, seniors have not be left behind in the internet revolution.
<b>Personnel Psychology</b>	<b>2000</b>	<b>Morris.M.G Venkatesh.V</b>	<b>Vol.53 p.375-403</b>	<b>Age Differences in Technology Adoption Decisions: Implications for a Changing Work Force</b>	In the workplace context this research examines age differences in individuals adoption and sustained technology use. Technology users behavior was studied over a 5-month period, among 118 workers, at two points of measurement. Using TPB, age was integrated as a moderating variable and determinant of attitude toward using technology, subjective norm and perceived behavioral control constructs. Younger workers were more strongly influenced by attitude towards using a technology. Older workers were more strongly influenced by subjective norm and perceived behavioral control.

<b>Web 2.0/OSNs/Internet -Literature Review</b>					
<b>Journal/ Conference</b>	<b>Year</b>	<b>Author(s)</b>	<b>Vol/Issue/ Pages</b>	<b>Article Title</b>	<b>Findings</b>
<b>Qualitative Market Research: An International Journal</b>	2012	<b>Hadija.Z Barnes.S.B Hair.N</b>	<b>Vol.15 No.1 p.19-32</b>	<b>Why We Ignore Social Networking Advertising</b>	In order to provide an understanding of ways in which online advertisements are perceived. This research conducted in-depth interviews with 20 college students. This research concluded that OSN users do not dislike online advertising. Instead they simply do not notice these adverts. Brand recognition in OSNs was also found to be much lower than recognition that is formed through media channels.
<b>Computers In Human Behavior</b>	2012	<b>Muscannell.N.L Guadagno.R.E</b>	<b>Vol.28 p.107-112</b>	<b>Make New Friends or Keep the Old: Gender and Personality Differences In Social Networking Use</b>	This research examines the influence of gender and personality on individuals OSN use. An online survey was used to collect data from 238 participating undergraduate students. Results showed that men reported using OSNs for forming new relationships while women reported using them more for relationship maintenance. This research concluded, by highlighting the importance of examining individual difference in online behavior.
<b>Computers In Human Behavior</b>	2012	<b>Tosun.L.P</b>	<b>Vol.28 p.1510-1517</b>	<b>Motives for Facebook Use and Expressing “True Self” on the Internet</b>	This research examined what motivates young adults towards the use of OSN; Facebook. An online survey was used to collect data from 143 university students. The results showed that the primary motive for Facebook use was to maintain long-distance relationships. Followed by game-playing/entertainment, active forms of photo-related activities, organizing social activities, passive observations, establishing new friendships, and initiating and/or terminating romantic relationships.
<b>Computers In Human Behavior</b>	2012	<b>Special.W.P Li-Barber.K.T</b>	<b>Vol.28 p.624-630</b>	<b>Self-Disclosure and Student Satisfaction With Facebook</b>	The aim of this research was to identify specific motives for creating and maintaining a Facebook profile. A computer-based survey was administered to 127 undergraduate students. The results showed that satisfaction with Facebook is to an extent related to levels of self-disclosure and time spent maintaining one’s Facebook page.
<b>Procedia - Social and Behavioral Sciences</b>	2012	<b>Moradabadi.Y.N Gharehshiran.M.A Amrai.K</b>	<b>Vol.46 p.5192-5195</b>	<b>What Is the Motivation Student of Iranians for Using Facebook?</b>	This research examines motivations for Facebook use by Iranian students. Using a survey questionnaire of 400 Iranian student Facebook users. The results showed that the main motivations were; information sharing, freedom of communication, free flow of information, control of information, principles of equality and the requirement for information and Entertainment.
<b>Computers In Human Behavior</b>	2012	<b>McAndrew.F.T Jeong.H.S</b>	<b>Vol.28 p.2359-2365</b>	<b>Who Does What on Facebook? Age, Sex, and Relationship Status as Predictors of Facebook Use</b>	With the aim of investigating how individuals use Facebook, an online survey was administered through Facebook event invitations. This resulted in an international sample of 1,026 Facebook users. The result showed that females spent more time on Facebook, had more Facebook friends, and were more likely to use profile pictures for impression management. Also, women and older people engaged in more online family activity.
<b>Government Information Quarterly</b>	2012	<b>Kavanaugh.A.L Fox.E.A Sheetz.S.D Yang.S Li.L.T Shoemaker.D.J Natsev.A Xie.L</b>	<b>Article In Press</b>	<b>Social Media Use By Government: From the Routine to the Critical</b>	Identifying that governments are utilizing the benefits of OSNs. This research conducts an exploratory study using focus group interviews and questionnaire (25). The results showed that local government uses social media without knowing its costs and benefits, tools are needed to help government and citizens make use of the massive amounts being generated on OSNs, and digital libraries are needed to archive and curate generated OSN content, especially for crisis management.
<b>Computers In Human Behavior</b>	2012	<b>Junco.R</b>	<b>Vol.28 p.187-198</b>	<b>Too Much Face and Not Enough Books: The Relationship Between Multiple Indices of Facebook Use and Academic Performance</b>	Investigating the relationship between college students Facebook use and academic performance. This research conducted an online survey, resulting in 1,839 responses. Analysis showed that time spent on Facebook was significantly, negatively related to overall GPA of participating students. Also a weak relationship was observed with Facebook use and time spent preparing for class.
<b>Computers &amp; Education</b>	2012	<b>Junco.R</b>	<b>Vol.58 p.162-171</b>	<b>The Relationship Between Frequency of Facebook Use, Participation in Facebook Activities, and Student Engagement</b>	With the aim of examining the relationship between frequency of Facebook use, participation in Facebook activities, and student engagement. An online survey was used to collect data from 2,368 students. Results showed that Facebook use was negatively predictive of engagement scale score and positively predictive of time spent in co-curricular activities

<b>Information Economics and Policy</b>	2012	Hong.S	Vol.24 p.69-74	<b>Online News on Twitter: Newspapers' Social Media Adoption and Their Online Readership</b>	With the aim of understanding the implications of news organizations' adoption of social media sites. This research compiled a data set of 337 sample newspapers. The analysis demonstrated newspapers' adoption of social media is positively related with an increase in their online readership.
<b>Computers In Human Behavior</b>	2012	Guadagno.R.E Muscanell.N.L Pollio.D.E	Article In Press	<b>The Homeless Use Facebook?! Similarities of Social Network use Between College Students and Homeless Young Adults</b>	This research examined the differences of technology use among homeless young adults and college students. With the aim of understanding younger adults technology use. An online survey was used to collect data from 303 homeless young adults and 237 undergraduates. The analysis showed consistently high proportions of OSN use by both the undergraduate (96.7%) and homeless young adults (75%). These results indicated that OSN usage was nearly ubiquitous for both sample groups.
<b>Procedia - Social and Behavioral Sciences</b>	2012	Bicen.H Cavus.N	Vol.46 p.335-339	<b>Twitter Usage Habits of Undergraduate Students</b>	This research aimed to investigate undergraduates use of the OSN; Twitter. An online survey was used to collect data from 93 students. The results showed that quotes, photos, videos, music, news, IT news and magazine news are the most commonly shared items on Twitter. Also, educational items were found to be the least frequently shared by the participating students.
<b>Journal of Computer Information Systems</b>	2012	Yang.T	Vol.52 Issue.3 p.50-59	<b>The Decision Behavior of Facebook Users</b>	This study aimed to identify factors that assist the successful implementation of Facebook marketing by enterprises. 256 smartphone Facebook users took part in this research. The results showed that Utilitarian and recreational advertising messages affect consumer advertising attitude, brand attitudes, purchasing intentions and involvement, influence Facebook decision behavior.
<b>Computers in Human Behavior</b>	2012	Mohamed.N Ahmad.I.H	Vol.28 p.2366-2375	<b>Information Privacy Concerns, Antecedents and Privacy Measure Use In Social Networking Sites: Evidence From Malaysia</b>	With the aim of understanding information privacy concerns toward OSNs, using Social Cognitive and Protection Motivation Theory and gender. This research conducted a cross-sectional survey of 340 Malaysian undergraduate students. Results showed that perceived severity, self-efficacy, perceived vulnerability, and gender are antecedents of information privacy concerns with social networking sites.
<b>Journal of Management Information Systems</b>	2012	Chai.S Das.S Raghav Rao.H	Vol.28 No.3 p.309-341	<b>Factors Affecting Bloggers' Knowledge Sharing: An Investigation Across Gender</b>	This research develops a framework in order to understand factors affecting knowledge sharing among bloggers in online social networks. Using a survey to collect data from 446 participants. This research found that Trust, Social Ties and Reciprocity are significant determinants of knowledge sharing behaviors. Information Privacy Concerns was found to be a non-significant determinant.
<b>Internet Research</b>	2012	Baltar.F Brunet.I	Vol.22 Issue.1 p.57-74	<b>Social Research 2.0: Virtual Snowball Sampling Method Using Facebook</b>	This research aimed to explore the utilization of Facebook as a method for sampling minority populations. A virtual method was developed using Facebook to identify Argentinean immigrant entrepreneurs in Spain (214). The number of cases detected by Facebook and the virtual response rate was found to be greater than the traditional snowball technique.
<b>International Journal Of Business And Management</b>	2011	Alam.S.S Yeow.P.H.P Loo.H.S	Vol.6 No.10 p.155-161	<b>An Empirical Study on Online Social Networks Sites Usage: Online Dating Sites Perspective</b>	This research investigates the attitudes of young adults towards online social networks and online dating sites usage. Data was collected using a survey questionnaire method totaling 378 participants. Results showed that even though most young adults have a Facebook page, only just over 10% of them date online. It was also found that from those who do date online females are searching their long-term partners, while the males are mainly interested in building casual relationships.
<b>Information Technology &amp; People</b>	2011	Batemen.P.J Pike.J.C Butler.B.S	Vol.24 No.1 p.78-100	<b>To Disclose or Not: Publicness in Social Networking Sites</b>	This research aims to answer how perceived publicness of OSNs effects users self-disclosure intentions. Theoretically assessing competing perspectives using an online survey research method. The results show that perceived publicness of an OSN negatively influences users' self-disclosure intentions.
<b>Personality And Individual Differences</b>	2011	Carpenter.J.M Green.M.C LaFlam.J	Vol.50 p.538-541	<b>People or Profiles: Individual Differences in Online Social Networking Use</b>	Investigating OSN use with regards to comparatively assessing behavior of individuals and their interactions in real life versus those conducted through OSNs. Using Mind-Reading Motivation Theory, as the premise to conduct an online survey of 194 participating psychology students. This research found that the extent to which individuals use Facebook to form romantic relationships was unrelated to perspective curiosity. Also, people who used Facebook as a real-life supplement were more likely to demonstrate perspective curiosity.

Computers In Human Behavior	2011	Chang.Y.P Zhu.D.H	Vol.27 p.1840-1848	Understanding Social Networking Sites Adoption in China. A Comparison of Pre-Adoption and Post-Adoption	This research develops a theoretical model using TPB, in order to examine the adoption intention of pre-adopters and post-adopters of OSNs. Using online survey data of 278 pre-adopters and 328 post-adopters. This research showed that connecting with old friends, meeting new friends and conformity were found to be strong predictors of post-adopters OSN use. Also, attitude, subjective norm, and perceived behavior control are the predictors of adoption intention in pre-adoption and post-adoption stages.
Computers In Human Behavior	2011	Chen.G.M	Vol.27 p.755-762	Tweet This: A Uses And Gratifications Perspective on How Active Twitter Use Gratifies a Need to Connect With Others	Using a Uses and Gratification theory to examine the user behavior of OSN Twitter. Using survey data for 317 Twitter users. This research found that with regards to use frequency; the greater the number of months a person was active on Twitter, the more hours per week a user spent on Twitter. Also, a relationship was found between active Twitter use and gratifying a need for connection.
Computers In Human Behavior	2011	Cheung.C.M.K Chiu.P Lee.M.K.O	Vol.27 p.1337-1343	Online Social Networks: Why Do Students Use Facebook?	Acknowledging the massive growth and adoption of OSNs by over 1 billion individuals worldwide. This research aims to empirically identify factors that drive students to use OSNs. Constructs; social influence, social presence, and the five key values from the uses and gratification paradigm were tested on We-Intention. An online survey questionnaire posted through Facebook, resulted in 182 responses. The results showed that social presence and entertainment value were significant predictors of We-Intention.
Journal Of Database Marketing & Customer Strategy Management	2011	Geddes.C	Vol.18 Issue.2 p.123-128	Achieving Critical Mass In Social Networks	Investigating the phenomena of critical mass within social networks. This research employs a business perspective to factors that create and drive critical mass within a social network. Successful critical mass was achieved through ensuring users experience is to their expectation from first use experience. Otherwise users are significantly less likely to log in a second time.
Computers In Human Behavior	2011	Hew.K.F	Vol.27 p.662-676	Students' And Teachers' Use of Facebook	This study reviewed existing literature focusing on the use of Facebook by students and teachers, in terms of teaching and learning purposes. The empirical review reveals a number of topics/themes: (a) students' Facebook usage profile (including their motives for Facebook use and identity presentation), (b) students' attitudes toward Facebook (c) the effects of Facebook on teacher credibility, student social presence, discussion, and academic performance.
Cyber psychology, Behavior, And Social Networking	2011	Kalpidou.M Costin.D Morris.J	Vol.14 No.4 p.183-189	The Relationship Between Facebook and the Well-Being of Undergraduate College Students	This research aimed to examine the relationship between Facebook use and attitudes, and self-esteem. Data was collected through a survey questionnaire from 70 undergraduate students. Descriptive analyses indicated that the average user spent 60–120 minutes on Facebook every day. Findings also strongly supported a relationship between Facebook variables and psychological well-being.
Journal Of Marketing Research	2011	Katona.Z Zubcsek.P.P Sarvary.M	p.425-443	Network Effects and Personal Influences: The Diffusion of an Online Social Network	Investigating the diffusion process within online social networks. This research examines the individual connections between members. Adoption decisions of individuals were modeled using three effecting factors: (1) the local network structure formed by already adopted neighbors, (2) the average characteristics of adopted neighbors (influencers) (3) the characteristics of the potential adopters. Data was sourced from a major European social networking site. It was found that interconnectedness of an individual's already adopted friends has a positive effect on adoption, which suggests influence of WOM. Also, demographic variables are good predictors of adoption.
Computers In Human Behavior	2011	Kim.Y Sohn.D Choi.S.M	Vol.27 p365-372	Cultural Differences in Motivations for Using Social Networking Sites: A Comparative Study of American and Korean College Students	This research aims to identify motives for and patterns of using social networking sites among college students in the US and Korea. 589 American (349), and Korean students (240) completed a self-administered survey. Motives for OSN use with both American and Korean participants were; seeking friends, social support, entertainment, information, and convenience.
Computers In Human Behavior	2011	Lin.K Lu.H	Vol.27 p.1152-1161	Why People Use Social Networking Sites: An Empirical Study Integrating Network Externalities And Motivation Theory	With the aim of investigating factors motivating continued OSN use, this research utilizes network externalities and motivation theory. An online survey distributed by means of Facebook, resulted in 402 responses. Findings showed that enjoyment, number of peers and usefulness are influential factors in participants continued use of OSNs.

<b>Information Technology &amp; People</b>	2011	Mital.M Sarker.S	Vol.24 No.4 p.378-392	<b>Multihoming Behavior of Users In Social Networking Web Sites: A Theoretical Model</b>	With the aim of investigating the multihoming behavior of OSN users, this research develops a theoretical model of multihoming behavior. Multihoming occurs when consumer's use the services of two competing service providers in order to obtain maximum network benefits. This article found that without product differentiation, all members that belong to smaller networks multihome to the bigger networks. Therefore the OSN with the bigger network size benefits from multihoming.
<b>Journal Of Product Innovation Management</b>	2011	Peng.G Mu.J	Vol.28 p.133-145	<b>Technology Adoption in Online Social Networks</b>	This research develops a framework to investigate behavioral differences within and between online and offline social networks. Behavior-link panel data obtained from an open source software (OSS) development network was used. This research found that ones decision to adopt a new technology is strongly influenced by the actions of the connected others.
<b>Cyber Psychology, Behavior, And Social Networking</b>	2011	Pollet.T.V Roberts.S.G.B Dunbar.R.I.M	Vol.14 No.4 p.253-258	<b>Use of Social Network Sites and Instant Messaging Does Not Lead to Increased Offline Social Network Size, or to Emotionally Closer Relationships with Offline Network Members</b>	This research examined the relationship between social media use, network size and emotional closeness. Using a questionnaire, data was collected from 117 participants (18-63 years). The results showed that OSN users compared to non-users, did not have larger offline networks, and were not emotionally closer to offline network members.
<b>Children And Youth Services Review</b>	2011	Sengupta.A Chaudhuri.A	Vol.33 p.284-290	<b>Are Social Networking Sites a Source of Online Harassment for Teens? Evidence From Survey Data</b>	Acknowledging that OSNs are being held partly responsible, as a cause for cyber-bullying and harassment. This research aims to understand factors that make teenagers vulnerable to internet abuse. Using data from the 2006 round of Pew Internet American Life Survey. The results show that OSN membership is not a strong predictor of online abuse in teenagers. Instead this study finds that demographic and behavioral characteristics are strong predictors of online abuse.
<b>Journal Of Advertising Research</b>	2011	Taylor.D.G Lewin.J.E Strutton.D	Vol.51 Issue.1 p.258-275	<b>Friends, Fans and Followers: Do Ads Work on Social Networks?</b>	This research empirically tests a framework in order to understand attitudes towards OSN advertising. Factors included peer influence, privacy concerns and entertainment. A survey questionnaire was used to collect data from 2,642 participants. Privacy concerns had a significant negative affect on attitude, where as peer influence and entertainment were found to have a significant positive affect on attitude.
<b>Knowledge Information Systems</b>	2011	Ying.X Wu.X	Vol.28 p.645-663	<b>On Link Privacy In Randomizing Social Networks</b>	This research utilizes an edge randomization approach to examine on link privacy of social networks. Using four network data sets; polbooks, Enron, email, and polblogs, theoretical studies and empirical evaluations. This research found that similarity measures could be used by attackers to significantly increase their confidence/accuracy of predicted sensitive links between nodes with high similarity values.
<b>Computers In Human Behavior</b>	2011	Ryan.T Xenos.S	Vol.27 p.1658-1664	<b>Who Uses Facebook? An Investigation Into the Relationship between the Big Five, Shyness, Narcissism, Loneliness, and Facebook Usage</b>	This research utilizes psychology theory to examine the OSN usage behavior of Australian internet users. Using an online survey, data was collected from 1324 Internet users (1158 Facebook users / 166 non- users), between the ages of 18 and 44. The results showed that Facebook users tend to be more extraverted and narcissistic, but less conscientious and socially lonely non-OSN users.
<b>Computers In Human Behavior</b>	2011	Hew.K.F	Vol.27 p.662-676	<b>Students' and Teachers' Use of Facebook</b>	This study conducts a review of published literature related to students and teachers use of Facebook. A literature search of 539 articles led to 36 that were identified for review. This review found the following motives for Facebook use: maintaining existing relationships, meeting new people, Facebook use is 'cool and fun', to increase ones popularity, to pass time, to express oneself and for learning purposes.
<b>Procedia - Social and Behavioral Sciences</b>	2011	Dogruer.N Menevis.I Eyyam.R	Vol.15 p.2642-2646	<b>What is the Motivation for Using Facebook?</b>	This study aims to examine the motivational factors of university preparatory school students for using Facebook. Using a survey questionnaire of 302 participants. This research found that factors relating to; passing time, information seeking, personal status and entertainment. For a proportion of users, were the motivational factors to partake in Facebook use.

European Conference On Information Systems	2011	Maier.C Laumer.S Eckhardt.A	2011 Proceedings Article.57	Dispositional Resistance to Change and Social Network Site Adopters' and Non-Adopters Attitudinal Beliefs – An Empirical Analysis	Examining the dispositional resistance to change in OSN adopters and non-adopters. This research used attitudinal beliefs from MATH theory. An online survey was used to collect data from 298 adopters, non-adopters and long-term non-adopters. The results showed significant relationships between the dispositional resistance to change and individuals' attitudinal beliefs, which varied for the three sample groups.
Symposium on Usable Privacy and Security	2011	Wang.Y, Komanduri.S, Leon.P.G, Norcie.G, Acquisti.A & Cranor.L.F	2011 Proceedings	"I regretted the minute I pressed share": A Qualitative Study of Regrets on Facebook	This research aimed to examine individuals OSN behavior with regards to regrets associated with 'posted' messages on popular OSNs. Using an online survey of 569 American Facebook users. This research found that causes of regret include:(1) they want to be perceived in favorable ways, (2) they do not think about their reason for posting or the consequences of their posts, (3) they misjudge the culture and norms within their social circles, (4) they are in a "hot" state of high emotion when posting, or under the influence of drugs or alcohol.
Information Technology & People	2011	Panteli.N Yan.L Chamakiotis.P	Vol.24 Issue.4 p.362-377	Writing to the Unknown: Bloggers and the Presence of Backpackers	With the aim of investigating the virtual presence in travel blogs, this research utilized an exploratory case study approach. Qualitative analysis using a thematic analysis approach was undertaken. This research found that invisible and unknown audience has an important role to play in backpackers' presence online.
International Journal of Advanced Computer Science and Applications	2010	Abedniya.A Mahmouei.S.S	Vol.1 No.6 p.139-146	The Impact of Social Networking Websites to Facilitate the Effectiveness of Viral Marketing	This research investigated the impact of OSNs as tools to facilitate the effectiveness of viral marketing. An online survey was used to collect data from 150 students enrolled in Malaysian Universities. Playfulness, critical mass, community driven, peer pressure, perceived ease of use and perceive usefulness constructs were tested as explanatory constructs of 'rapid diffusion to audience reaches'. The results showed that social networking websites are significantly influenced by individual's motivational characteristics on viral marketing.
Journal of Interactive Online Learning	2010	Brady.K.P Holcomb.L.B Smith.B.V	Vol.9 No.2 p.151-170	The Use of Alternative Social Networking Sites in Higher Educational Settings: A Case Study of the E-Learning Benefits of Ning in Education	Investigating the integration of OSN use for distance education delivery and the educational benefits of OSNs. This research focuses on the education based OSN, Ning. 50 graduate students participated in an online survey regarding the benefits of OSNs. The results of this research showed that education based OSNs can be used most effectively in distance education courses as a tool for communication for students in higher education.
Computers In Human Behavior	2010	Gao.Q Dai.Y Fan.Z Kang.R	Vol.26 p.1846-1861	Understanding Factors Affecting Perceived Sociability of Social Software	The aim of this study was to identify factors that effect a users perception of sociability of social software on users attitudes and intention. Using a survey questionnaire of 163 responses. This research found that; sociability influences social climate, benefits and purposes, people, interaction richness, self-presentation and support for formal interaction. System competency was not a sociability factor, but it was significantly influential to a user's experience.
Information Systems	2010	Kim.W Jeong.O Lee.S	Vol.35 p.215-236	On Social Web Sites	In light of the massive popularity of social media internet technologies. This research proposes a comprehensive framework for discussing, understanding, using, building, and forecasting the future of social Web sites. From an assessment of press articles this research provides a set of taxonomies as a basis for understanding, discussing, adopting, and developing social Web sites.
Journal Of Adolescent Health	2010	Mitchell.K.J Finkelhor.D Jones.L.M Wolak.J	Vol.47 p.183-190	Use of Social Networking Sites in Online Sex Crimes Against Minors: An Examination of National Incidence and Means of Utilization	This research aims to describe a number of ways in which OSNs are used to facilitate the sexual exploitation of youth. Mail surveys were sent to a nationally representative sample of law enforcement agencies. 1,051 follow up telephone interviews were then conducted. This research concluded that considerable number of arrests for internet sex crimes against minors hold the involvement of OSNs.
Computers In Human Behavior	2010	Nosko.A Wood.E Molema.S	Vol.26 p.406-418	All About Me: Disclosure In Online Social Networking Profiles: The Case of Facebook	This research examines the disclosure of personal information of OSN users. Three views were employed; 1) reflection of personal identity information 2) involvement of sensitive personal information 3) involvement of potentially stigmatizing information. Thematic analysis was conducted. This research provided evidence that shows that highly personal, sensitive, and potentially stigmatizing information is being disclosed on social networking sites

<b>Computers In Human Behavior</b>	2010	Patchin.J.W Hinduja.S	Vol.26 p.1818-1821	<b>Changes In Adolescent Online Social Networking Behaviors From 2006 to 2009</b>	This research identified that due to the OSN phenomena, considerations regarding personal privacy have drastically changed. The aim of this study was to assess any behavioral changes that might have occurred between 2006 and 2009. This research found that youth are more frequently restricting access to their profiles and less frequently revealing personal information on public profiles.
<b>Conference On Information Systems Applied Research</b>	2010	Peslak.A Cecucci.W Sendall.P	Proceedings 2010	<b>An Empirical Study of Social Networking Behavior Using Diffusion of Innovation Theory</b>	This study investigates individual's behavior towards OSN use, using DOI innovation characteristics. 198 students completed a survey questionnaire, the results showed that; compatibility, relative advantage, complexity and ease of trying are positively associated with individuals intention to use OSNs. Gender showed a minor difference between diffusion influences on intention.
<b>Communications Of The ACM</b>	2010	Vannoy.S.A Palvia.P	Vol.53 No.6 p.149-153	<b>The Social Influence Model of Technology Adoption</b>	This research aims to examine the adoption of information technologies in the context of social computing. Through the development of the social influence model of technology adoption. Factors; Social computing; action, consensus, cooperation and authority are determinants of social influence, which in turn predict technology adoption.
<b>Computers &amp; Education</b>	2010	Mazman.S.G Usluel.Y.K	Vol.55 p.444-453	<b>Modeling Educational Usage of Facebook</b>	Using factors perceived ease of use, usefulness, social influence and facilitating conditions this research develops a theoretical framework to examine the educational use of Facebook. An online survey was used to collect data from 606 Facebook users. The results showed that Usefulness, ease of use, social influence and facilitating conditions were all strong predictors of a participants 'purpose' for Facebook use.
<b>Public Relations Review</b>	2010	Curtis.L Edwards.C Fraser.K.L Gudelsky.S Holmquist.J Thorton.K Sweetser.K.D	Vol.36 p.90-92	<b>Adoption of Social Media for Public Relations by Non-profit Organizations</b>	In order to investigate the use of social media by nonprofit public relations practitioners. This research employed UTUAT, and an online survey of 409 participants. The results showed that women consider social media use to be beneficial, whereas men demonstrated more confidence in actively using social media services. Also, findings suggest that social media tools are becoming a useful method of communication for public relations practitioners in the nonprofit sector.
<b>Information Technology &amp; People</b>	2010	Light.B McGrath.K	Vol.23 No.4 p.290-311	<b>Ethics and Social Networking Sites: A Disclosive Analysis of Facebook</b>	This research investigates views and perceptions towards OSNs regarding ethics and moral values. Using a qualitative approach of participant observation, over a 2-year period. The findings reveal the complex and diffuse nature of ethical responsibility and the resulting implications for the governance of OSNs.
<b>Internet Measurement Conference</b>	2009	Benevenuto.F Rodrigues.T Cha.M Almeida.V	2009 Proceedings	<b>Characterizing User Behavior in Online Social Networks</b>	The aim of this study was to determine how OSN users behave when interacting with their OSN profile. Click- stream data was collected over a 12-day period, summarizing HTTP sessions of 37,024 users who accessed four popular social networks: Orkut, MySpace, Hi5, and LinkedIn. This research demonstrated the applicability of clickstream data in identifying patterns in social network workloads and social interactions.
<b>International Journal Of Market Research</b>	2009	Casteleyn.J Mottart.A Rutten.K	Vol.51 Issue.4 p.439-447	<b>How to Use Facebook In Your Market Research</b>	Focusing on OSN use, this preliminary article employs a business perspective, evaluating the use of Facebook as an organizational marketing tool. Using theory developed by Kenneth Burke (1897-1993), this article posits a method of investigation behind the human actions regarding OSNs and marketing strategies.
<b>Cyber Psychology &amp; Behavior</b>	2009	Christofides.E Muise.A Desmarais.S	Vol.12 No.3 p.341-345	<b>Information Disclosure and Control on Facebook: Are They Two Sides of the Same Coin or Two Different Processes?</b>	In light of OSNs requirement to disclose personal information, in order to full utilize the benefits of these online services. This research examined undergraduate students behavior towards the disclosure of their personnel information. Using online survey methods to collect data from 343 student participants. This research found that participants perceived that they disclosed more information about themselves on Facebook, than in general. Also, information control and privacy were found to be important considerations of use decision-making.
<b>Computers In Human Behavior</b>	2009	Fogel.J Nehmad.E	Vol.25 p.153-160	<b>Internet Social Network Communities: Risk Taking, Trust and Privacy Concerns</b>	Focusing on facets of risk taking, trust and privacy concerns with regards to OSNs. This study conducts a survey of 205 undergraduate students. The results showed that 10% of the participants provided their phone number on their social network profile. And those with social networking profiles had greater risk taking attitudes than those who did not have social networking profiles.

Journal Of Business Ethics	2009	Grabner-Krauter.S	Vol.90 p.505-522	Web 2.0 Social Networks: The Role of Trust	Focusing on the issues of trust and web 2.0 technologies, specifically OSNs. A theoretical framework was developed which facilitates a multi-level and multi-dimensional analysis of research problems related to trust in OSNs. Literature and sources of trust and trust-related decisions and behaviors in OSNs were reviewed. This review found that social capital can be viewed both as an outcome gained by individuals in an OSN and as a tool for facilitating governance.
European Conference On Information Systems	2009	Haider.A	2009 Proceedings Paper.28	Continuance Usage Intention In Micro blogging Services: The Case Of Twitter	Identifying the massive popularity experienced by the OSN, Twitter. This research examines the intention to continue using OSNs after initial acceptance. A theoretical model drawing on theories of continuance, habit and critical mass was developed. Using an online survey of 131 participants. The results demonstrated that that continued use intention is strongly determined by perceived usefulness, satisfaction and habit ( $R^2=0.454$ ), which together provided a strong explanation for Twitter user behavior.
Communications Of The Association For Information Systems	2009	Kim.D.J Yue.K Hall.S.P Gates.T	2009 Proceedings Vol.24 Article 38	Global Diffusion of the Internet XV: Web 2.0 Technologies, Principles, and Applications: A Conceptual Framework from Technology Push and Demand Pull Perspective	This research presents a conceptual Web 2.0 framework to examine web 2.0 diffusion, using a technology push and demand pull perspective. This research also details opportunities provided by Web 2.0 to education, business, and social life. It is concluded that web 2.0 has expanded beyond consumer use to become a popular business tool.
International Conference On Information Systems	2009	Lin.M Prabhala.N.R Viswanathan.S	2009 Proceedings	Can Social Networks Help Mitigate Information Asymmetry in Online Markets?	From an economics standpoint this research investigates OSNs ability to assist mitigation of information asymmetry. Using data on peer-to-peer lending market; prosper.com. Results showed that online social networks can be sometimes associated with negative outcomes, and OSNs do not automatically and always create value to stakeholders.
Journal Of Applied Developmental Psychology	2009	Pempek.T.A Yermolayeva.Y.A Calvert.S.L	Vol.30 p.227-238	College Students' Social Networking Experiences on Facebook	In order to understand motives behind the use of OSN; Facebook. This research obtained data through a diary-like measure each day for 1 week, and follow up interviews. 92 undergraduate students participated. The results showed that students use Facebook for approximately 30 minutes throughout the day as part of their daily routine. Also, students communicated on Facebook using a one-to-many structure. Communication was fundamentally between those who held a pre-established relationship offline
European Conference On Information Systems	2009	Saeed.N Yang.Y Sinnappan.S	2009 Proceedings	User Acceptance of Second Life: An Extended TAM Including Hedonic Consumption Behaviors	This study examines the intention to use Web 2.0 virtual worlds. Theoretically extending TAM with the inclusion of hedonic consumption constructs, and survey data of 122 users. This research found that hedonic consumption behaviors are strong predictors of Second Life use, when compared to original TAM constructs; usefulness and ease-of-use.
Journal Of Computer Information Systems	2009	Sledgianowski.D Kulviwat.S	Vol.49 Issue.4 p.74-83	Using Social Network Sites: The Effects of Playfulness, Critical Mass and Trust in a Hedonic Context	This study aims to understand OSN adoption factors; normative pressure, playfulness, critical mass, trust, usefulness, and ease of use on usage intention and actual OSN use. An online survey was used to collect data from 289 participants. The results show that all constructs had a significant direct effect on intent to use OSNs. Perceived playfulness and perceived critical mass were the strongest indicators.
International Journal Of Human Sciences	2009	Kocak-Usuel.Y Mazman.S.G	Vol.6 Issue.2 p.90-98	Adoption of Web 2.0 Tools In Distance Education	This research examines the adoption of web 2.0 tools; blogs, wikis, podcasts and OSNs. This research theoretically assesses TRA, TPB, UTAUT, TAM 1 and TAM 2, and the theoretical application of these theories on web 2.0 research practices. This research concludes by suggesting that consideration of both technological characteristics of technology and factors in distance education should be made.
European Conference On Information Systems	2009	Wang.C Chou.S Chang.H	2009 Proceedings	The Moderating Role of Utilitarian/Hedonic User Motivation on User Behavior Towards Web 2.0 Applications	In order to understand motivational factors influencing the behavior towards web 2.0 applications. This research extends TAM with the moderating factors of hedonic/utilitarian motivation. Using a survey questionnaire, responses were collected for the utilitarian experiment (102) and for the hedonic experiment (92). The results showed that utilitarian and hedonic motivations had a moderating impact on the relationship between perceived belief and user attitude.

Computers In Human Behavior	2009	Ross.C Orr.E.S Sisic.M Arseneault.J.M Simmering.M.G Orr.R.R	Vol.25 p.578-586	Personality and Motivations Associated with Facebook Use	Acknowledging the offline-to-online trend that occurs in OSNs, this research presents a five-factor model to examine personality and motivations toward Facebook use. Personality factors include; Neuroticism, extraversion, openness to experience, agreeableness and conscientiousness. An online survey was used to collect data from 97 psychology students. Personality variables were found to be associated with some aspects of Facebook use.
Journal of Computer Information Systems	2009	Cardon.P.W, Marshall.B, Choi.J, El-Shinnaway.M.M, North.M, Svensson.L, Wang.S, Norris.D.T, Cui.L, Goreva.N, Ranongpaka.V, Tsinias.A, Whelan.C, Cho.J, Collier.C, Nilsson.S, Ravid.G & Valenzuela.J.B	Vol.50 Issue.1 p.54-64	Online and Offline Social Ties of Social Network Website Users: An Exploratory Study in Eleven Societies	Investigating OSN usage and social ties both online and offline, of university students across eleven international societies (China, Egypt, France, Israel, India, Korea, Macao, Sweden, Thailand, Turkey, and the United States). This research used an online survey of 1,113 OSN users. This research found no difference in the number of online social ties between individualist and collectivist nations.
Journal Of Direct, Data And Digital Marketing Practice	2008	Constantinides.E Fountain.S.J	Vol.9 No.3 p.231-244	Web 2.0: Conceptual Foundations And Marketing Issues	This article theoretically assesses the technological and commercial foundations of social media applications to marketing processes and strategies. This article defines and describes Web 2.0 and its sub-categories and goes on to describe social media as an effective marketing tool within corporate and organizational environments.
Physica A	2008	Fu.F Liu.L Wang.L	Vol.387 p.675-684	Empirical Analysis of Online Social Networks in the Age of Web 2.0	This research investigates the statistical properties of two important Chinese OSNs; 1) a blogging network 2) SNS open to college students. Using mathematical analysis, the blogging network showed disassortative mixing pattern, whereas the SNS network an assortative pattern.
European Conference On Information Systems	2008	Krasnova.H Hildebrand.T Guenther.O Kovrigin.A Nowobilaska.A	2008 Proceedings Paper.33	Why Participate In An Online Social Network? An Empirical Analysis	In an attempt to understand factors that influence participation in OSN use. A survey questionnaire was used to collect data from 129 participants. The results found that the satisfaction of the needs for belongingness, the esteem needs through self-presentation together and peer pressure are the main drivers of participation in OSN use. The analysis of a sub sample of more active users revealed that 'satisfaction of the cognitive needs' is also a motivational factor.
Computers In Human Behavior	2008	Lewis.C.C George.J.F	Vol.24 p.2945-2964	Cross-Cultural Deception in Social Networking Sites and Face-To-Face Communication	From a perspective of deception in OSNs. This study presents a framework examining the role Korean and American culture plays in deceptive behavior for both face-to-face (FTF) and computer-mediated communication (CMC). An online survey was used to collect data from 193 participants. This research found that Korean respondents exhibited greater collectivist values, lower levels of power distance, and higher levels of masculine values than Americans.
European Conference On Information Systems	2008	Schaefer.C	2008 Proceedings	Motivations and Usage Patterns on Social Network Sites	This article suggests a framework for understanding the frequency and motivations of OSN use. Using a survey questionnaire of 284 participants (mean age 31). This research found that users contact lists mirror real life social networks to an extent. Also, a majority of SNS users try to form new relationships by adding someone unknown to them.
Journal of Applied Developmental Psychology	2008	Subrahmanyam.K Reich.S.M Waechter.N Espinoza.G	Vol.29 p.420-433	Online and Offline Social Networks: Use of Social Networking Sites by Emerging Adults	Examining the use behavior of OSNs and college students. This research collected person-to-person and online survey (105) data. The results showed that participants use the Internet, especially OSNs, to connect and reconnect with friends and family members. With regards to decision making about adding new 'friends'. The majority said they would only add someone they have met in person. The minority said they add anyone who sends a request.
International Conference On Information Systems	2008	Wang.D Xu.L Chan.H.C	29th Proceedings	Understanding Users' Continuance of Facebook: The Role of General and Specific Computer Self-Efficacy	This research aimed to examine the role of general and specific computer self-efficacy in predicting users' continuance intention of OSNs. Using an extension of TAM and a survey questionnaire of 110 participants. The results validated the predictive power of this TAM extension for Facebook continuance. Perceived usefulness was the strongest significant predictor of Facebook continuance intention.
IEEE Asia-Pacific Services Computing Conference	2008	Wu.M Chou.H Weng.Y Huang.Y	2008 Proceedings	A Study of Web 2.0 Website Usage Behavior Using TAM 2	This research examines the effect of TAM2 constructs on an individuals intention use web 2.0 technologies. A questionnaire in both online and paper based formats was distributed, resulting in 400 responses. The results showed that perceived usefulness, perceived ease of use and subjective norm have a significant positive effect on intention to use. Intention positively effected use behavior.

Workshop on Social Network Systems	2008	Maia.M Almeida.J Almeida.V	2008 Proceedings p.1-6	Identifying User Behavior in Online Social Networks	Identifying that OSN use behavior changes throughout different groups of society. This research develops a methodology for identifying differences in OSN use behavior. Using WebCrawler's to collect data from YouTube. This research found that attributes sourced from user social interactions, diverse to attributes relative to each individual user, are good discriminators and allow the identification of the dominant user behaviors.
ACM Conference on Computer Supported Cooperative work	2008	Lampe.C Ellison.N.B Steinfeld.C	2008 Proceedings	Changes in Use and Perception of Facebook	This research aims to understand how and if OSN perceptions and use behavior have changed over time. Surveys were conducted over a three-year period 2006 (288), 2007 (468) and 2008 (419). Interviews were also conducted. The results showed that uses of OSNs remain relatively constant over time, but the perceived audience for user profiles and attitudes about OSNs showed differences over the research period.
Workshop on Social Network Systems	2008	Krishnamurthy.B Willis.C.E	2008 Proceedings p.37-42	Characterizing Privacy in Online Social Networks	Employing a privacy perspective, and focusing on information sharing and privacy leakages throughout OSNs. This research found a strong negative correlation between regional network size in Facebook and users utilization of privacy settings to limit access to the information they share.
American Conference On Information Systems	2007	Dwyer.C Hiltz.S Passerini.K	2007 Proceedings	Trust and Privacy Concern Within Social Networking Sites: A Comparison of Facebook and MySpace	With focus on OSNs; Facebook and MySpace. This research examines the effect of trust and privacy concern on OSN use. Using the privacy trust model and a survey instrument. Data gathered from 117 participants, showed that both Facebook and MySpace users demonstrated similar levels of trust regarding internet privacy. Facebook members were more trusting of the site and its members. Where as MySpace members were more active in the development of new relationships.
Internet Measurement Conference	2007	Mislove.A Marcon.M Gummadi.K.P Druschel.P Bhattacharjee.B	2007 Proceedings	Measurement and Analysis of Online Social Networks	This research aims to conduct a large-scale measurement study of the structure of popular and widely used OSNs. Data was obtained through web crawlers collected from Flickr, YouTube, LiveJournal, and Orkut. The result of analysis showed much higher fractions of symmetric links and also exhibited much higher levels of local clustering.
Journal Of The Association For Information Systems	2007	Parameswaran.M Whinston.A.B	Vol.8 Issue.6 Article.1	Research Issues In Social Computing	This article discusses research issues regarding the business deployment of social computing, including network effects, trust and reputation, business models, market structure, and customer interaction. This article concludes that social computing presents the IS research the opportunity for new research, as well as for further evolving the discipline and its practice of research and education.
Communications of the Association for Information Systems	2007	Parameswaran.M Whinston.A.B	Vol.19 p.762-780 Article.37	Social Computing: An Overview	This research provides an overview of social computing through the identification of salient characteristics. This article presents views that social computing technologies have a disruptive potential in terms of business, and can significantly impact society, also providing suggestions that social computing should be a priority topic in future research and business endeavors.
Journal of Computer-Mediated Communication	2007	Ellison.N.B Steinfeld.C Lampe.C	Vol.12 p.1143-1168	The Benefits of Facebook "Friends:" Social Capital and College Students' Use of Online Social Network Sites	With the aim to investigate the relationship between Facebook use and the formation and maintenance of social capital. A randomly sampled online survey was used to collect data from 286 undergraduate students. The results showed that Facebook usage interacted with measures of psychological well being, and was strongly correlated to the three types of social capital.
International Journal Human-Computer Studies	2006	Du.H.S Wagner.C	Vol.64 p.789-798	Weblog Success: Exploring the Role of Technology	Identifying the massive popularity of weblogs, 126 highly successful weblogs were tracked over a 3-month period. The analysis of data collected showed that the success of a weblog is associated with the type of weblog being used. As a result this research proposes the weblog success model. With interrelated constructs; content value, technology value, social value as determinants of weblog success/popularity.

<b>Medical Informatics And The Internet In Medicine</b>	<b>2005</b>	<b>Adams.N Stubbs.D Woods.V</b>	<b>Vol.30 Issue.1 p.3-17</b>	<b>Psychological Barriers to Internet Usage Among Older Adults in the UK</b>	Identifying that the majority of internet users are of the age of 55, this study investigated perceived usefulness, perceived ease of use, Internet efficacy, perceived complexity of navigation and perceived complexity of terminology. As psychological barriers to internet use. Interviews were conducted using 23 subjects (55-75 years). The research revealed the majority of the older adults who had a positive perception of usefulness, ease of use, and efficacy of the Internet or e-mail, used the Internet or e-mail more often.
<b>Information Technology &amp; People</b>	<b>2005</b>	<b>Herring.S.C Scheidt.L.A Wright.E Bonus.S</b>	<b>Vol.18 No.2 p.142-171</b>	<b>Weblogs As a Bridging Genre</b>	The aim of this research was to systematically describe the characteristics of web 2.0 services; weblogs. Using content analysis of 203 randomly selected blogs, empirically examining the content of each post. Less evidence than expected was found supporting that blogs are interlinked, interactive, and oriented towards external events.
<b>Annual Review Of Sociology</b>	<b>2001</b>	<b>DiMaggio.P Hargittai.E Neuman.R Robinson.J.P</b>	<b>Vol.27 p.307-336</b>	<b>Social Implications of the Internet</b>	This article conducts an annual review of sociology which describes the current (at the time of publication) trends on internet research: (1) inequality (the "digital divide) (2) community and social capital 3) political participation (4) organization and other economic institutions (5) Cultural participant and cultural diversity.

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## **3- 1 Pilot Survey - Content Validity Feedback Form**

# **Research Feedback**

**Facebook is one of the leading social networking websites. As of 2011 there are half a billion active users: approx.1 IN EVERY 13 PEOPLE on earth. Half of these users are logged in on any given day.... Facebook is not the only social network this phenomenon is occurring within, many other widely used social networks have experienced the same rapid growth such as MySpace and Twitter.**

**Although the vast majority of these users are aged 18 – 35 years old, the minority of users are aged 50+....**

**The overall purpose of this research is therefore to understand what causes the over 50s Internet community to be the minority users?**

**A framework comprised of possible factors that are viewed to be influencing the social networking usage behaviour of 50+ internet users, has been created. Two methods will be used to collect data to examine these factors (1) a survey questionnaire (2) focus group sessions. This preliminary validation process, is designed to ensure the questions being asked within each of these methods are pertinent to aims of this social networking research.**

**Instructions are on the following page.**

**On behalf of the research team, thank you for your time and participation.**

## **Content Validity - Instructions**

A copy of the survey questionnaire and focus group questions has been provided.

For each individual question we would like your opinion on whether you believe that question is:

<p style="text-align: center;"><b>Essential</b> to aims of this research.</p> <p style="text-align: center;"><b>Useful, but not essential</b> to the aims of this research.</p> <p style="text-align: center;"><b>Not necessary</b> to the aims of this research</p>
--

Please select one tick box for EACH question according to the statement you think is applicable from the three options given above.

**This is an ACTIVE word document, so you are able to select (mouse click) ONE checkbox for each question.**

Once you have completed this process for all questions, in all sections of the survey questionnaire, please repeat this process for the focus group questions.

Once you have done this please save the document.

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**Please enter your name here >**

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## SURVEY QUESTIONS

### Section A – Demographics

	Essential	Useful, but not essential	Not necessary
Question 1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Question 2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Question 3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Question 4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Question 5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Question 6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Question 7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Question 8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Question 9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Question 10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Question 11	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Question 12	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Question 13	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Question 14	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### Section B – Internet Usage

	Essential	Useful, but not essential	Not necessary
Question 1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Question 2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Question 3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Question 4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Question 5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Question 6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Question 7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Question 8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Question 9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Question 10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Question 11	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Question 12	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Question 13	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Section C - Online Social Networking**

	Essential	Useful, but not essential	Not necessary
Question 1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Question 2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Question 3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Question 4	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Question 5	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Question 6	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Question 7	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Question 8	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Question 9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Question 10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Question 11	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Question 12	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Question 13	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Question 14	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Question 15	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Question 16	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Question 17	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### 3- 2 Review of Research Approaches and Sample Sizes

<b>APPENDIX 3.3 - RESEARCH APPROACHES IN OSN RESEARCH</b>				
<b>AUTHOR(S)</b>	<b>YEAR</b>	<b>UNIT OF ANALYSIS</b>	<b>RESEARCH APPROACH</b>	<b>SAMPLE SIZE</b>
Muscanell & Guadagno	2012	Undergraduate Students	Online Survey	238
Tosun	2012	University Students	Online Survey	143
Special & Li-Barber	2012	Undergraduate Students	Digital Survey	127
Moradabadi et al.	2012	Iranian Students	Survey	400
McAndrew & Jeong	2012	International: Public	Online Survey	1,026
Junco	2012	College Students	Online Survey	1,839
Junco	2012	Students	Online Survey	2,368
Alam et al.	2011	Young Adults	Survey	378
Carpenter et al.	2011	Psychology Students	Online Survey	194
Chang & Zhu	2011	OSN: Pre-adopters & Post-	Online survey	606
Chen	2011	Twitter Users	Survey	317
Cheung et al.	2011	Students	Online Survey	182
Kalpidou et al.	2011	Undergraduate Students.	Survey	70
Kim et al.	2011	College Students	Survey	589
Lin & Lu	2011	General Public	Online Survey	402
Pollet et al.	2011	General Public	Survey	117
Sengupta & Chaudhuri	2011	General Public	Secondary Survey	--
Taylor et al.	2011	General Public	Survey	2,642
Abedniya & Mahmoudi	2010	Malaysian Students	Online Survey	150
Brady et al.	2010	Graduate Students	Online Survey	50
Mitchell et al.	2010	General Public	Telephone	1,051
Peslak et al.	2010	Students	Survey	198
Benevenuto et al.	2009	OSN Users	Click- stream data	37,024
Christofides et al.	2009	Undergraduate Students	Online Survey	343
Fogel & Nehmad	2009	Undergraduate Students	Survey	205
Haider	2009	General Public	Online Survey	131
Pempek et al.	2009	Undergraduate Students	Interviews	92
Sledgianowski & Kulviwat	2009	General Public	Online Survey	289
Krasnova et al.	2008	General Public	Survey	129
Lewis & George	2008	General Public	Online Survey	193
Schaefer	2008	General Public	Survey	284
Subrahmanyam et al.	2008	Emerging Adults	Online Survey	105
Wang et al.	2008	General Public	Survey	110
Dwyer et al.	2007	General Public	Survey	117
Mislove et al.	2007	General Public	Web Crawler	--

<b>APPENDIX 3.3 - RESEARCH APPROACHES IN OSN RESEARCH (Con't)</b>				
<b>AUTHOR(S)</b>	<b>YEAR</b>	<b>UNIT OF ANALYSIS</b>	<b>RESEARCH APPROACH</b>	<b>SAMPLE SIZE</b>
<b>Guadagno et al.</b>	2012	Young Adults	Online Survey	237
<b>Bicen &amp; Cavus</b>	2012	Undergraduate Students	Online Survey	93
<b>Ryan &amp; Xenos</b>	2011	Australian Internet Users	Online Survey	1324
<b>Hew</b>	2011	Students & Teachers	Literature Review	36 Articles
<b>Dogruer et al.</b>	2011	University Preparatory Students	Survey	302
<b>Maier et al.</b>	2011	General Public	Online Survey	298
<b>Mazman &amp; Usluel</b>	2010	Facebook Users	Online Survey	606
<b>Curtis et al.</b>	2010	Public Relations Practitioners	Online Survey	409
<b>Ross et al.</b>	2009	Psychology Students.	Online Survey	97
<b>Mohamed &amp; Ahmad</b>	2012	Malaysian Undergraduates	Survey	340
<b>Chai et al</b>	2012	General Public	Survey	446
<b>Wang et al</b>	2011	American Facebook Users	Online Survey	569
<b>Light &amp; McGrath</b>	2010	General Public	Observation	--
<b>Cardon et al</b>	2009	University Students	Online Survey	1,113
<b>Lampe et al</b>	2008	General Public	Survey (x3)	1,175
<b>Ellison et al</b>	2007	Undergraduate Students	Online Survey	286

<b>APPENDIX 3.3 - APPROACHES IN TECHNOLOGY RESEARCH AND OLDER ADULTS/AGE RESEARCH</b>				
<b>AUTHOR(S)</b>	<b>YEAR</b>	<b>PERSPECTIVE</b>	<b>RESEARCH APPROACH</b>	<b>SAMPLE SIZE</b>
<b>Maier et al.</b>	2011	Elderly People	Survey	115
<b>Niehaves &amp; Plattfaut</b>	2011	Comparative Age Groups	Survey	501
<b>Mitzner et al.</b>	2010	Older Adults	Focus Group	113
<b>Wagner et al.</b>	2010	Older Adults	Article review	151 Articles
<b>Pfeil et al.</b>	2009	OSN Age Differences	Web crawlers	--
<b>Ryu et al.</b>	2009	Elderly 50+	Online survey	290
<b>Hill et al.</b>	2008	Older People	Observation/Interview	--
<b>Arning &amp; Ziefle</b>	2007	Age Differences	Survey	32
<b>Carpenter &amp; Buday</b>	2007	Older Adults	Interviews	324
<b>Grimes et al.</b>	2007	Comparative Age Groups	Survey	205
<b>Morris et al.</b>	2005	Ager Differences	Survey	342
<b>Saunders</b>	2004	Elderly	Focus Groups	--
<b>Selwyn</b>	2004	Older Adults	Interviews	35
<b>Lee et al</b>	2011	Older Adults 50+	Survey	243
<b>Pan et al</b>	2010	Older Adults 50+	Survey	374
<b>Hill et al</b>	2008	Older People 50+	Observation/Interviews	293
<b>Cotton et al</b>	2012	Americans 50+	Survey	7,839
<b>McMurtrey et al</b>	2011	Seniors 67+	Mail Survey	173

## 4-1 Pilot Survey Questionnaire

### **A Quick Facebook, Twitter, MySpace, LinkedIn (Online Social Networking) Survey.**

THE UNIVERSITY OF HERTFORDSHIRE GRATEFULLY ASKS UK RESIDENTS OVER THE AGE OF 18 YEARS LIVING IN THE SOUTH-EAST (LONDON & HOME COUNTIES) OF ENGLAND. TO SPARE 10-15 MINUTES TO TAKE PART IN THIS RESEARCH. YOU DO NOT HAVE TO CURRENTLY BE AN ONLINE SOCIAL NETWORKING USER OR INTERNET USER TO TAKE PART.

In recent years the widespread use of online social networking websites such as Facebook, Twitter, LinkedIn and MySpace have impacted many internet users daily lives. The purpose of this research is to understand reasons that may influence UK residents; 18 years old or above, to use or not use online social networks. By understanding these factors, researchers can develop methods to drive the use of internet services such as online social networks among all age groups, in order to create and sustain a more open and connected society.

If you have any questions about this study please contact the researchers on the following address: Mr.Amit Vyas, Research student. De Havilland campus, Hatfield, Herts. AL10 9AB. Email: a.2.vyas@herts.ac.uk & Dr Jyoti Choudrie (j.choudrie@herts.ac.uk). Please note that your contributions to this survey are confidential, and for academic research purposes only. All responses are anonymous. The results will only be reported in aggregate terms, without any individual identifying information. (UH Ethics Protocol No: BS/R/015 10.) We would like to take this opportunity to thank you for your time and patience in completing this questionnaire.

**Thank You For Your Time.  
Just click NEXT below to begin!**

## Demographics

### 1. Please select one of the following age groups that you belong to:

- 18 -24
- 25 - 30
- 31 - 35
- 36 - 40
- 41 - 45
- 46 -50
- 51 - 55
- 56 - 60
- 61 - 65
- 66 - 70
- 71- 75
- 76- 80
- 81 or above

### 2. Please state your gender:

- Male
- Female

### 3. Please state your current highest academic qualification:

- Higher Degree / Postgraduate Degree (MBA PhD MD MA MSc)
- 1st Degree (BA / BSc)
- HND, HNC, Teaching
- A Level
- BTEC/Collage Diploma
- GCSE/OLevel

### 4. Please select the area you live in:

- Bedfordshire
- Berkshire
- Buckinghamshire
- Cambridgeshire
- Dorset
- Essex
- Hampshire
- Hertfordshire
- Kent
- London
- Middlesex
- Oxfordshire
- Surrey
- Sussex (East & West)

### 5. What is your current employment status?

- Pensioners 65+
- Retired (Under 65 years old)
- Currently employed Full time
- Currently employed part time
- Currently unemployed (For less than 6 months)

- Currently unemployed (Due to medical reasons)
- Currently unemployed (For more than 6 months)
- Student – Currently in part time education
- Student – Currently in full time education
- Redundant

**6. Please state the ethnic group that you belong to?**

- White British,
- Other white background
- Mixed White & Black African
- Mix White and Asian
- Other mixed background
- Asian/Brit Indian
- Asian/Brit Pakistani
- Other Asian background
- Black/Brit African
- Other (please specify)

**7. Please state your occupation, If you are retired/pensioner please select the occupation you held for the majority of your working life?**

- Student
- Legislators/Managers
- Academics/Teachers
- Crafts/Trades
- Clerks
- Services/sales
- Agricultural/Forestry/Fishery
- Plant/Machine Operators
- Freelance

**8. Please state your Marital Status:**

- Single
- Engaged
- Married
- Widowed
- Divorced
- Separated

**9. Please select one of the following options, which you think best describes your state of health:**

- Excellent
- Good
- Poor

**10. How many adults above the age of 18 are living in your household (Including yourself)?**

- 1    2    3    4+

**11. How many children (below 18 years) are living in the household?**

- 0    1    2    3    4+

**12. Do you use any of the following electronic devices? (You may choose more than one option)**

- Desktop PC  
 Laptop  
 Mobile Phone  
 Smart Phone (iPhone, Blackberry, Samsung Galaxy, HTC desire, Galaxy Nexus, Nokia Lumia)  
 iPad/PDA  
 I DO NOT USE ANY OF THESE DEVICES

**Internet Use****13. How often do you use the internet?**

- I DO NOT USE THE INTERNET  
 Once a month  
 Once a week  
 Daily (Less than 2 hours)  
 Daily (Less than 2 hours)

Please rate the following statements using the scales provided

**14. How much spare time do you have in the week?**

Very little spare time      1 2 3 4 5      Lots of spare time

**15. How much do you know about the Internet, computers and mobile phones?**

I know very little      1 2 3 4 5      I know a lot

**16. Do you think Internet access and computers are expensive?**

Not Expensive      1 2 3 4 5      Very expensive

**17. Do you prefer face-to-face contact or Internet contact?**

Mainly face-to-face      1 2 3 4 5      Mainly Internet

**18. How much influence does TV, radio & newspapers have on all your decisions regarding USE of the Internet?**

Minimum influence      1 2 3 4 5      Most influence

**19. How much influence does TV, radio & newspapers have on all your decisions regarding PURCHASE of the Internet?**

Minimum influence      1 2 3 4 5      Most influence

**20. How much influence do friends/family/colleagues have on choices you make regarding USE about computers, Internet and mobile phones?**

Minimum influence      1 2 3 4 5      Most influence

**21. How long have you had the Internet in your household?**

- I DO NOT USE THE INTERNET IN MY HOUSEHOLD
- Less than 1 Year
- Between 1 2 Years
- Between 24 Years
- Between 46 Years
- Between 6 8 Years
- More than 8 Years

**22. What is the speed of your current Internet connection? (Mbps = Mega Bits Per Second)**

- I DO NOT USE THE INTERNET IN MY HOUSEHOLD
- 0–4Mbps 5
- Mbps–9Mbps 1
- 0 Mbps – 14 Mbps 1
- 5 Mbps 20Mbps
- 20+ Mbps
- I do not know

**23. Who is your current Internet Service Provider (ISP)?**

- I DO NOT USE THE INTERNET IN MY HOUSEHOLD
- BT
- Virgin Media
- Sky
- Talk Talk
- Orange
- AOL
- 02
- Plus Net
- Other (please specify)

**24. Which of the following method(s) do you use to access the Internet?  
(You may choose more than one option)**

- I DO NOT USE THE INTERNET
- Internet via desktop PC
- Internet via laptop
- Internet via mobile phone
- Internet via cable/satellite
- TV provider (Virgin/Sky)
- Internet via 3G Personal Desktop Assistant (e.g. iPad,)
- Internet via Personal Desktop Assistant (Home Internet) (e.g. iPad)

**25. Do you use the internet (an online service) for any of the following activities?  
(You may choose more than one option)**

**I DO NOT USE THE INTERNET**

- Check emails
- Google searching
- YouTube
- Video Calling (Skype)
- Paid work done at home
- Voluntary/unpaid work
- Education/Coursework
- Leisure/ General reading
- Use Instant messaging (IM) services
- Personal Financial Accounts / Home banking
- Insurance Purchasing:
- Car/home/pet/travel
- Government Services; Central
- Government Services; Local

### Online Social Networking

**26. How often do you use online social networks such as Facebook, Twitter, Bebo, Myspace, Badoo ?**

- I DO NOT USE ONLINE SOCIAL NETWORKS
- Once a month
- Once a week
- Once a day (Less than 2 hours)
- Once a day (More than 2 hours)
- I USED TO USE ONLINE SOCIAL NETWORKS
- I WILL START USING ONLINE SOCIAL NETWORKS IN THE FUTURE

**27. Please rate your agreement or disagreement to the following short statements please use the scale provided, where 1 is complete disagreement and 5 is complete agreement:**

Online social networks take up much valuable time.

Disagree    1        2        3        4        5        Agree

I have the knowledge/confidence needed to use online social networks.

Disagree    1        2        3        4        5        Agree

I prefer faceto face contact rather than using online social networks.

Disagree    1        2        3        4        5        Agree

TV, newspapers & Radio influence the choices I make about online social networks.

Disagree    1        2        3        4        5        Agree

Many of my friends, family and colleagues use online social networks.

Disagree    1        2        3        4        5    Agree

Online social networking is (are) a fun and entertaining activity.

Disagree    1        2        3        4        5    Agree

Online social networks have social benefits

Disagree    1        2        3        4        5    Agree

Online social networks are useful for personal and work related activities.

Disagree    1        2        3        4        5    Agree

**28. Where have you heard discussion/news/information about online social networking?  
(You may choose more than one option)**

- T V
- Newspapers
- Internet
- Radio
- Magazines
- Friends/family/coworkers
- Other (please specify)\_\_\_\_\_

**29. Which online social networks do you use?**

I DO NOT CURRENTLY USE ONLINE SOCIAL NETWORKS

- Facebook
- Twitter
- LinkedIn
- Bebo
- Myspace
- FlickrR
- Badoo
- Google +
- Digg
- Other (please specify)\_\_\_\_\_

**30. Where do you access online social networks from? (Please select all those that apply)**

- I DO NOT CURRENTLY USE ONLINE SOCIAL NETWORKS
- Household (Home)
- Office (work)
- Library
- Friends/family home
- Internet café
- Restaurants
- Local community outlets
- Local school (evening)
- Coffee houses

- Fast food outlets  
 Other \_\_\_\_\_

**31. How do you use online social networks? (Please select all that apply to you please)**

- I DO NOT CURRENTLY USE ONLINE SOCIAL NETWORKS  
 Writing picture comments and wall posts  
 Messaging your friends  
 For paid work  
 For voluntary work  
 Facebook 'places'  
 Health related purposes (e.g. subscribing to NHS quit smoking Facebook page)  
 "Friending/adding" those you know in real life  
 Uploading photos  
 Viewing photos  
 Uploading videos  
 Viewing videos  
 Central government purposes (contact/subscribe)  
 Local government purposes (contact/subscribe)  
 Promoting yourself/your work/ events  
 Forming new relationships online  
 Sending private messages to friends  
 Forming groups  
 Finding out about events  
 Finding new media  
 Posting to message boards  
 Promoting yourself, your business & events  
 Other (please specify) \_\_\_\_\_

**32. Do you have a profile picture on your online social networking account(s)?**

- I DO NOT CURRENTLY USE ONLINE SOCIAL NETWORKS  
 Yes  
 Not at the moment but I do intend to.  
 No

**33. Which of the following device(s) do you use to access online social networks (You may choose more than one option)**

- I DO NOT CURRENTLY USE ONLINE SOCIAL NETWORKS  
 Online social networks via desktop PC  
 Online social networks via laptop  
 Online social networks via mobile phone  
 Online social networks via cable/satellite TV provider (Virgin/Sky)  
 Online social networks via 3G MOBILE INTERNET Personal Desktop Assistant (e.g. iPad,)  
 Online social networks via HOME INTERNET Personal Desktop Assistant (e.g. iPad,)

**34. How long have you been using online social networks?**

- I DO NOT CURRENTLY USE ONLINE SOCIAL NETWORKS  
 Less than 1 Year  
 Between 1 2 Years  
 Between 24 Years  
 Between 46 Years  
 Between 6 8 Years  
 More than 8 Years

**35. Do you intend to carry on using online social networks?**

I DO NOT CURRENTLY USE ONLINE SOCIAL NETWORKS

Yes

No

**36. Please confirm that you are happy to submit your completed survey?**

Yes, I would like to submit my completed survey

No, I would like to go back and start again.

## 4-2 Pilot Survey Sample - Demographic Data

Age	Frequency	Percent
18-24	26	10.3
25-30	42	16.7
31-35	24	9.5
36-40	14	5.6
41-45	12	4.8
46-50	10	4.0
51-55	26	10.3
56-60	28	11.1
61-65	15	6.0
66-70	28	11.1
71-75	21	8.3
76-80	6	2.4
<b>Total</b>	<b>252</b>	<b>100.0</b>

Gender	Frequency	Percent
Male	127	50.4
Female	125	49.6
<b>Total</b>	<b>252</b>	<b>100.0</b>

Education	Frequency	Percent
Higher Degree/ Postgraduate Degree (MBA PhD MD MA MSc)	28	11.1
1st Degree (BA/BSc)	80	31.7
HND / HNC / Teaching	18	7.1
A- Level	30	11.9
BTEC/ Diploma	59	23.4
GCSE / O-Level	37	14.7
<b>Total</b>	<b>252</b>	<b>100.0</b>

<b>Residential Area</b>	<b>Frequency</b>	<b>Percent</b>
Bedfordshire	6	2.4
Buckinghamshire	1	.4
Cambridgeshire	9	3.6
Essex	27	10.7
Hampshire	3	1.2
Hertfordshire	92	36.5
Kent	44	17.5
London	45	17.9
Middlesex	5	2.0
Oxfordshire	2	.8
Surrey	13	5.2
Sussex (East & West)	5	2.0
<b>Total</b>	<b>252</b>	<b>100.0</b>

<b>Labour Force Status</b>	<b>Frequency</b>	<b>Percent</b>
Currently Employed Full Time	120	47.6
Currently Employed Part Time	22	8.7
Student - Currently In Full Time Education	17	6.7
Pensioner 65+	50	19.8
Retired (Under 60 Years Old)	22	8.7
Currently Unemployed (For Less Than 6 Months)	10	4.0
Currently Unemployed ( For More Than 6 Months)	10	4.0
Redundant	1	.4
<b>Total</b>	<b>252</b>	<b>100.0</b>

<b>Health</b>	<b>Frequency</b>	<b>Percent</b>
Excellent Health	109	43.3
Good Health	132	52.4
Poor Health	11	4.4
<b>Total</b>	<b>252</b>	<b>100.0</b>

<b>Race</b>	<b>Frequency</b>	<b>Percent</b>
White British	179	71.0
Other - White Background	15	6.0
Mixed White and Black African	2	.8
Mix White and Asian	2	.8
Other Mixed Background	4	1.6
Asian/Brit Indian	41	16.3
Asian/Brit Pakistan	5	2.0
Other Asian Background	4	1.6
<b>Total</b>	<b>252</b>	<b>100.0</b>

<b>Occupation</b>	<b>Frequency</b>	<b>Percent</b>
Student	24	9.5
Legislators/Managers/Professionals	72	28.6
Academics/Teachers	16	6.3
Crafts/Trades	21	8.3
Clerks	17	6.7
Service/Sales	76	30.2
Agriculture/Forestry/Fishery	4	1.6
Plant/Machine Operators	6	2.4
Freelance	16	6.3
<b>Total</b>	<b>252</b>	<b>100.0</b>

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<b>Marital Status</b>	<b>Frequency</b>	<b>Percent</b>
Single	80	31.7
Engaged	12	4.8
Married	137	54.4
Widowed	6	2.4
Divorced	11	4.4
Separated	6	2.4
<b>Total</b>	<b>252</b>	<b>100.0</b>

## 4-3 Pilot Survey Data Analysis

### Summary of Significant Results (All Participants)

#### PILOT MOSN - ALL PARTICIPANTS (N-252 / R<sup>2</sup> 38.3%)

MOSN CONSTRUCT	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
OSN Resource F.C	.246	.060	.278	4.086	.000
OSN Requisite Knowledge	.272	.060	.288	4.519	.000
OSN Primary Influence	.167	.057	.187	2.940	.004
OSN Hedonic Outcomes	-.350	.088	-.416	-3.985	.000
OSN Utilitarian Outcomes	-.220	.063	-.223	-3.514	.001

#### PILOT MOSN - ALL PARTICIPATING INTERNET USERS (N-232 / R<sup>2</sup> 37.4%)

MOSN Constructs	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
OSN Resource F.C	.262	.064	.292	4.101	.000
OSN Requisite Knowledge	.279	.064	.296	4.345	.000
OSN Primary Influence	.177	.062	.197	2.872	.004
OSN Hedonic Outcomes	-.358	.093	-.410	-3.865	.000
OSN Utilitarian Outcomes	-.225	.066	-.225	-3.419	.001

## Summary of Significant Results (51 and Above)

### PILOT MOSN - ALL PARTICIPANTS 51 AND ABOVE (N-124 / R<sup>2</sup> 45.6%)

MOSN CONSTRUCT	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
OSN Resource F.C	.332	.099	.277	3.361	.001
OSN Requisite Knowledge	.360	.093	.372	3.877	.000
OSN Utilitarian Outcomes	-.347	.124	-.264	-2.785	.006

### PILOT MOSN - ALL 51 AND ABOVE - OSN ADOPTERS (N-36 / R<sup>2</sup> 68.5%)

MOSN Constructs	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
OSN Resource F.C	.402	.091	.565	4.435	.000
OSN Requisite Knowledge	-.316	.146	-.274	-2.155	.041
OSN Hedonic Outcomes	.482	.213	.519	2.267	.032

### PILOT MOSN - ALL 51 AND ABOVE - OSN NON-ADOPTERS (N-88 / R<sup>2</sup> 67.1%)

MOSN Constructs	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
OSN Resource F.C	.161	.042	.305	3.836	.000
OSN Relative Advantage	.110	.033	.227	3.370	.001
OSN Secondary Influence	-.101	.038	-.186	-2.686	.009
OSN Primary Influence	.170	.039	.386	4.312	.000

## Summary of Significant Results (50 and Below)

### PILOT MOSN - ALL PARTICIPANTS 50 AND BELOW (N-128 / R<sub>2</sub> 27.4%)

MOSN CONSTRUCT	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
OSN Resource F.C	.147	.073	.224	1.996	.048
OSN Technology F.C	.396	.194	.198	2.040	.044
OSN Secondary Influence	-.204	.082	-.217	-2.479	.015
OSN Primary Influence	.276	.112	.308	2.455	.016

### PILOT MOSN - ALL 50 AND BELOW OSN ADOPTERS (N-106/ R<sub>2</sub> 28%)

MOSN Constructs	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
OSN Resource F.C	.141	.059	.252	2.393	.019
OSN Secondary Influence	-.176	.072	-.235	-2.437	.017

### PILOT MOSN - ALL 50 AND BELOW OSN NON- ADOPTERS (N-22 / R<sub>2</sub> 93.2%)

MOSN Constructs	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
OSN Resource F.C	.652	.113	.976	5.773	.000
OSN Requisite Knowledge	.167	.049	.381	3.394	.005
OSN Primary Influence	.120	.042	.285	2.855	.014
OSN Utilitarian Outcomes	-.380	.152	-.342	-2.496	.028

## Summary of Significant Results (OSN Adopters Vs Non-OSN Adopters)

### PILOT MOSN - ALL OSN NON-ADOPTERS (N-110 / R<sub>2</sub> 64.3%)

MOSN CONSTRUCT	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
OSN Resource F.C	.193	.040	.357	4.823	.000
OSN Relative Advantage	.106	.030	.216	3.504	.001
OSN Secondary Influence	-.121	.034	-.222	-3.524	.001
OSN Primary Influence	.085	.029	.203	2.964	.004
OSN Hedonic Outcomes	.269	.063	.437	4.262	.000

### PILOT MOSN - ALL OSN ADOPTERS (N-142 / R<sub>2</sub> 43.5%)

MOSN CONSTRUCT	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
OSN Resource F.C	.222	.053	.325	4.213	.000

## Summary of Significant Results (Diffusion Channels)

### PILOT MOSN - OSN ADOPTERS DIFFUSION CHANNELS (N-142 / R<sub>2</sub> 16.1%)

MOSN CONSTRUCT	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
OSN Secondary Influence	-.243	.078	-.260	-3.100	.002
OSN Diffusion: TV	.492	.214	.195	2.302	.023

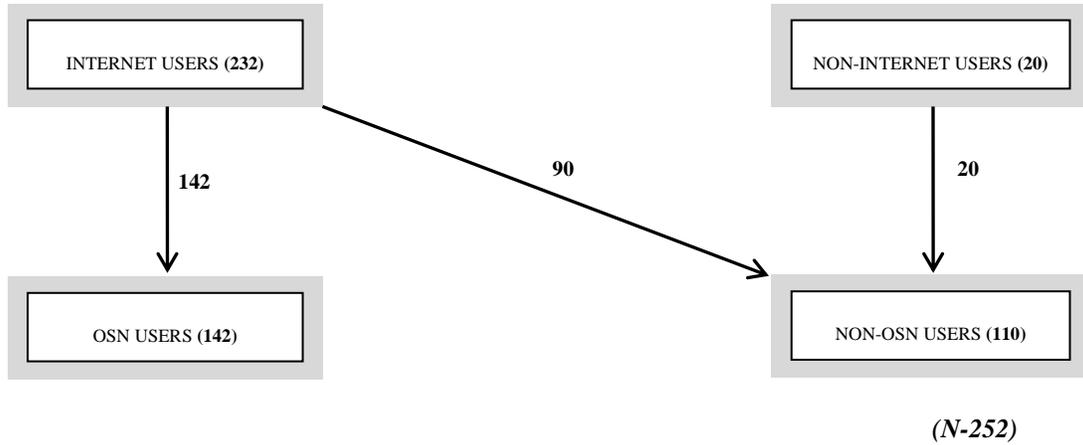
### PILOT MOSN - OSN NON ADOPTERS DIFFUSION CHANNELS (N-110 / R<sub>2</sub> 19.2%)

MOSN Constructs	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
OSN Secondary Influence	-.202	.050	-.370	-4.009	.000

## **ALL PARTICIPANTS ANALYSIS**

**(N-252)**

### ALL PARTICIPANT DESCRIPTIVES (N-252)



Internet Users/Non-Users	Frequency	Percent	Valid Percent	Cumulative Percent
Internet Non-User	20	7.9	7.9	7.9
Once a Week	43	17.1	17.1	25.0
Daily (More Than 2 Hours)	74	29.4	29.4	54.4
Daily (Less Than 2 Hours)	115	45.6	45.6	100.0
<b>Total</b>	<b>252</b>	<b>100.0</b>	<b>100.0</b>	

OSN Users/Non-Users	Frequency	Percent	Valid Percent	Cumulative Percent
Once a Month	4	1.6	1.6	1.6
Once a Week	43	17.1	17.1	18.7
Daily (More Than 2 Hours)	18	7.1	7.1	25.8
Daily (Less Than 2 Hours)	77	30.6	30.6	56.3
I Do Not Use OSNs	86	34.1	34.1	90.5
Former OSN User	13	5.2	5.2	95.6
Future OSN User	11	4.4	4.4	100.0
<b>Total</b>	<b>252</b>	<b>100.0</b>	<b>100.0</b>	

## ALL PARTICIPANTS - DEMOGRAPHICS (N-252)

Age	Frequency	Percent
18-24	26	10.3
25-30	42	16.7
31-35	24	9.5
36-40	14	5.6
41-45	12	4.8
46-50	10	4.0
51-55	26	10.3
56-60	28	11.1
61-65	15	6.0
66-70	28	11.1
71-75	21	8.3
76-80	6	2.4
<b>Total</b>	<b>252</b>	<b>100.0</b>

Gender	Frequency	Percent
Male	127	50.4
Female	125	49.6
<b>Total</b>	<b>252</b>	<b>100.0</b>

Education	Frequency	Percent
Higher Degree/ Postgraduate Degree (MBA PhD MD MA MSc)	28	11.1
1st Degree (BA/BSc)	80	31.7
HND / HNC / Teaching	18	7.1
A- Level	30	11.9
BTEC/ Diploma	59	23.4
GCSE / O-Level	37	14.7
<b>Total</b>	<b>252</b>	<b>100.0</b>

Area	Frequency	Percent
Bedfordshire	6	2.4
Buckinghamshire	1	.4
Cambridgeshire	9	3.6
Essex	27	10.7
Hampshire	3	1.2
Hertfordshire	92	36.5
Kent	44	17.5
London	45	17.9
Middlesex	5	2.0
Oxfordshire	2	.8
Surrey	13	5.2
Sussex (East & West)	5	2.0
<b>Total</b>	<b>252</b>	<b>100.0</b>

Employment	Frequency	Percent
Currently Employed Full Time	120	47.6
Currently Employed Part Time	22	8.7
Student - Currently In Full Time Education	17	6.7
Pensioner 65+	50	19.8
Retired (Under 60 Years Old)	22	8.7
Currently Unemployed (For Less Than 6 Months)	10	4.0
Currently Unemployed ( For More Than 6 Months)	10	4.0
Redundant	1	.4
<b>Total</b>	<b>252</b>	<b>100.0</b>

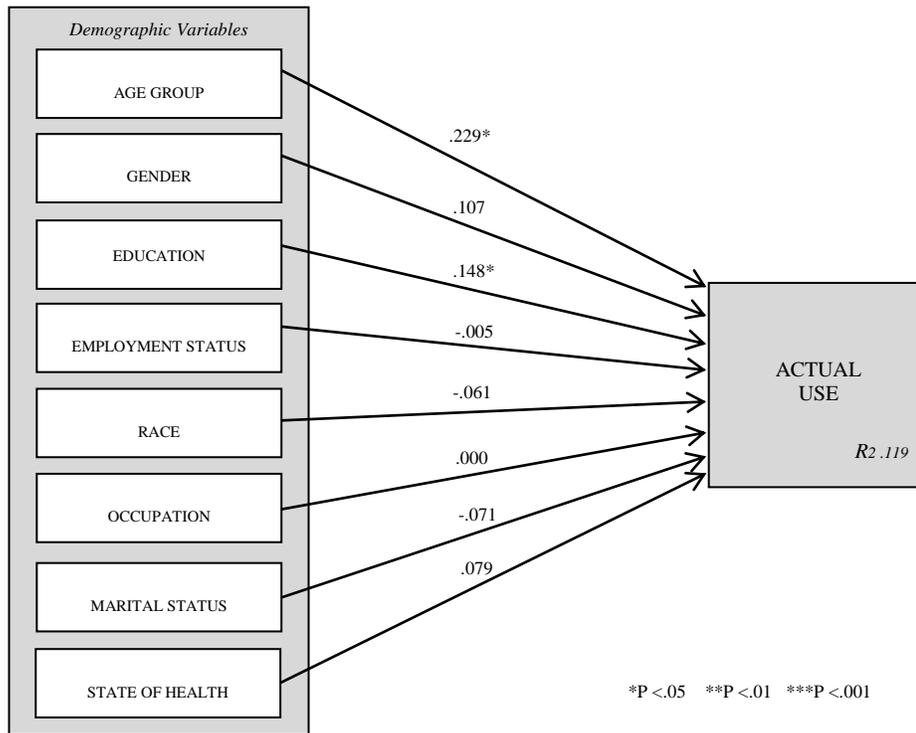
Health	Frequency	Percent
Excellent Health	109	43.3
Good Health	132	52.4
Poor Health	11	4.4
<b>Total</b>	<b>252</b>	<b>100.0</b>

<b>Race</b>	<b>Frequency</b>	<b>Percent</b>
White British	179	71.0
Other - White Background	15	6.0
Mixed White and Black African	2	.8
Mix White and Asian	2	.8
Other Mixed Background	4	1.6
Asian/Brit Indian	41	16.3
Asian/Brit Pakistan	5	2.0
Other Asian Background	4	1.6
<b>Total</b>	<b>252</b>	<b>100.0</b>

<b>Occupation</b>	<b>Frequency</b>	<b>Percent</b>
Student	24	9.5
Legislators/Managers/Professionals	72	28.6
Academics/Teachers	16	6.3
Crafts/Trades	21	8.3
Clerks	17	6.7
Service/Sales	76	30.2
Agriculture/Forestry/Fishery	4	1.6
Plant/Machine Operators	6	2.4
Freelance	16	6.3
<b>Total</b>	<b>252</b>	<b>100.0</b>

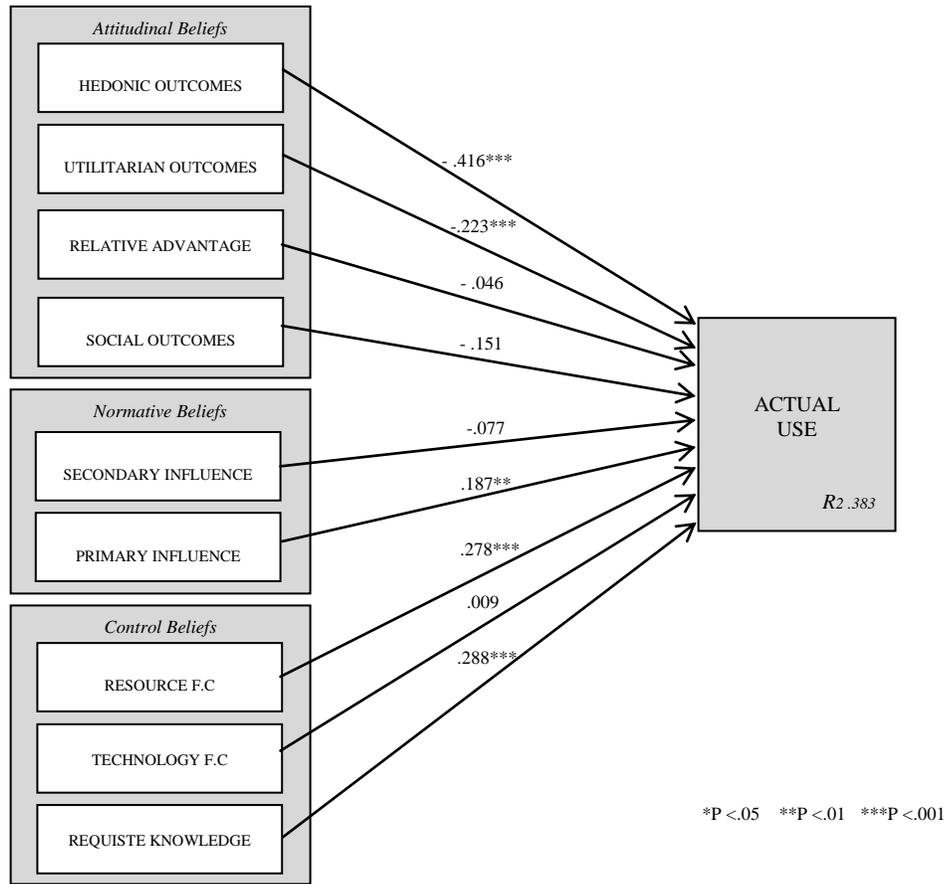
	<b>Frequency</b>	<b>Percent</b>
Single	80	31.7
Engaged	12	4.8
Married	137	54.4
Widowed	6	2.4
Divorced	11	4.4
Separated	6	2.4
<b>Total</b>	<b>252</b>	<b>100.0</b>

## ALL PARTICIPANTS - DEMOGRAPHICAL PREDICTORS (N-252)



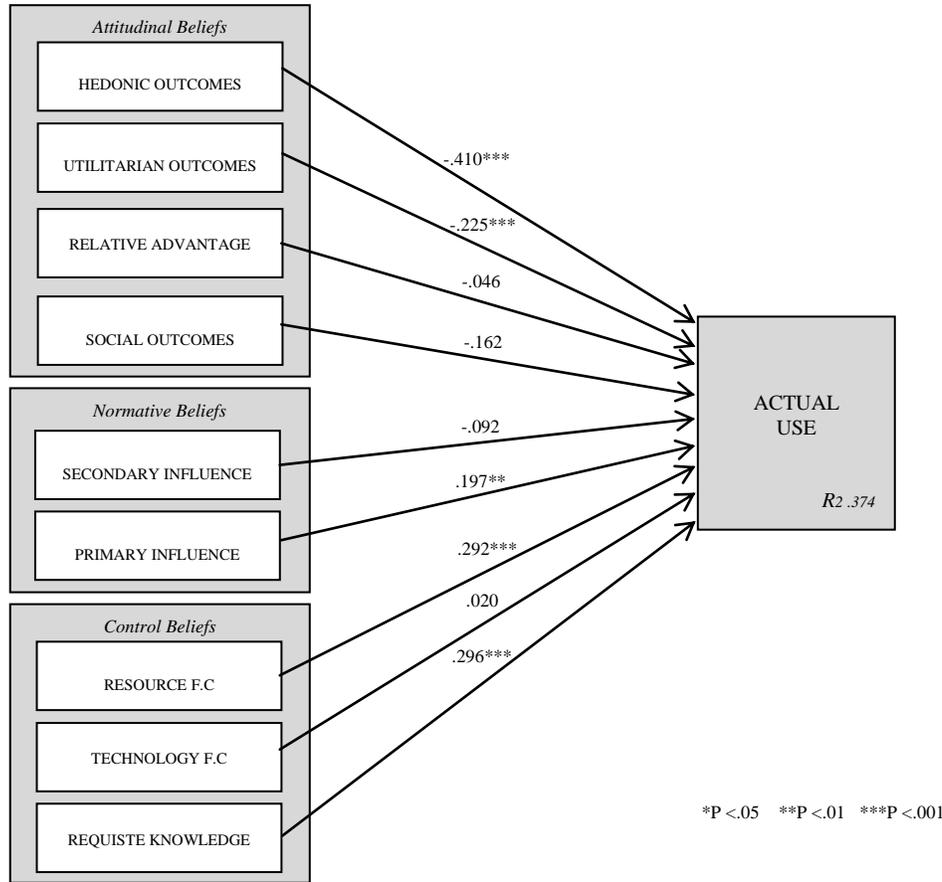
Demographic Variables	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Age Group	.089	.036	.229	2.455	.015
Gender	.288	.171	.107	1.685	.093
Education	.117	.051	.148	2.284	.023
Employment Status	-.003	.038	-.005	-.071	.944
Race	-.038	.040	-.061	-.951	.343
Occupation	.000	.038	.000	.007	.994
Marital Status	-.078	.092	-.071	-.854	.394
State of Health	.188	.164	.079	1.147	.252

**PILOT MOSN - ALL PARTICIPANTS (N-252)**



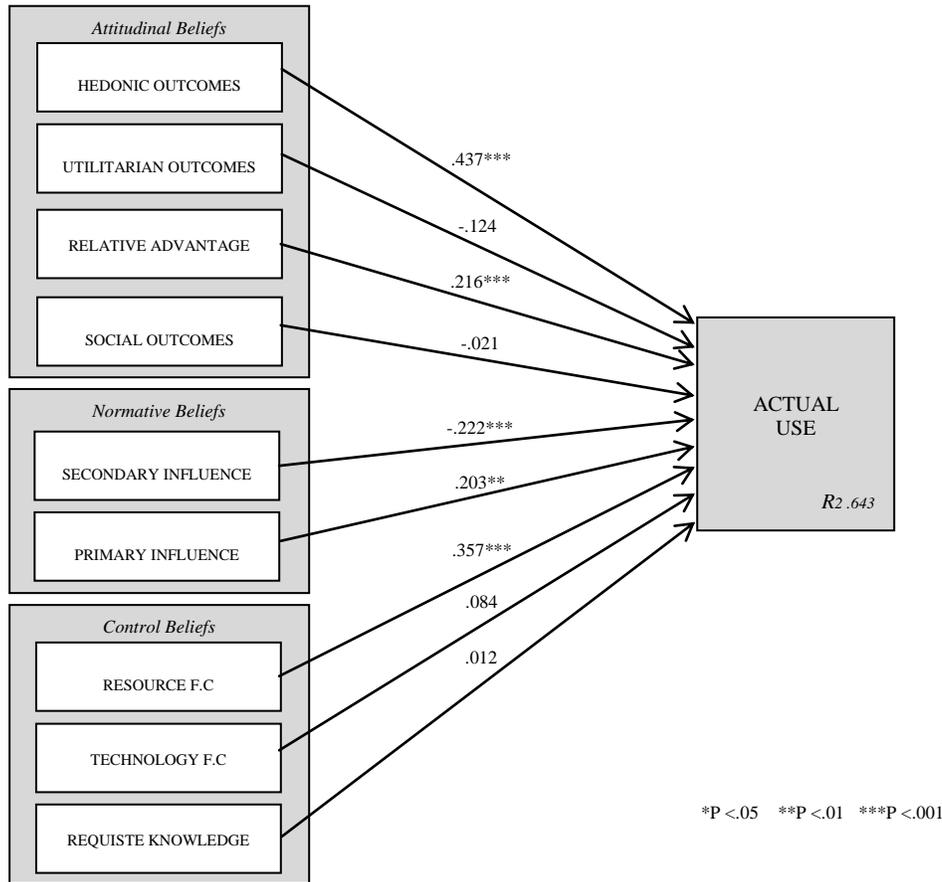
MOSN CONSTRUCT	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
OSN Resource F.C	.246	.060	.278	4.086	.000
OSN Requisite Knowledge	.272	.060	.288	4.519	.000
OSN Relative Advantage	-.051	.058	-.046	-.889	.375
OSN Technology F.C	.010	.066	.009	.155	.877
OSN Secondary Influence	-.091	.064	-.077	-1.418	.158
OSN Primary Influence	.167	.057	.187	2.940	.004
OSN Hedonic Outcomes	-.350	.088	-.416	-3.985	.000
OSN Social Outcomes	-.136	.089	-.151	-1.524	.129
OSN Utilitarian Outcomes	-.220	.063	-.223	-3.514	.001

**PILOT MOSN - ALL PARTICIPATING INTERNET USERS (N-232)**



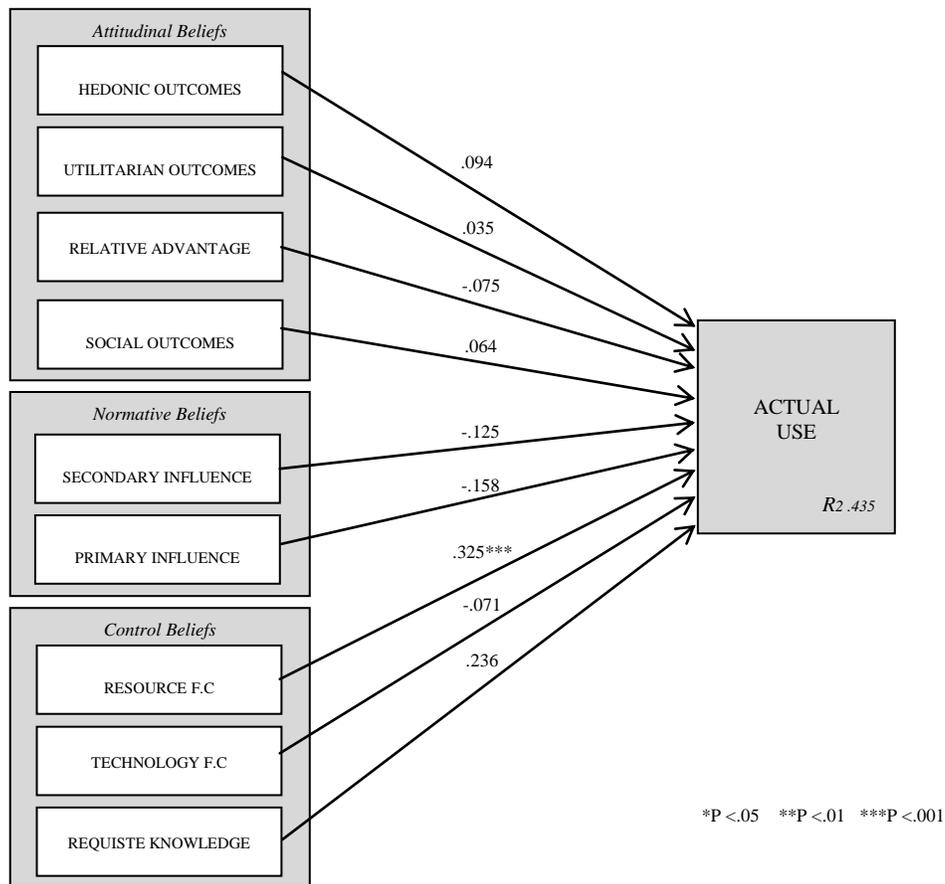
MOSN Constructs	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
OSN Resource F.C	.262	.064	.292	4.101	.000
OSN Requisite Knowledge	.279	.064	.296	4.345	.000
OSN Relative Advantage	-.055	.064	-.046	-.848	.397
OSN Technology F.C	.045	.127	.020	.357	.721
OSN Secondary Influence	-.115	.071	-.092	-1.634	.104
OSN Primary Influence	.177	.062	.197	2.872	.004
OSN Hedonic Outcomes	-.358	.093	-.410	-3.865	.000
OSN Social Outcomes	-.152	.095	-.162	-1.602	.111
OSN Utilitarian Outcomes	-.225	.066	-.225	-3.419	.001

**PILOT MOSN - ALL OSN NON-ADOPTERS (N-110)**



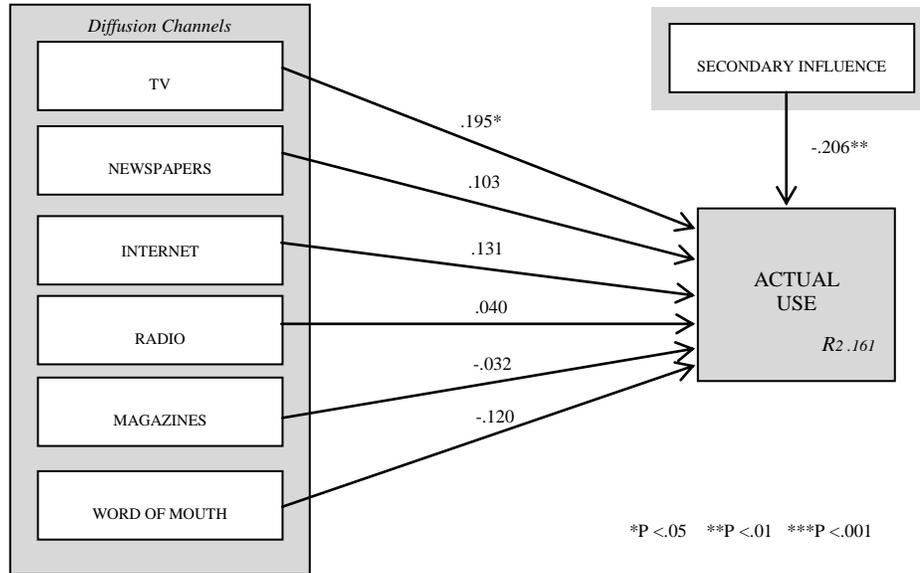
MOSN CONSTRUCT	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
OSN Resource F.C	.193	.040	.357	4.823	.000
OSN Requisite Knowledge	.006	.032	.012	.186	.853
OSN Relative Advantage	.106	.030	.216	3.504	.001
OSN Technology F.C	.035	.027	.084	1.286	.201
OSN Secondary Influence	-.121	.034	-.222	-3.524	.001
OSN Primary Influence	.085	.029	.203	2.964	.004
OSN Hedonic Outcomes	.269	.063	.437	4.262	.000
OSN Social Outcomes	-.014	.056	-.021	-.245	.807
OSN Utilitarian Outcomes	-.114	.077	-.124	-1.478	.142

**PILOT MOSN - ALL OSN ADOPTERS (N-142)**



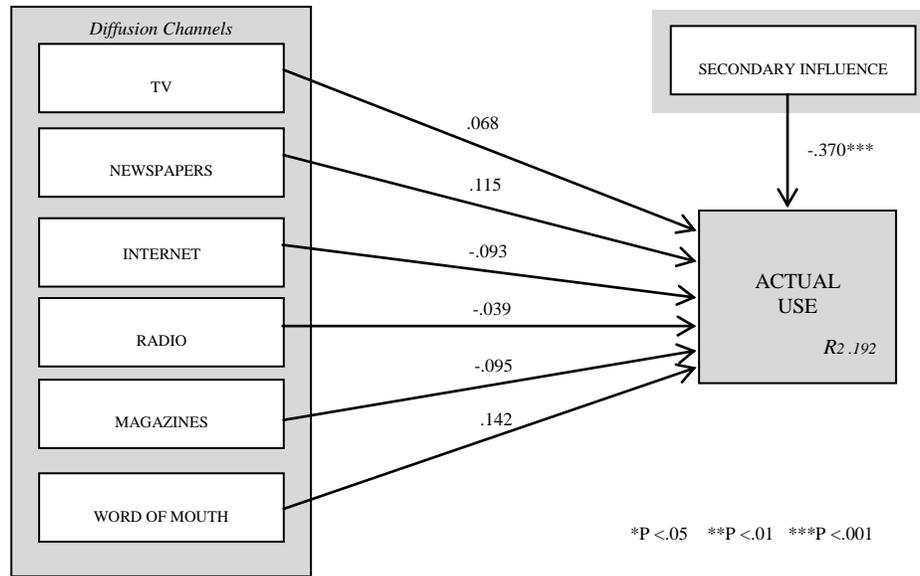
MOSN CONSTRUCT	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
OSN Resource F.C	.222	.053	.325	4.213	.000
OSN Requisite Knowledge	.150	.079	.236	1.912	.058
OSN Relative Advantage	-.064	.059	-.075	-1.076	.284
OSN Technology F.C	-.150	.162	-.071	-.925	.356
OSN Secondary Influence	-.117	.065	-.125	-1.795	.075
OSN Primary Influence	-.103	.078	-.158	-1.311	.192
OSN Hedonic Outcomes	.094	.091	.094	1.029	.306
OSN Social Outcomes	.061	.081	.064	.755	.452
OSN Utilitarian Outcomes	.026	.052	.035	.499	.619

### PILOT MOSN - ALL OSN ADOPTERS (N-142) DIFFUSION CHANNELS



MOSN CONSTRUCT	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
OSN Secondary Influence	-.243	.078	-.260	-3.100	.002
OSN Diffusion: TV	.492	.214	.195	2.302	.023
OSN Diffusion: Newspaper	.101	.089	.103	1.136	.258
OSN Diffusion: Internet	.085	.059	.131	1.455	.148
OSN Diffusion: Radio	.022	.051	.040	.437	.663
OSN Diffusion: Magazines	-.014	.038	-.032	-.360	.720
OSN Diffusion: Word of Mouth [Friends/Family/Colleagues]	-.064	.044	-.120	-1.452	.149

**PILOT MOSN - ALL OSN NON ADOPTERS (N-110)  
DIFFUSION CHANNELS**



MOSN Constructs	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
OSN Secondary Influence	-.202	.050	-.370	-4.009	.000
OSN Diffusion: TV	.089	.132	.068	.675	.501
OSN Diffusion: Newspaper	.165	.156	.115	1.063	.290
OSN Diffusion: Internet	-.209	.233	-.093	-.897	.372
OSN Diffusion: Radio	-.084	.200	-.039	-.417	.677
OSN Diffusion: Magazines	-.293	.298	-.095	-.983	.328
OSN Diffusion: Word of Mouth [Friends/Family/Colleagues]	.319	.218	.142	1.462	.147

## OSN USAGE - ALL OSN ADOPTERS (N-142)

OSN Provider	Gender		Total
	Male	Female	
OSN Provider: Facebook	64	53	117
OSN Provider: Twitter	32	20	52
OSN Provider: LinkedIn	30	16	46
OSN Provider: Bebo	0	2	2
OSN Provider: MySpace	4	8	12
OSN Provider: Flickr	2	1	3
OSN Provider: Google+	11	3	14
OSN Provider: Digg	1	1	2
<b>Total</b>	<b>82</b>	<b>60</b>	<b>142</b>

OSN Access Location	Gender		Total
	Male	Female	
OSN Access Location: Household (Home)	82	60	142
OSN Access Location: Office	24	23	47
OSN Access Location: Library	3	3	6
OSN Access Location: Friends/Family Place	15	8	23
OSN Access Location: Internet Cafe	1	3	4
OSN Access Location: Restaurants	6	5	11
OSN Access Location: Coffee Houses	1	8	9
OSN Access Location: Fast Food	2	1	3
<b>Total</b>	<b>82</b>	<b>60</b>	<b>142</b>

OSN Use	Gender		Total
	Male	Female	
OSN Usage: Friending/Adding	77	56	133
OSN Usage: Picture Comments	46	44	90
OSN Usage: Messaging	55	44	99
OSN Usage: Uploading Photos	42	36	78
OSN Usage: Viewing Photos	55	47	102
OSN Usage: Uploading Videos	19	12	31
OSN Usage: View Videos	27	18	45
OSN Usage: Paid Work	6	4	10
OSN Usage: Voluntary Work	7	3	10
OSN Usage: Facebook Places	26	20	46
OSN Usage: Health Related Purposes	0	2	2
OSN Usage: Gov. Central	2	1	3
OSN Usage: Gov. Local	3	2	5
OSN Usage: Promote Self/Work	9	10	19
OSN Usage: Forming New Relationships	9	4	13
OSN Usage: Private Messaging	16	14	30
OSN Usage: Forming Groups	8	8	16
OSN Usage: Events Planning/Information	22	14	36
OSN Usage: New Media	9	6	15
OSN Usage: Messaging Boards	5	8	13
OSN Usage: Promoting - Yourself/Business	19	8	27
<b>Total</b>	<b>82</b>	<b>60</b>	<b>142</b>

OSN Access Device	Gender		Total
	Male	Female	
OSN Access Device: iPod (All Models)	6	4	10
OSN Access Device: Desktop PC	44	25	69
OSN Access Device: Laptop	59	50	109
OSN Access Device: Mobile Phone	44	35	79
OSN Access Device: TV Provider	1	0	1
OSN Access Device: 3G PDA	4	3	7
OSN Access Device: PDA	21	5	26
<b>Total</b>	<b>82</b>	<b>60</b>	<b>142</b>

OSN Profile Picture	Gender		Total
	Male	Female	
Yes	70	52	122
Intention To Have Profile Picture	1	3	4
No	11	5	16
<b>Total</b>	<b>82</b>	<b>60</b>	<b>142</b>

OSN Use Period	Gender		Total
	Male	Female	
Less Than 1 Year	3	4	7
Between 1-2 Years	18	11	29
Between 2-4 years	41	26	67
Between 4-6 Years	13	10	23
Between 6-8 Years	4	6	10
More Than 8 Years	3	3	6
<b>Total</b>	<b>82</b>	<b>60</b>	<b>142</b>

OSN Continuance Intention	Gender		Total
	Male	Female	
No	3	1	4
Yes	79	59	138
<b>Total</b>	<b>82</b>	<b>60</b>	<b>142</b>

## INTERNET USAGE - ALL INTERNET ADOPTERS (N-232)

Internet Access Device	Gender		Total
	Male	Female	
Internet Access Device: Desktop PC	64	41	105
Internet Access Device: Laptop	90	93	183
Internet Access Device: Mobile / Smart Phone	81	58	139
Internet Access Device: TV Service	3	4	7
Internet Access Device: 3G iPad/PDA	5	3	8
Internet Access Device: iPad/PDA	30	11	41
<b>Total</b>	<b>120</b>	<b>112</b>	<b>232</b>

Internet Use	Gender		Total
	Male	Female	
Internet Usage: Check e-mails	115	88	203
Internet Usage: Google Searching	120	109	229
Internet Usage: YouTube	68	54	122
Internet Usage: Video Calling	42	35	77
Internet Usage: Paid Work	24	11	35
Internet Usage: Unpaid Work	24	24	48
Internet Usage: Education/Coursework	29	25	54
Internet Usage: Leisure	96	88	184
Internet Usage: Instant Messaging	35	24	59
Internet Usage: Financial/Banking	79	52	131
Internet Usage: Insurance	84	55	139
Internet Usage: Gov. Central	18	4	22
Internet Usage: Gov. Local	11	5	16
<b>Total</b>	<b>120</b>	<b>112</b>	<b>232</b>

Internet Consumer (Time/Years)	Gender		Total
	Male	Female	
Less Than One Year	3	6	9
Between 1 - 2 Years	9	13	22
Between 2 - 4 Years	16	22	38
Between 4 -6 Years	38	35	73
Between 6 - 8 Years	21	20	41
More Than 8 Years	33	16	49
<b>Total</b>	<b>120</b>	<b>112</b>	<b>232</b>

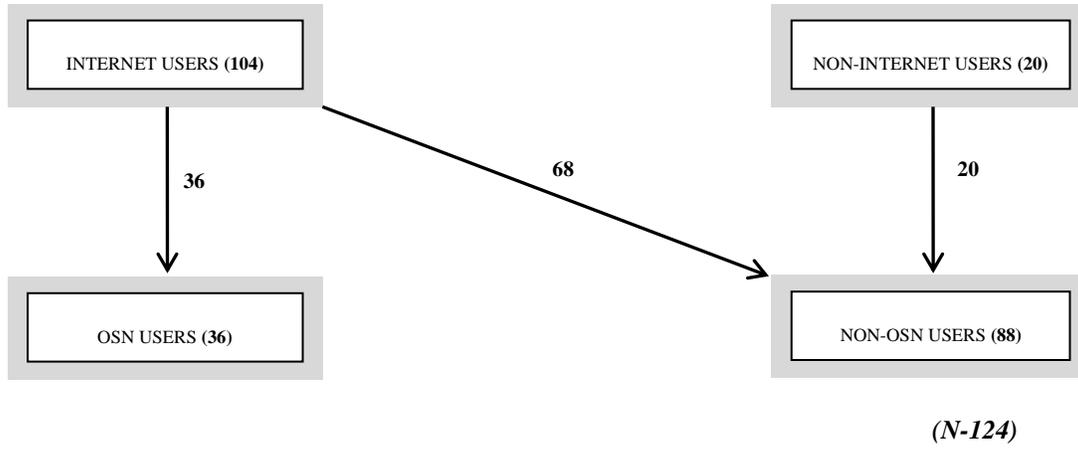
Household Internet Speed	Gender		Total
	Male	Female	
0-4 Mbps	2	1	3
5 Mbps - 9 Mbps	5	1	6
10 Mbps - 14 Mbps	4	3	7
15 Mbps - 20 Mbps	14	19	33
20 + Mbps	64	34	98
I Do Not Know	31	54	85
<b>Total</b>	<b>120</b>	<b>112</b>	<b>232</b>

ISP	Gender		Total
	Male	Female	
BT	36	42	78
Virgin Media	38	28	66
Sky	25	15	40
Talk Talk	6	11	17
Orange	4	7	11
AOL	1	1	2
O2	7	5	12
Plus Net	3	3	6
<b>Total</b>	<b>120</b>	<b>112</b>	<b>232</b>

## **51 AND OVER - PARTICIPANTS ANALYSIS**

**(N-124)**

## 51 AND OVER - PARTICIPANT DESCRIPTIVES (N-124)



Internet Users/Non-Users	Frequency	Percent	Valid Percent	Cumulative Percent
Internet Non-User	20	16.1	16.1	16.1
Once a Week	38	30.6	30.6	46.8
Daily (More Than 2 Hours)	14	11.3	11.3	58.1
Daily (Less Than 2 Hours)	52	41.9	41.9	100.0
<b>Total</b>	<b>124</b>	<b>100.0</b>	<b>100.0</b>	

OSN Users/Non-Users	Frequency	Percent	Valid Percent	Cumulative Percent
Once a Month	4	3.2	3.2	3.2
Once a Week	24	19.4	19.4	22.6
Daily (More Than 2 Hours)	1	.8	.8	23.4
Daily (Less Than 2 Hours)	7	5.6	5.6	29.0
I Do Not Use OSNs	68	54.8	54.8	83.9
Former OSN User	11	8.9	8.9	92.7
Future OSN User	9	7.3	7.3	100.0
<b>Total</b>	<b>124</b>	<b>100.0</b>	<b>100.0</b>	

## DEMOGRAPHICS - 51 AND OVER (N-124)

	Frequency	Percent
51-55	26	21.0
56-60	28	22.6
61-65	15	12.1
66-70	28	22.6
71-75	21	16.9
76-80	6	4.8
<b>Total</b>	<b>124</b>	<b>100.0</b>

	Frequency	Percent
Male	56	45.2
Female	68	54.8
<b>Total</b>	<b>124</b>	<b>100.0</b>

	Frequency	Percent
Higher Degree/ Postgraduate Degree (MBA PhD MD MA MSc)	14	11.3
1st Degree (BA/BSc)	38	30.6
HND / HNC / Teaching	8	6.5
A- Level	5	4.0
BTEC/ Diploma	33	26.6
GCSE / O-Level	26	21.0
<b>Total</b>	<b>124</b>	<b>100.0</b>

<b>Area</b>	<b>Frequency</b>	<b>Percent</b>
Bedfordshire	2	1.6
Buckinghamshire	1	.8
Cambridgeshire	5	4.0
Essex	17	13.7
Hampshire	3	2.4
Hertfordshire	36	29.0
Kent	36	29.0
London	15	12.1
Middlesex	1	.8
Surrey	6	4.8
Sussex (East & West)	2	1.6
<b>Total</b>	<b>124</b>	<b>100.0</b>

<b>Employment</b>	<b>Frequency</b>	<b>Percent</b>
Currently Employed Full Time	39	31.5
Currently Employed Part Time	13	10.5
Pensioner 65+	50	40.3
Retired (Under 60 Years Old)	21	16.9
Currently Unemployed ( For More Than 6 Months)	1	.8
<b>Total</b>	<b>124</b>	<b>100.0</b>

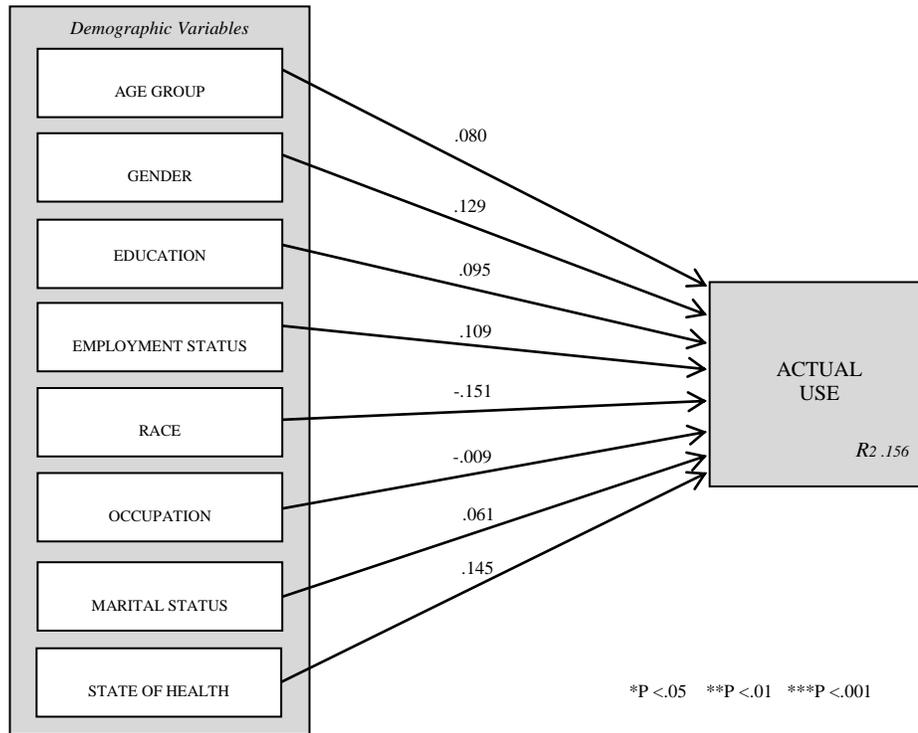
<b>Race</b>	<b>Frequency</b>	<b>Percent</b>
White British	105	84.7
Other - White Background	6	4.8
Asian/Brit Indian	11	8.9
Asian/Brit Pakistan	2	1.6
<b>Total</b>	<b>124</b>	<b>100.0</b>

<b>Occupation</b>	<b>Frequency</b>	<b>Percent</b>
Legislators/Managers/Professionals	40	32.3
Academics/Teachers	10	8.1
Crafts/Trades	16	12.9
Clerks	9	7.3
Service/Sales	31	25.0
Agriculture/Forestry/Fishery	4	3.2
Plant/Machine Operators	4	3.2
Freelance	10	8.1
<b>Total</b>	<b>124</b>	<b>100.0</b>

<b>Marital</b>	<b>Frequency</b>	<b>Percent</b>
Single	2	1.6
Married	104	83.9
Widowed	6	4.8
Divorced	6	4.8
Separated	6	4.8
<b>Total</b>	<b>124</b>	<b>100.0</b>

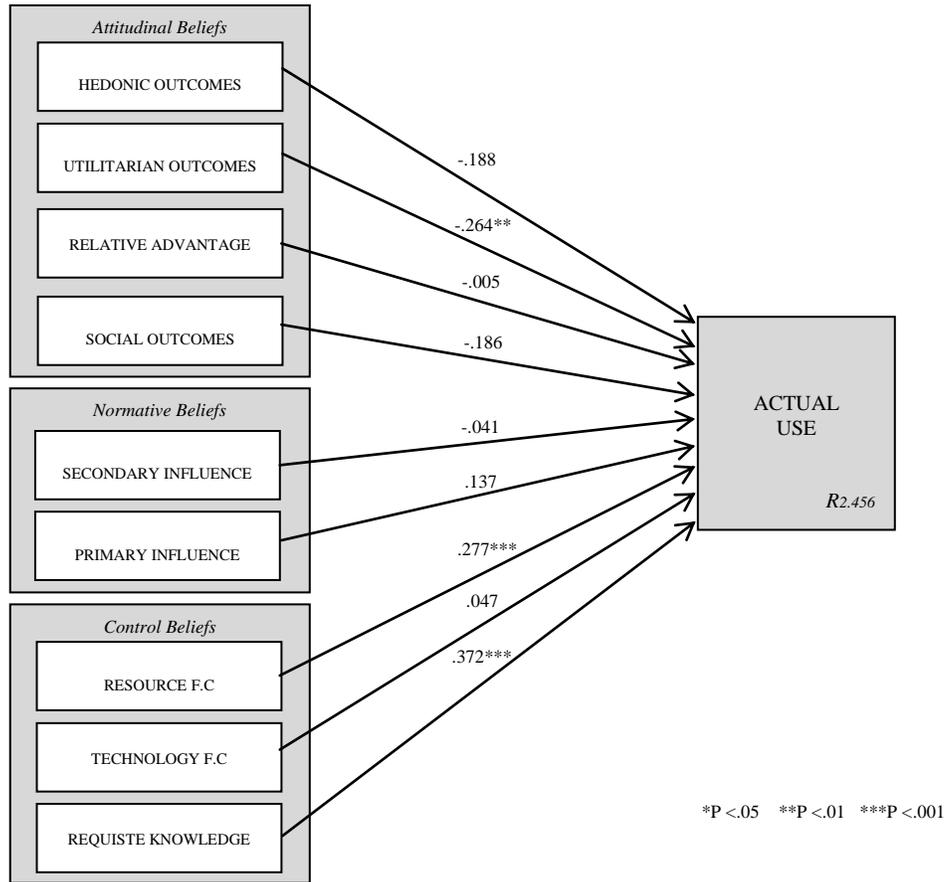
<b>Health</b>	<b>Frequency</b>	<b>Percent</b>
Excellent Health	30	24.2
Good Health	86	69.4
Poor Health	8	6.5
<b>Total</b>	<b>124</b>	<b>100.0</b>

## 51 AND OVER - DEMOGRAPHIC PREDICTORS (N-124)



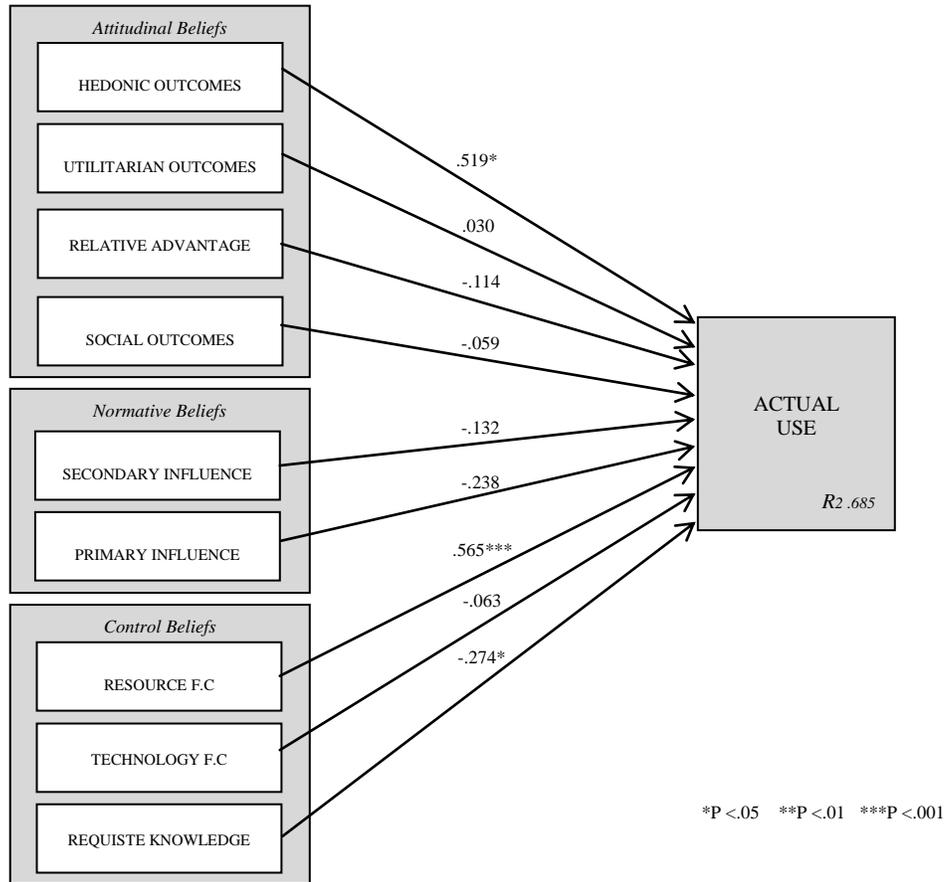
Demographic Variables	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Age	.081	.119	.080	.678	.499
Gender	.403	.294	.129	1.371	.173
Education	.081	.087	.095	.934	.352
Employment Status	.081	.089	.109	.910	.365
Race	-.149	.089	-.151	-1.676	.097
Occupation	-.006	.070	-.009	-.092	.927
Marital Status	.117	.168	.061	.693	.490
State of Health	.431	.289	.145	1.492	.138

**PILOT MOSN - ALL PARTICIPANTS - 51 AND OVER (N-124)**



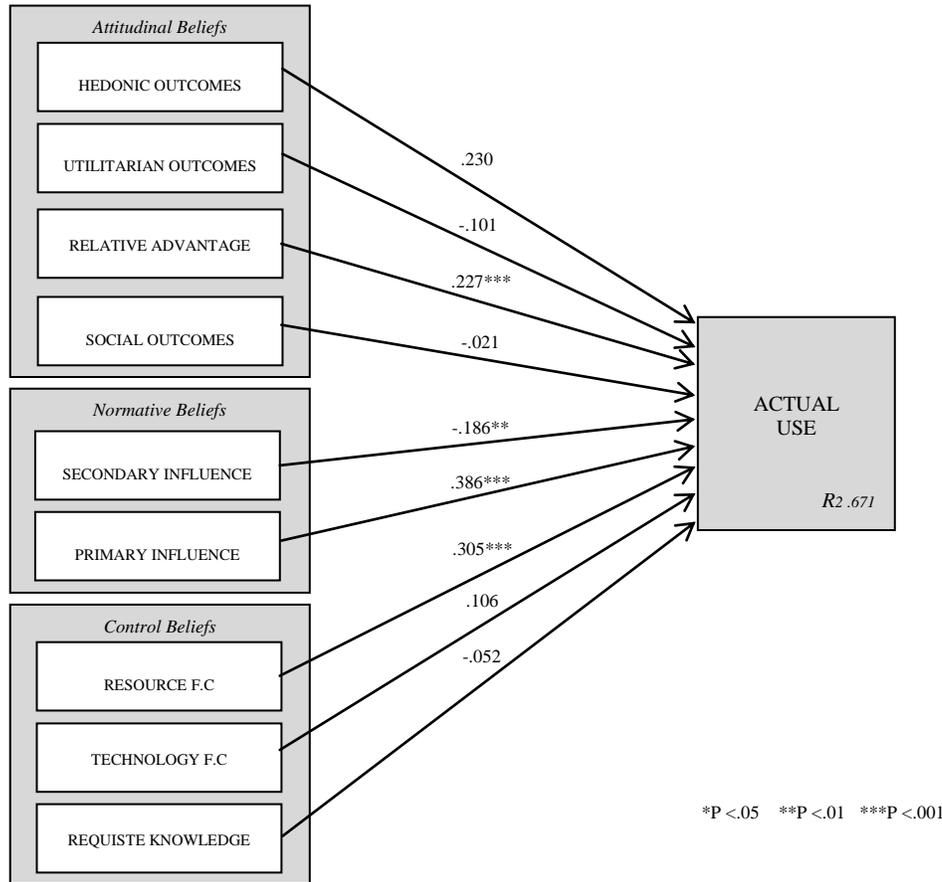
MOSN CONSTRUCT	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
OSN Resource F.C	.332	.099	.277	3.361	.001
OSN Requisite Knowledge	.360	.093	.372	3.877	.000
OSN Relative Advantage	-.006	.088	-.005	-.067	.947
OSN Technology F.C	.049	.082	.047	.592	.555
OSN Secondary Influence	-.054	.099	-.041	-.549	.584
OSN Primary Influence	.131	.111	.137	1.179	.241
OSN Hedonic Outcomes	-.195	.174	-.188	-1.121	.264
OSN Social Outcomes	-.210	.142	-.186	-1.485	.140
OSN Utilitarian Outcomes	-.347	.124	-.264	-2.785	.006

**PILOT MOSN - 51 AND OVER - OSN ADOPTERS (N-36)**



MOSN Constructs	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
OSN Resource F.C	.402	.091	.565	4.435	.000
OSN Requisite Knowledge	-.316	.146	-.274	-2.155	.041
OSN Relative Advantage	-.106	.118	-.114	-.894	.380
OSN Technology F.C	-.349	.628	-.063	-.555	.584
OSN Secondary Influence	-.121	.105	-.132	-1.156	.258
OSN Primary Influence	-.276	.179	-.238	-1.539	.136
OSN Hedonic Outcomes	.482	.213	.519	2.267	.032
OSN Social Outcomes	-.048	.155	-.059	-.308	.760
OSN Utilitarian Outcomes	.022	.082	.030	.262	.795

**PILOT MOSN - 51 AND OVER - OSN NON-ADOPTERS (N-88)**



MOSN Constructs	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
OSN Resource F.C	.161	.042	.305	3.836	.000
OSN Requisite Knowledge	-.028	.038	-.052	-.735	.465
OSN Relative Advantage	.110	.033	.227	3.370	.001
OSN Technology F.C	.042	.028	.106	1.498	.138
OSN Secondary Influence	-.101	.038	-.186	-2.686	.009
OSN Primary Influence	.170	.039	.386	4.312	.000
OSN Hedonic Outcomes	.144	.075	.230	1.928	.058
OSN Social Outcomes	-.014	.059	-.021	-.230	.819
OSN Utilitarian Outcomes	-.090	.082	-.101	-1.103	.274

### OSN DIFFUSION CHANNELS - 51 AND OVER - OSN ADOPTERS (N-36)

OSN Diffusion Channels	Gender		Total
	Male	Female	
OSN Diffusion: TV	14	11	25
OSN Diffusion: Newspaper	9	7	16
OSN Diffusion: Internet	6	4	10
OSN Diffusion: Radio	5	0	5
OSN Diffusion: Magazines	1	2	3
OSN Diffusion: Word of Mouth [Friends/Family/Colleagues]	21	15	36
<b>Total</b>	<b>21</b>	<b>15</b>	<b>36</b>

### OSN DIFFUSION CHANNELS - 51 AND OVER - OSN NON- ADOPTERS (N-88)

OSN Diffusion Channels	Gender		Total
	Male	Female	
OSN Diffusion: TV	26	21	47
OSN Diffusion: Newspaper	11	6	17
OSN Diffusion: Internet	3	2	5
OSN Diffusion: Radio	3	4	7
OSN Diffusion: Magazines	0	2	2
OSN Diffusion: Word of Mouth [Friends/Family/Colleagues]	28	50	78
<b>Total</b>	<b>35</b>	<b>53</b>	<b>88</b>

## OSN USAGE - 51 AND OVER - OSN ADOPTERS (N-36)

OSN Usage	Gender		Total
	Male	Female	
Once a Month	4	0	4
Once a Week	14	10	24
Daily (More Than 2 Hours)	1	0	1
Daily (Less Than 2 Hours)	2	5	7
<b>Total</b>	<b>21</b>	<b>15</b>	<b>36</b>

OSN Usage	Age Group						Total
	51-55	56-60	61-65	66-70	71-75	76-80	
Once a Month	1	1	0	2	0	0	4
Once a Week	9	8	1	3	2	1	24
Daily (More Than 2 Hours)	0	0	1	0	0	0	1
Daily (Less Than 2 Hours)	5	1	1	0	0	0	7
<b>Total</b>	<b>15</b>	<b>10</b>	<b>3</b>	<b>5</b>	<b>2</b>	<b>1</b>	<b>36</b>

OSN Provider	Gender		Total
	Male	Female	
OSN Provider: Facebook	8	9	17
OSN Provider: Twitter	3	3	6
OSN Provider: LinkedIn	13	5	18
OSN Provider: MySpace	1	0	1
OSN Provider: Google+	1	0	1
<b>Total</b>	<b>21</b>	<b>15</b>	<b>36</b>

OSN Access Location	Gender		Total
	Male	Female	
OSN Access Location: Household (Home)	21	15	36
OSN Access Location: Office	4	1	5
OSN Access Location: Friends/Family Place	1	0	1
OSN Access Location: Restaurants	1	0	1
<b>Total</b>	<b>21</b>	<b>15</b>	<b>36</b>

OSN Use	Gender		Total
	Male	Female	
OSN Usage: Friending/Adding	20	15	35
OSN Usage: Picture Comments	3	6	9
OSN Usage: Messaging	6	4	10
OSN Usage: Uploading Photos	1	1	2
OSN Usage: Viewing Photos	7	7	14
OSN Usage: Paid Work	3	0	3
OSN Usage: Voluntary Work	3	0	3
OSN Usage: Facebook 'Places	1	0	1
OSN Usage: Promote Self/Work	2	0	2
OSN Usage: Forming New Relationships	1	0	1
OSN Usage: Private Messaging	3	0	3
OSN Usage: Forming Groups	0	1	1
OSN Usage: Events Planning/Information	3	2	5
OSN Usage: New Media	3	1	4
OSN Usage: Messaging Boards	0	1	1
OSN Usage: Promoting - Yourself/Business	7	2	9
<b>Total</b>	<b>21</b>	<b>15</b>	<b>36</b>

OSN Access Device	Gender		Total
	Male	Female	
OSN Access Device: iPod (All Models)	1	0	1
OSN Access Device: Desktop PC	14	6	20
OSN Access Device: Laptop	16	12	28
OSN Access Device: Mobile Phone	3	1	4
OSN Access Device: TV Provider	1	0	1
OSN Access Device: 3G PDA	1	0	1
OSN Access Device: PDA	4	1	5
<b>Total</b>	<b>21</b>	<b>15</b>	<b>36</b>

OSN Profile Picture	Gender		Total
	Male	Female	
Yes	12	9	21
Intention To Have Profile Picture	1	2	3
No	8	4	12
Total	21	15	36

OSN Use Period	Gender		Total
	Male	Female	
Less Than 1 Year	2	3	5
Between 1-2 Years	7	5	12
Between 2-4 years	9	7	16
Between 4-6 Years	2	0	2
More Than 8 Years	1	0	1
Total	21	15	36

OSN Use Intention	Gender		Total
	Male	Female	
Yes	21	15	36
Total	21	15	36

## INTERNET USAGE - 51 AND OVER - INTERNET ADOPTERS (N-104)

Internet Access Device	Gender		Total
	Male	Female	
Internet Access Device: Desktop PC	27	17	44
Internet Access Device: Laptop	37	44	81
Internet Access Device: Mobile / Smart Phone	21	10	31
Internet Access Device: TV Service	1	0	1
Internet Access Device: 3G iPad/PDA	1	0	1
Internet Access Device: iPad/PDA	7	2	9
<b>Total</b>	<b>49</b>	<b>55</b>	<b>104</b>

Internet Use	Gender		Total
	Male	Female	
Internet Usage: Check e-mails	46	36	82
Internet Usage: Google Searching	49	53	102
Internet Usage: YouTube	15	15	30
Internet Usage: Video Calling	8	6	14
Internet Usage: Paid Work	6	2	8
Internet Usage: Unpaid Work	10	6	16
Internet Usage: Education/Coursework	6	2	8
Internet Usage: Leisure	38	41	79
Internet Usage: Instant Messaging	6	1	7
Internet Usage: Financial/Banking	28	18	46
Internet Usage: Insurance	33	23	56
Internet Usage: Gov. Central	7	0	7
Internet Usage: Gov. Local	3	1	4
<b>Total</b>	<b>49</b>	<b>55</b>	<b>104</b>

Internet Consumer (Time/Years)	Gender		Total
	Male	Female	
Between 1 - 2 Years	0	5	5
Between 2 - 4 Years	6	14	20
Between 4 - 6 Years	13	24	37
Between 6 - 8 Years	12	6	18
More Than 8 Years	18	6	24
<b>Total</b>	<b>49</b>	<b>55</b>	<b>104</b>

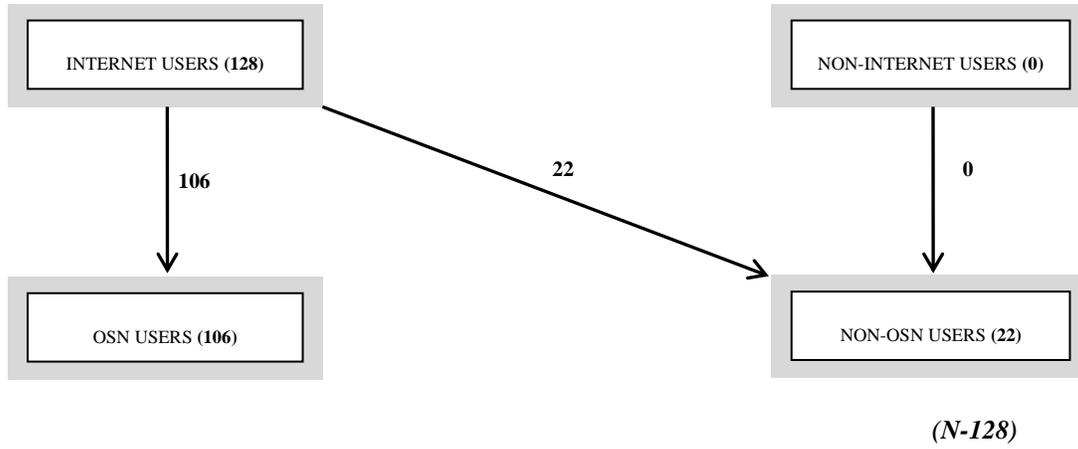
Household Internet Speed	Gender		Total
	Male	Female	
0-4 Mbps	1	0	1
5 Mbps - 9 Mbps	1	0	1
10 Mbps - 14 Mbps	2	2	4
15 Mbps - 20 Mbps	2	12	14
20 + Mbps	29	12	41
I Do Not Know	14	29	43
<b>Total</b>	<b>49</b>	<b>55</b>	<b>104</b>

ISP	Gender		Total
	Male	Female	
BT	18	24	42
Virgin Media	14	8	22
Sky	7	7	14
Talk Talk	1	6	7
Orange	1	4	5
AOL	1	1	2
O2	4	3	7
Plus Net	3	2	5
<b>Total</b>	<b>49</b>	<b>55</b>	<b>104</b>

## **50 AND BELOW - PARTICIPANTS ANALYSIS**

**(N-128)**

## ALL 50 AND BELOW - PARTICIPANT DESCRIPTIVES (N-128)



Internet Users/Non-Users	Frequency	Percent	Valid Percent	Cumulative Percent
Once a Week	5	3.9	3.9	3.9
Daily (More Than 2 Hours)	60	46.9	46.9	50.8
Daily (Less Than 2 Hours)	63	49.2	49.2	100.0
<b>Total</b>	<b>128</b>	<b>100.0</b>	<b>100.0</b>	

OSN Users/Non-Users	Frequency	Percent	Valid Percent	Cumulative Percent
Once a Week	19	14.8	14.8	14.8
Daily (More Than 2 Hours)	17	13.3	13.3	28.1
Daily (Less Than 2 Hours)	70	54.7	54.7	82.8
I Do Not Use OSNs	18	14.1	14.1	96.9
Former OSN User	2	1.6	1.6	98.4
Future OSN User	2	1.6	1.6	100.0
<b>Total</b>	<b>128</b>	<b>100.0</b>	<b>100.0</b>	

## DEMOGRAPHICS - 50 AND BELOW (N-128)

Age	Frequency	Percent
18-24	26	20.3
25-30	42	32.8
31-35	24	18.8
36-40	14	10.9
41-45	12	9.4
46-50	10	7.8
<b>Total</b>	<b>128</b>	<b>100.0</b>

Gender	Frequency	Percent
Male	71	55.5
Female	57	44.5
<b>Total</b>	<b>128</b>	<b>100.0</b>

Education	Frequency	Percent
Higher Degree/ Postgraduate Degree (MBA PhD MD MA MSc)	14	10.9
1st Degree (BA/BSc)	42	32.8
HND / HNC / Teaching	10	7.8
A- Level	25	19.5
BTEC/ Diploma	26	20.3
GCSE / O-Level	11	8.6
<b>Total</b>	<b>128</b>	<b>100.0</b>

Area	Frequency	Percent
Bedfordshire	4	3.1
Cambridgeshire	4	3.1
Essex	10	7.8
Hertfordshire	56	43.8
Kent	8	6.3
London	30	23.4
Middlesex	4	3.1
Oxfordshire	2	1.6
Surrey	7	5.5
Sussex (East & West)	3	2.3
<b>Total</b>	<b>128</b>	<b>100.0</b>

Employment	Frequency	Percent
Currently Employed Full Time	81	63.3
Currently Employed Part Time	9	7.0
Student - Currently In Full Time Education	17	13.3
Retired (Under 60 Years Old)	1	.8
Currently Unemployed (For Less Than 6 Months)	10	7.8
Currently Unemployed ( For More Than 6 Months)	9	7.0
Redundant	1	.8
<b>Total</b>	<b>128</b>	<b>100.0</b>

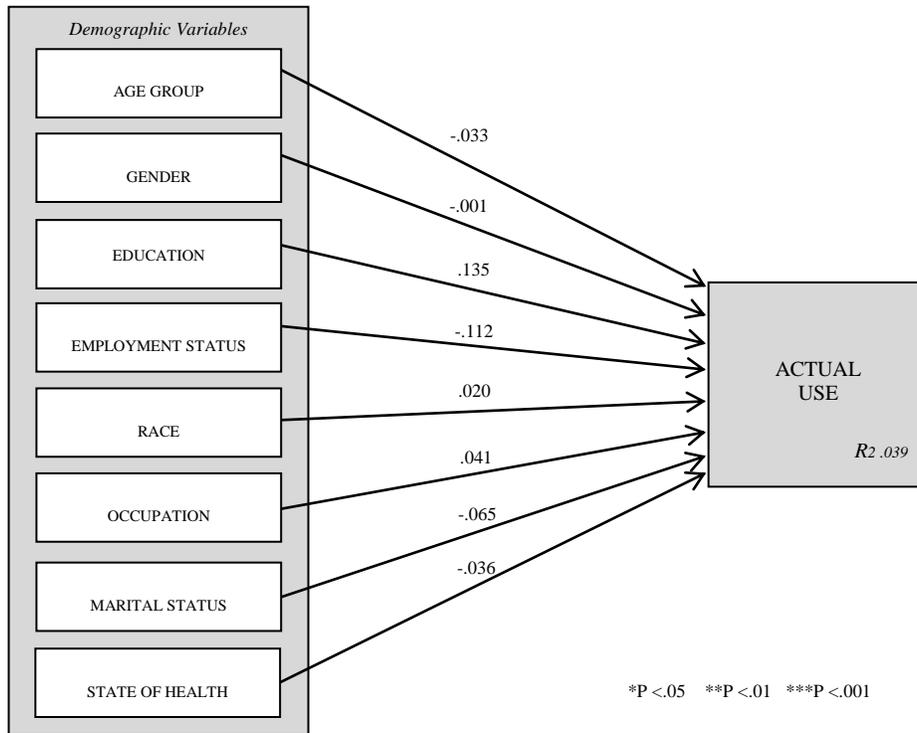
Health	Frequency	Percent
Excellent Health	79	61.7
Good Health	46	35.9
Poor Health	3	2.3
<b>Total</b>	<b>128</b>	<b>100.0</b>

<b>Race</b>	Frequency	Percent
White British	74	57.8
Other - White Background	9	7.0
Mixed White and Black African	2	1.6
Mix White and Asian	2	1.6
Other Mixed Background	4	3.1
Asian/Brit Indian	30	23.4
Asian/Brit Pakistan	3	2.3
Other Asian Background	4	3.1
<b>Total</b>	<b>128</b>	<b>100.0</b>

<b>Occupation</b>	Frequency	Percent
Student	24	18.8
Legislators/Managers/Professionals	32	25.0
Academics/Teachers	6	4.7
Crafts/Trades	5	3.9
Clerks	8	6.3
Service/Sales	45	35.2
Plant/Machine Operators	2	1.6
Freelance	6	4.7
<b>Total</b>	<b>128</b>	<b>100.0</b>

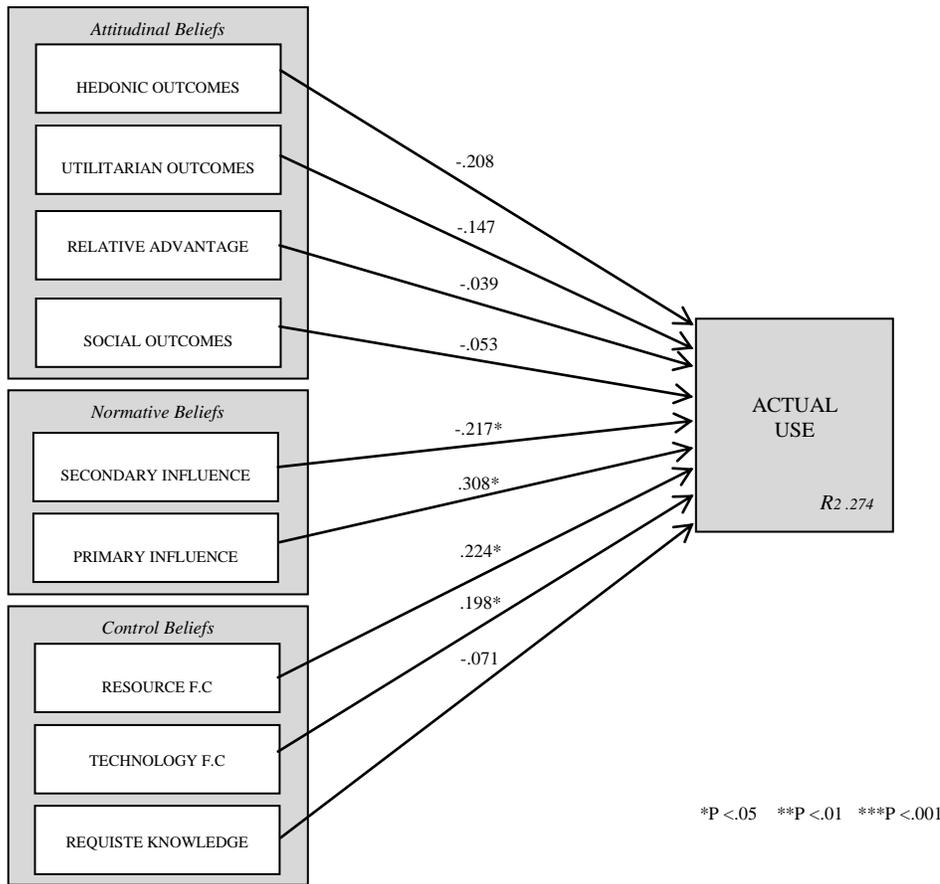
<b>Marital</b>	Frequency	Percent
Single	78	60.9
Engaged	12	9.4
Married	33	25.8
Divorced	5	3.9
<b>Total</b>	<b>128</b>	<b>100.0</b>

### 50 AND BELOW - DEMOGRAPHIC PREDICTORS (N-128)



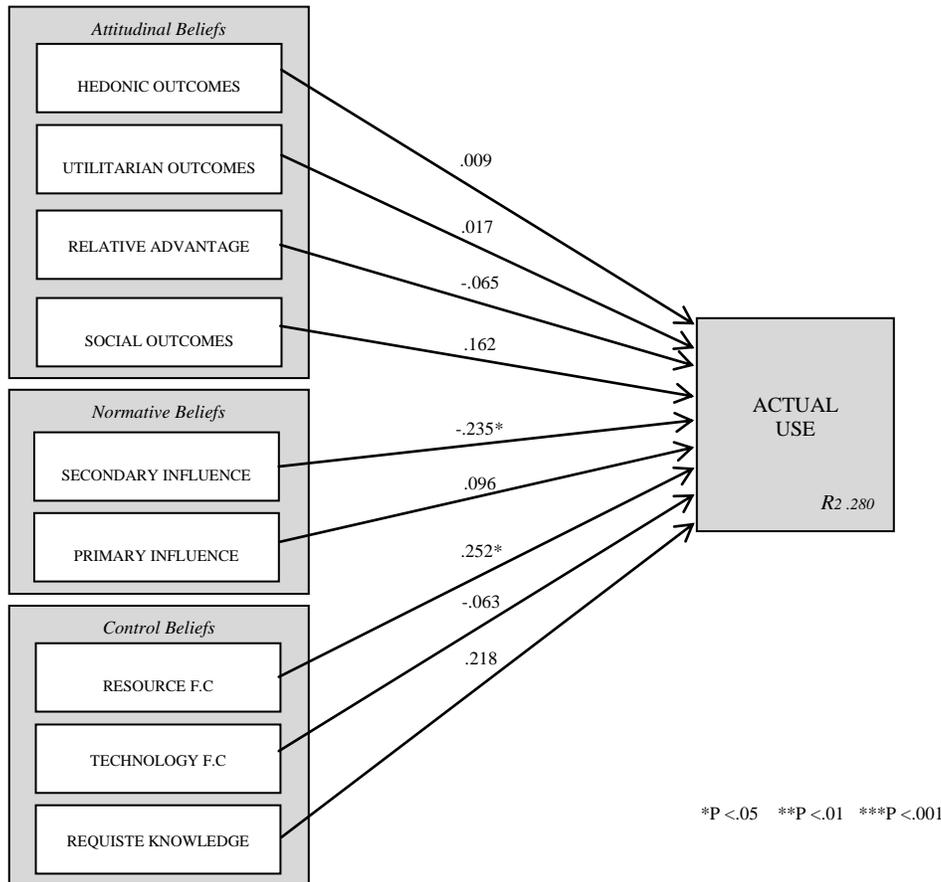
Demographic Variables	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Age	-.022	.085	-.033	-.264	.792
Gender	-.002	.196	-.001	-.013	.990
Education	.087	.062	.135	1.414	.160
Employment Status	-.044	.036	-.112	-1.194	.235
Race	.008	.039	.020	.210	.834
Occupation	.018	.042	.041	.421	.674
Marital Status	-.061	.113	-.065	-.544	.588
State of Health	-.068	.175	-.036	-.387	.699

**PILOT MOSN - ALL PARTICIPANTS - 50 AND BELOW (N-128)**



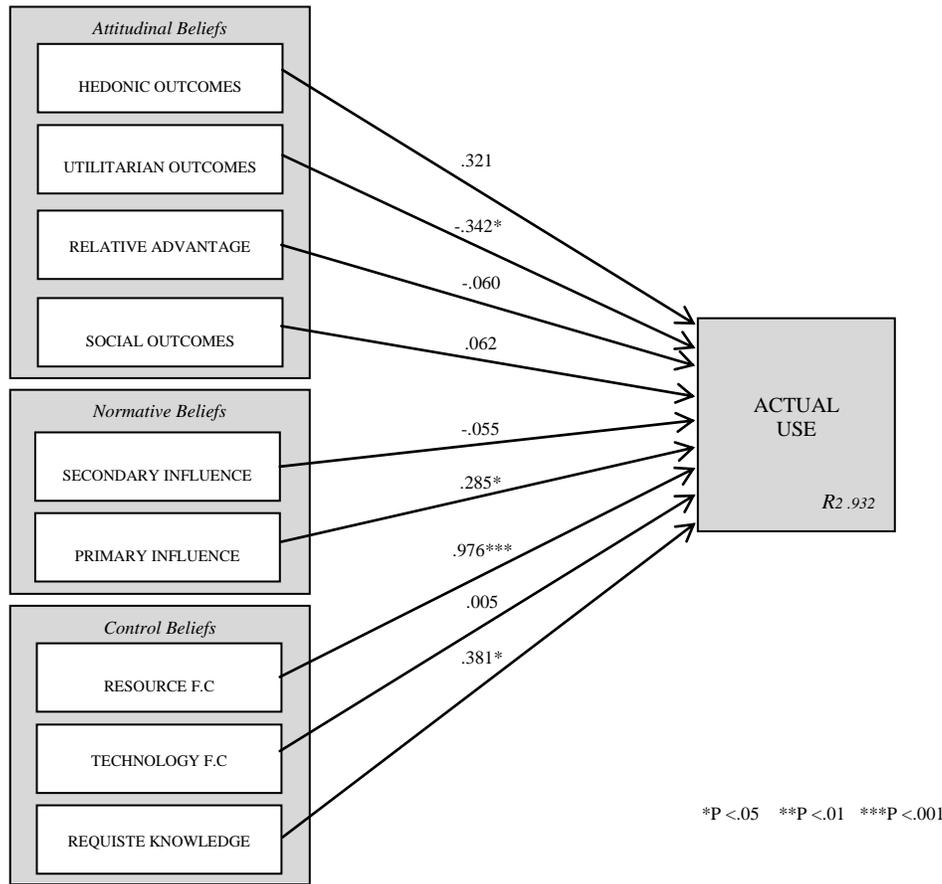
MOSN CONSTRUCT	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
OSN Resource F.C	.147	.073	.224	1.996	.048
OSN Requisite Knowledge	-.067	.106	-.071	-.630	.530
OSN Relative Advantage	-.034	.072	-.039	-.471	.638
OSN Technology F.C	.396	.194	.198	2.040	.044
OSN Secondary Influence	-.204	.082	-.217	-2.479	.015
OSN Primary Influence	.276	.112	.308	2.455	.016
OSN Hedonic Outcomes	-.151	.116	-.208	-1.297	.197
OSN Social Outcomes	-.041	.106	-.053	-.385	.701
OSN Utilitarian Outcomes	-.106	.068	-.147	-1.555	.123

**PILOT MOSN - ALL 50 AND BELOW - OSN ADOPTERS (N-106)**



MOSN Constructs	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
OSN Resource F.C	.141	.059	.252	2.393	.019
OSN Requisite Knowledge	.209	.119	.218	1.756	.082
OSN Relative Advantage	-.044	.063	-.065	-.705	.482
OSN Technology F.C	-.097	.204	-.063	-.474	.637
OSN Secondary Influence	-.176	.072	-.235	-2.437	.017
OSN Primary Influence	.126	.141	.096	.893	.374
OSN Hedonic Outcomes	.007	.102	.009	.070	.944
OSN Social Outcomes	.134	.091	.162	1.476	.143
OSN Utilitarian Outcomes	.010	.056	.017	.178	.859

**PILOT MOSN - ALL 50 AND BELOW - OSN NON- ADOPTERS (N-22)**



MOSN Constructs	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
OSN Resource F.C	.652	.113	.976	5.773	.000
OSN Requisite Knowledge	.167	.049	.381	3.394	.005
OSN Relative Advantage	-.032	.050	-.060	-.644	.531
OSN Technology F.C	.006	.114	.005	.055	.957
OSN Secondary Influence	-.030	.054	-.055	-.562	.584
OSN Primary Influence	.120	.042	.285	2.855	.014
OSN Hedonic Outcomes	.185	.098	.321	1.883	.084
OSN Social Outcomes	.044	.100	.062	.439	.668
OSN Utilitarian Outcomes	-.380	.152	-.342	-2.496	.028

**OSN DIFFUSION CHANNELS -  
ALL 50 AND BELOW - OSN ADOPTERS (N-106)**

OSN Diffusion Channels	Gender		Total
	Male	Female	
OSN Diffusion: TV	51	41	92
OSN Diffusion: Newspaper	43	29	72
OSN Diffusion: Internet	27	23	50
OSN Diffusion: Radio	13	18	31
OSN Diffusion: Magazines	20	19	39
OSN Diffusion: Word of Mouth [Friends/Family/Colleagues]	52	41	93
<b>Total</b>	<b>61</b>	<b>45</b>	<b>106</b>

**OSN DIFFUSION CHANNELS -  
ALL 50 AND BELOW - OSN NON- ADOPTERS (N-22)**

OSN Diffusion Channels	Gender		Total
	Male	Female	
OSN Diffusion: TV	8	10	18
OSN Diffusion: Newspaper	6	8	14
OSN Diffusion: Internet	1	4	5
OSN Diffusion: Radio	3	1	4
OSN Diffusion: Magazines	1	2	3
OSN Diffusion: Word of Mouth [Friends/Family/Colleagues]	10	12	22
<b>Total</b>	<b>10</b>	<b>12</b>	<b>22</b>

## OSN USAGE - 50 AND BELOW - OSN ADOPTERS (N-106)

OSN Usage	Gender		Total
	Male	Female	
Once a Week	9	10	19
Daily (More Than 2 Hours)	7	10	17
Daily (Less Than 2 Hours)	45	25	70
<b>Total</b>	<b>61</b>	<b>45</b>	<b>106</b>

OSN Usage	Age Group						Total
	18-24	25-30	31-35	36-40	41-45	46-50	
Once a Week	2	1	1	5	4	6	19
Daily (More Than 2 Hours)	7	8	2	0	0	0	17
Daily (Less Than 2 Hours)	17	28	16	6	2	1	70
<b>Total</b>	<b>26</b>	<b>37</b>	<b>19</b>	<b>11</b>	<b>6</b>	<b>7</b>	<b>106</b>

OSN Provider	Gender		Total
	Male	Female	
OSN Provider: Facebook	56	44	100
OSN Provider: Twitter	29	17	46
OSN Provider: LinkedIn	17	11	28
OSN Provider: Bebo	0	2	2
OSN Provider: MySpace	3	8	11
OSN Provider: FlickrR	2	1	3
OSN Provider: Google+	10	3	13
OSN Provider: Digg	1	1	2
<b>Total</b>	<b>61</b>	<b>45</b>	<b>106</b>

OSN Access Locations	Gender		Total
	Male	Female	
OSN Access Location: Household (Home)	61	45	106
OSN Access Location: Office	20	22	42
OSN Access Location: Library	3	3	6
OSN Access Location: Friends/Family Place	14	8	22
OSN Access Location: Internet Cafe	1	3	4
OSN Access Location: Restaurants	5	5	10
OSN Access Location: Coffee Houses	1	8	9
OSN Access Location: Fast Food	2	1	3
<b>Total</b>	<b>61</b>	<b>45</b>	<b>106</b>

OSN Use	Gender		Total
	Male	Female	
OSN Usage: Friending/Adding	57	41	98
OSN Usage: Picture Comments	43	38	81
OSN Usage: Messaging	49	40	89
OSN Usage: Uploading Photos	41	35	76
OSN Usage: Viewing Photos	48	40	88
OSN Usage: Uploading Videos	19	12	31
OSN Usage: View Videos	27	18	45
OSN Usage: Paid Work	3	4	7
OSN Usage: Voluntary Work	4	3	7
OSN Usage: Facebook 'Places	25	20	45
OSN Usage: Health Related Purposes	0	2	2
OSN Usage: Gov. Central	2	1	3
OSN Usage: Gov. Local	3	2	5
OSN Usage: Promote Self/Work	7	10	17
OSN Usage: Forming New Relationships	8	4	12
OSN Usage: Private Messaging	13	14	27
OSN Usage: Forming Groups	8	7	15
OSN Usage: Events Planning/Information	19	12	31
OSN Usage: New Media	6	5	11
OSN Usage: Messaging Boards	5	7	12
OSN Usage: Promoting - Yourself/Business	12	6	18
<b>Total</b>	<b>61</b>	<b>45</b>	<b>106</b>

OSN Access Device	Gender		Total
	Male	Female	
OSN Access Device: iPod (All Models)	5	4	9
OSN Access Device: Desktop PC	30	19	49
OSN Access Device: Laptop	43	38	81
OSN Access Device: Mobile Phone	41	34	75
OSN Access Device: 3G PDA	3	3	6
OSN Access Device: PDA	17	4	21
<b>Total</b>	<b>61</b>	<b>45</b>	<b>106</b>

OSN Profile Picture	Gender		Total
	Male	Female	
Yes	58	43	101
Intention To Have Profile Picture	0	1	1
No	3	1	4
<b>Total</b>	<b>61</b>	<b>45</b>	<b>106</b>

OSN Use Period	Gender		Total
	Male	Female	
Less Than 1 Year	1	1	2
Between 1-2 Years	11	6	17
Between 2-4 years	32	19	51
Between 4-6 Years	11	10	21
Between 6-8 Years	4	6	10
More Than 8 Years	2	3	5
<b>Total</b>	<b>61</b>	<b>45</b>	<b>106</b>

OSN Continuance Intention	Gender		Total
	Male	Female	
No	3	1	4
Yes	58	44	102
<b>Total</b>	<b>61</b>	<b>45</b>	<b>106</b>

## INTERNET USAGE - ALL 50 AND BELOW - INTERNET ADOPTERS (N-128)

Internet Access Device	Gender		Total
	Male	Female	
Internet Access Device: Desktop PC	37	24	61
Internet Access Device: Laptop	53	49	102
Internet Access Device: Mobile / Smart Phone	60	48	108
Internet Access Device: TV Service	2	4	6
Internet Access Device: 3G iPad/PDA	4	3	7
Internet Access Device: iPad/PDA	23	9	32
<b>Total</b>	<b>71</b>	<b>57</b>	<b>128</b>

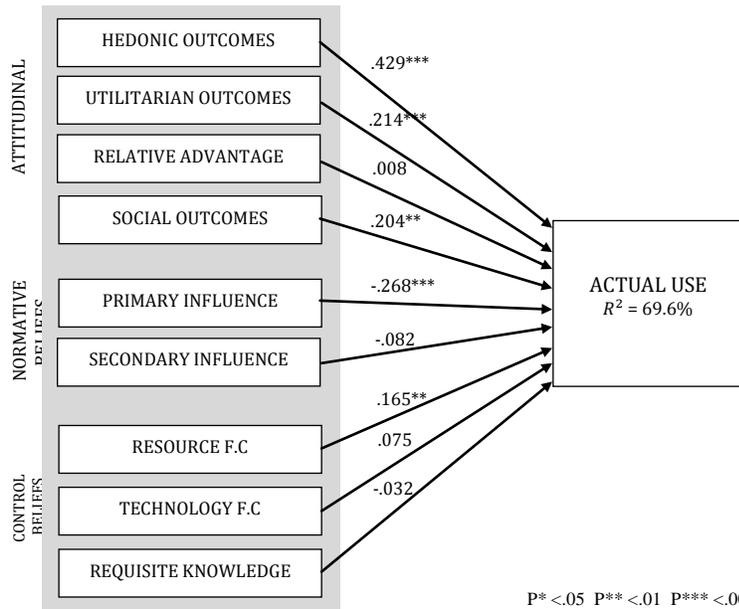
Internet Use	Gender		Total
	Male	Female	
Internet Usage: Check e-mails	69	52	121
Internet Usage: Google Searching	71	56	127
Internet Usage: YouTube	53	39	92
Internet Usage: Video Calling	34	29	63
Internet Usage: Paid Work	18	9	27
Internet Usage: Unpaid Work	14	18	32
Internet Usage: Education/Coursework	23	23	46
Internet Usage: Leisure	58	47	105
Internet Usage: Instant Messaging	29	23	52
Internet Usage: Financial/Banking	51	34	85
Internet Usage: Insurance	51	32	83
Internet Usage: Gov. Central	11	4	15
Internet Usage: Gov. Local	8	4	12
<b>Total</b>	<b>71</b>	<b>57</b>	<b>128</b>

Internet Consumer (Time/Years)	Gender		Total
	Male	Female	
Less Than One Year	3	6	9
Between 1 - 2 Years	9	8	17
Between 2 - 4 Years	10	8	18
Between 4 - 6 Years	25	11	36
Between 6 - 8 Years	9	14	23
More Than 8 Years	15	10	25
<b>Total</b>	<b>71</b>	<b>57</b>	<b>128</b>

Internet Speed	Gender		Total
	Male	Female	
0-4 Mbps	1	1	2
5 Mbps - 9 Mbps	4	1	5
10 Mbps - 14 Mbps	2	1	3
15 Mbps - 20 Mbps	12	7	19
20 + Mbps	35	22	57
I Do Not Know	17	25	42
<b>Total</b>	<b>71</b>	<b>57</b>	<b>128</b>

ISP	Gender		Total
	Male	Female	
BT	18	18	36
Virgin Media	24	20	44
Sky	18	8	26
Talk Talk	5	5	10
Orange	3	3	6
O2	3	2	5
Plus Net	0	1	1
<b>Total</b>	<b>71</b>	<b>57</b>	<b>128</b>

### ALL PILOT PARTICIPANTS - MOSN CONSTRUCTS



MOSN Construct	Coef.	Std. Err.	t	P>t	P*
Resource F.C	0.165	.0531692	3.10	0.002	**
Requisite Knowledge	-0.032	.0532016	-0.60	0.547	
Relative Advantage	0.008	.0509847	0.16	0.870	
Technology F.C	0.075	.0582014	1.30	0.196	
Secondary Influence	-0.082	.0568118	-1.44	0.152	
Primary Influence	-0.268	.0501252	-5.35	0.000	***
Hedonic Outcomes	0.429	.0777472	5.52	0.000	***
Social Outcomes	0.204	.0787759	2.59	0.010	**
Utilitarian Outcomes	0.214	.0553818	3.87	0.000	***
Constant	0.381	.5051655	0.75	0.452	

Source	SS	DF
Model	537	9
Residual	222	242
Total	759	251

Number of obs	N-252
F( 9, 242)	64.980
Prob > F	0.000
R-squared	0.707
Adj R-squared	0.696
Root MSE	0.958

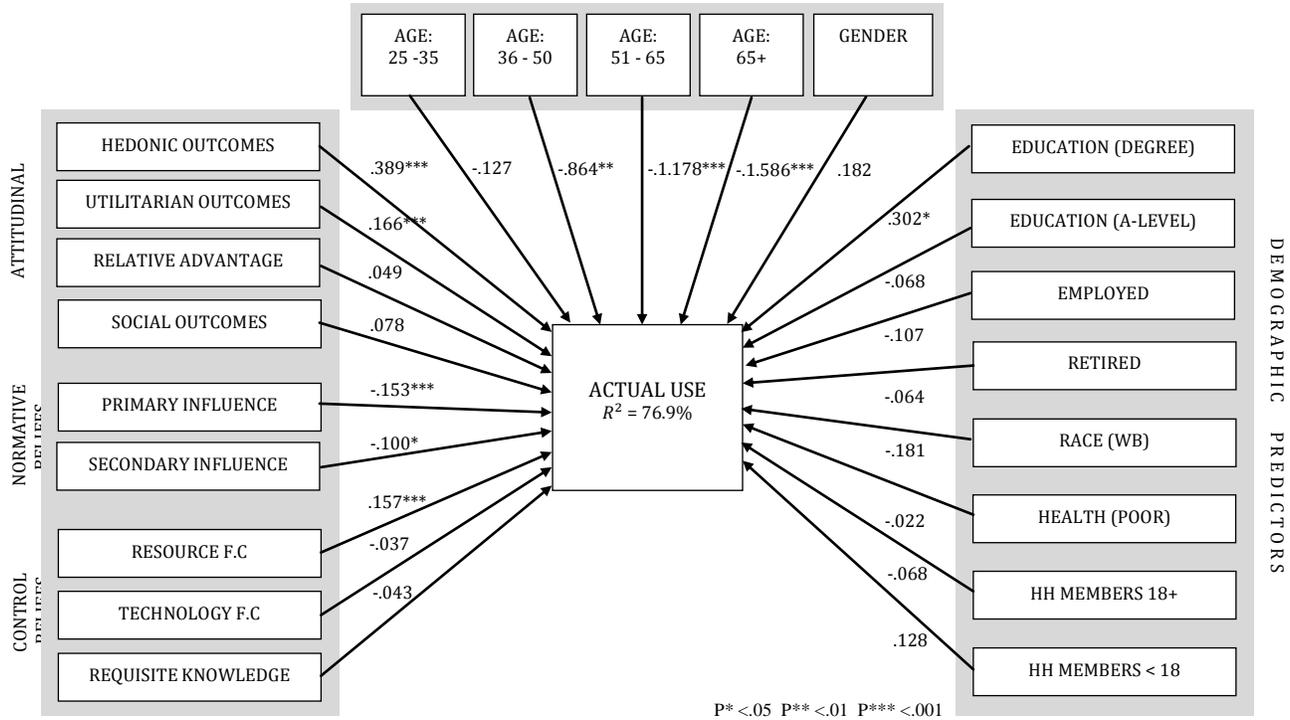
### ALL PILOT PARTICIPANTS - MOSN CONSTRUCTS + DEMOGRAPHIC PREDICTORS (TABLES)

Variable	Coef.	Std. Err.	t	P>t	P*
Age: 25-35	-0.127	.2255752	-0.56	0.573	
Age 36-50	-0.864	.2754881	-3.14	0.002	**
Age: 51-65	-1.178	.2990576	-3.94	0.000	***
Age: 65+	-1.586	.3652487	-4.34	0.000	***
Gender	0.182	.1132	1.61	0.109	
1st Degree Level (BA/BSc)	0.302	.1275121	2.37	0.019	*
A-Level	-0.068	.1679965	-0.41	0.685	
Employed	-0.107	.184548	-0.58	0.561	
Retired	-0.064	.2897687	-0.22	0.825	
Race: White British	-0.181	.1287868	-1.41	0.160	
Health Status: Poor	-0.022	.1111021	-0.19	0.846	
Household Members 18+	-0.068	.0791887	-0.86	0.391	
Household Members - 18	0.128	.0772438	1.65	0.100	
Resource F.C	0.157	.0482144	3.26	0.001	***
Requisite Knowledge	-0.043	.0515171	-0.84	0.401	
Relative Advantage	0.049	.0455701	1.07	0.287	
Technology F.C	-0.037	.0559424	-0.66	0.507	
Secondary Influence	-0.100	.0501798	-2.00	0.047	*
Primary Influence	-0.153	.0472131	-3.24	0.001	***
Hedonic Outcomes	0.389	.0701792	5.54	0.000	***
Social Outcomes	0.078	.0732378	1.06	0.288	
Utilitarian Outcomes	0.166	.0511789	3.23	0.001	***
Constant	2.041	.6613902	3.09	0.002	**

Source	SS	DF
Model	599	22
Residual	160	229
Total	759	251

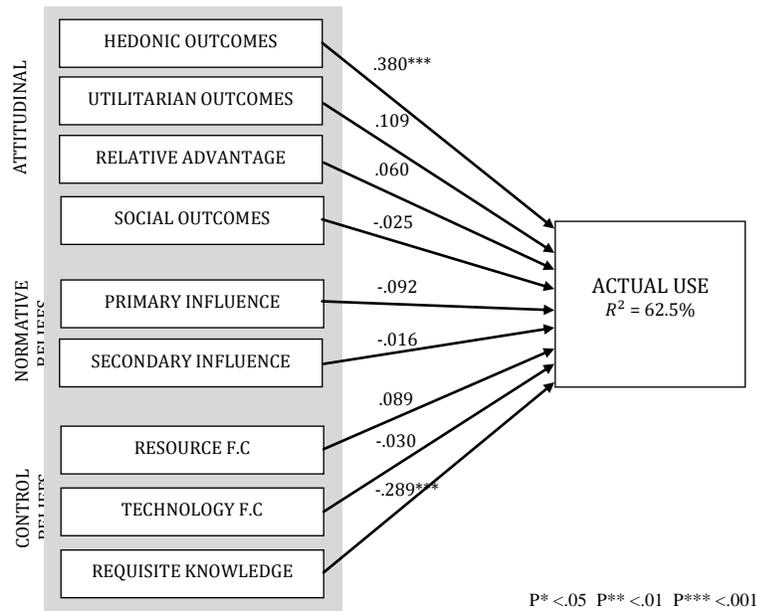
Number of obs	N-252
F( 22, 229)	39.020
Prob > F	0.000
R-squared	0.789
Adj R-squared	0.769
Root MSE	0.836

### ALL PILOT PARTICIPANTS - MOSN CONSTRUCTS + DEMOGRAPHIC PREDICTORS (DIAGRAM)



All Pilot Participants (N=252) MOSN Constructs + Demographic Predictors

### ALL 51+ PILOT PARTICIPANTS - MOSN CONSTRUCTS



51+ Pilot Participants (N-124) MOSN Constructs

MOSN Construct	Coef.	Std. Err.	t	P>t	P*
<b>Resource F.C</b>	0.089	.0584947	1.52	0.130	
<b>Requisite Knowledge</b>	-0.289	.0550473	-5.25	0.000	***
<b>Relative Advantage</b>	0.060	.0523227	1.14	0.255	
<b>Technology F.C</b>	-0.030	.0486432	-0.63	0.532	
<b>Secondary Influence</b>	-0.016	.0584572	-0.27	0.788	
<b>Primary Influence</b>	-0.092	.0658369	-1.39	0.167	
<b>Hedonic Outcomes</b>	0.380	.103061	3.69	0.000	***
<b>Social Outcomes</b>	-0.025	.0838925	-0.30	0.766	
<b>Utilitarian Outcomes</b>	0.109	.0738092	1.48	0.142	
<b>Constant</b>	1.573	.4879251	3.22	0.002	**

Source	SS	DF
<b>Model</b>	108	9
<b>Residual</b>	58	114
<b>Total</b>	165	123

Number of obs	N-124
<b>F( 9, 114)</b>	23.760
<b>Prob &gt; F</b>	0.000
<b>R-squared</b>	0.652
<b>Adj R-squared</b>	0.625
<b>Root MSE</b>	0.710

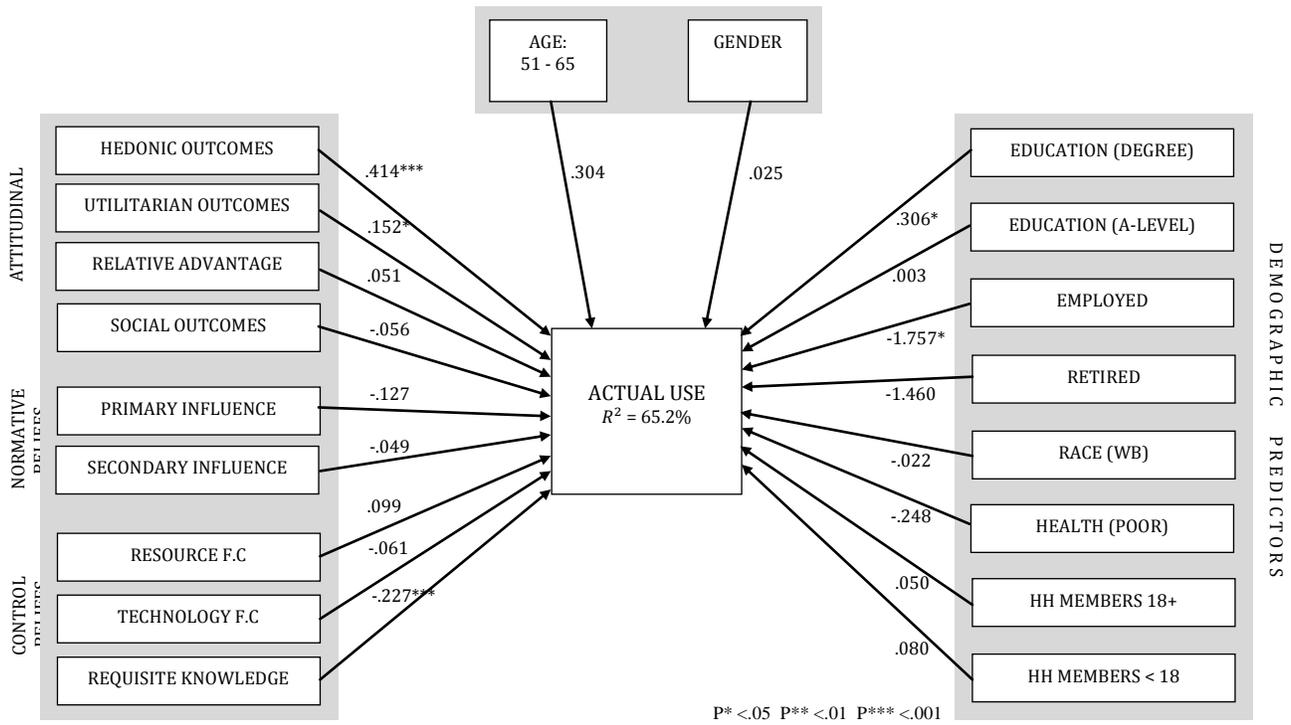
**ALL 51+ PILOT PARTICIPANTS - MOSN CONSTRUCTS + DEMOGRAPHIC PREDICTORS (TABLES)**

Variable	Coef.	Std. Err.	t	P>t	P*
<b>Age:50-65</b>	0.304	.1973585	1.54	0.126	
<b>Gender</b>	0.025	.1423168	0.17	0.863	
<b>1st Degree (Ba/BSc)</b>	0.306	.1460988	2.10	0.039	*
<b>A-level</b>	0.003	.2306527	0.01	0.990	
<b>Employed</b>	-1.757	.7953195	-2.21	0.029	*
<b>Retired</b>	-1.460	.8131625	-1.80	0.075	
<b>Race: White British</b>	-0.022	.1925251	-0.11	0.909	
<b>Health Status: Poor</b>	-0.248	.1418013	-1.75	0.084	
<b>Household Members 18+</b>	0.050	.1478351	0.34	0.735	
<b>Household Members -18</b>	0.080	.1186169	0.68	0.499	
<b>Resource F.C</b>	0.099	.0636276	1.56	0.121	
<b>Requisite Knowledge</b>	-0.227	.0617487	-3.68	0.000	***
<b>Relative Advantage</b>	0.051	.052457	0.98	0.331	
<b>Technology F.C</b>	-0.061	.0515221	-1.18	0.241	
<b>Secondary Influence</b>	-0.049	.0586066	-0.84	0.402	
<b>Primary Influence</b>	-0.127	.0677669	-1.88	0.064	
<b>Hedonic Outcomes</b>	0.414	.107254	3.86	0.000	***
<b>Social Outcomes</b>	-0.056	.0909842	-0.62	0.536	
<b>Utilitarian Outcomes</b>	0.152	.0754767	2.02	0.046	*
<b>Constant</b>	3.122	1.044648	2.99	0.003	**

Source	SS	DF
<b>Model</b>	117	19
<b>Residual</b>	49	104
<b>Total</b>	165	123

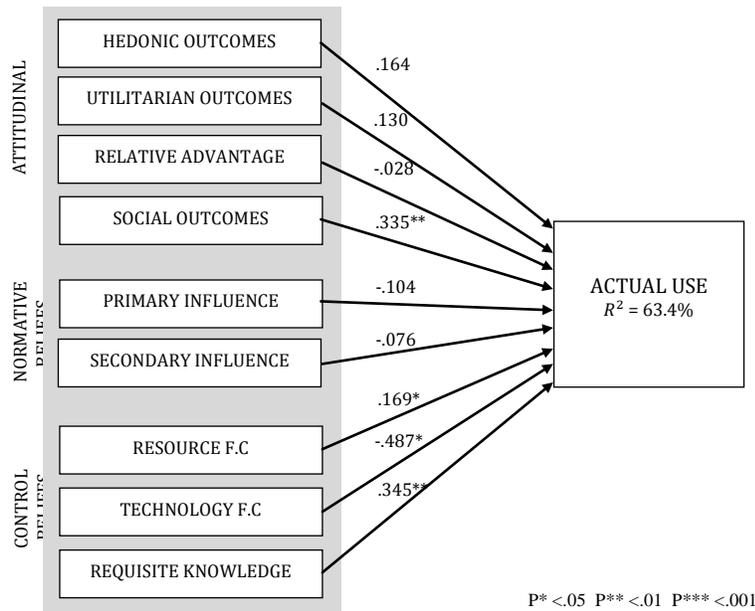
Number of obs	N-124
<b>F( 19, 104)</b>	13.150
<b>Prob &gt; F</b>	0.000
<b>R-squared</b>	0.706
<b>Adj R-squared</b>	0.652
<b>Root MSE</b>	0.684

### ALL 51+ PILOT PARTICIPANTS - MOSN CONSTRUCTS + DEMOGRAPHIC PREDICTORS (DIAGRAM)



51+ Pilot Participants (N-124) MOSN Constructs + Demographic Predictors

**ALL 50 AND UNDER PILOT PARTICIPANTS - MOSN CONSTRUCTS**



50 & Under Pilot Participants (N-128)  
MOSN Constructs

MOSN Construct	Coef.	Std. Err.	t	P>t	P*
Resource F.C	0.169	.0740785	2.28	0.024	*
Requisite Knowledge	0.345	.1066288	3.23	0.002	**
Relative Advantage	-0.028	.0730476	-0.38	0.704	
Technology F.C	-0.487	.1957769	-2.49	0.014	*
Secondary Influence	-0.076	.0830099	-0.91	0.364	
Primary Influence	-0.104	.1133254	-0.92	0.361	
Hedonic Outcomes	0.164	.1174296	1.39	0.166	
Social Outcomes	0.335	.1073298	3.12	0.002	**
Utilitarian Outcomes	0.130	.0687884	1.90	0.061	
Constant	2.362	1.086626	2.17	0.032	*

Source	SS	DF	Number of obs	N-128
Model	188	9	F( 9, 118)	25.460
Residual	97	118	Prob > F	0.000
Total	285	127	R-squared	0.660
			Adj R-squared	0.634
			Root MSE	0.906

**ALL 50 AND UNDER PILOT PARTICIPANTS - MOSN CONSTRUCTS +  
DEMOGRAPHIC PREDICTORS (TABLES)**

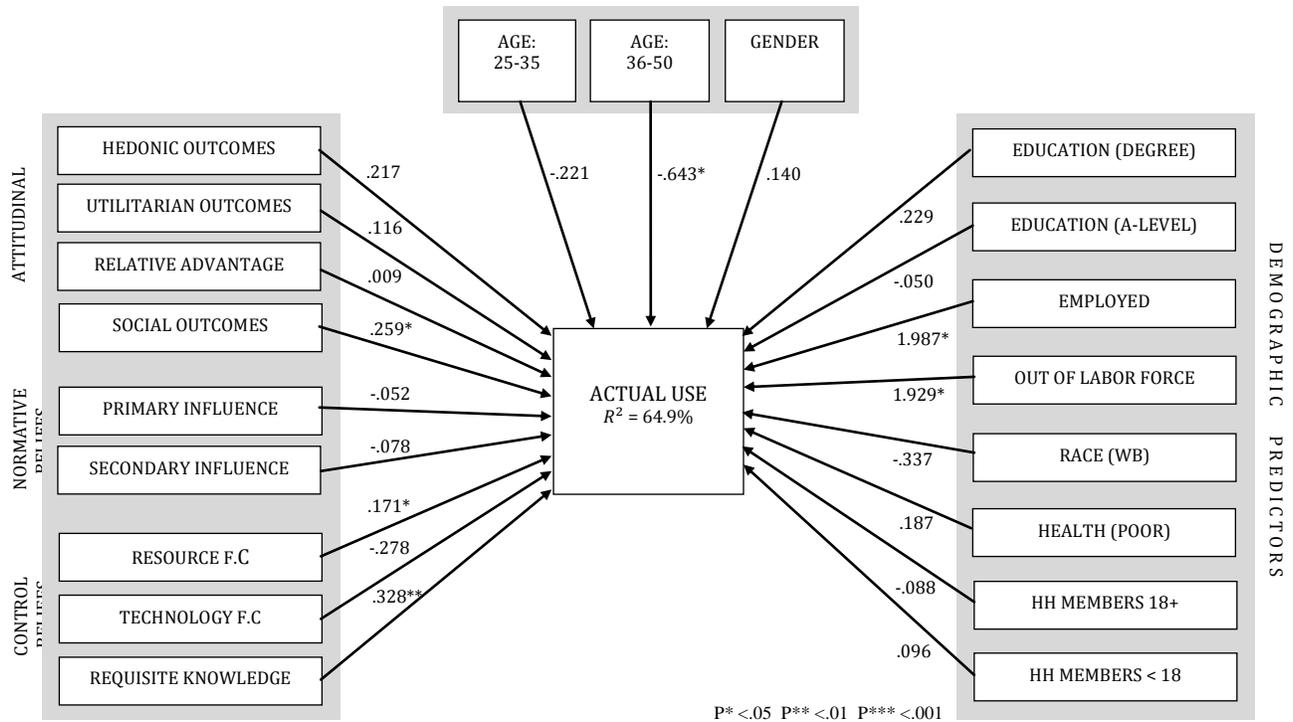
Variable	Coef.	Std. Err.	t	P>t	P*
Age:25-35	-0.221	.2500648	-0.88	0.379	
Age:36-50	-0.643	.315581	-2.04	0.044	*
Gender	0.140	.1836619	0.76	0.448	
1st Degree (BA/BSc)	0.229	.2112476	1.08	0.281	
A-Level	-0.050	.238823	-0.21	0.835	
In Employment	1.987	.9517238	2.09	0.039	*
Out of Labor Force (Not Working/Student)	1.929	.9596942	2.01	0.047	*
Race: White British	-0.337	.1723046	-1.96	0.053	
Health: Poor	0.187	.1689813	1.11	0.27	
Household Members 18+	-0.088	.0987503	-0.89	0.376	
Household Members -18	0.096	.1055374	0.91	0.364	
Resource F.C	0.171	.0757036	2.26	0.026	*
Requisite Knowledge	0.328	.1087399	3.02	0.003	**
Relative Advantage	0.009	.076962	0.12	0.904	
Technology F.C	-0.278	.2145875	-1.30	0.197	
Secondary Influence	-0.078	.0842879	-0.93	0.356	
Primary Influence	-0.052	.1176459	-0.45	0.657	
Hedonic Outcomes	0.217	.1174096	1.84	0.068	
Social Outcomes	0.259	.1180243	2.20	0.03	*
Utilitarian Outcomes	0.116	.071037	1.63	0.106	
Constant	-0.487	1.664621	-0.29	0.771	

50 And Under Pilot Participants (N-128)  
MOSN Constructs + Demographics Predictors

Source	SS	DF
Model	201	20
Residual	84	107
Total	285	127

Number of obs	N-128
F( 20, 107)	12.740
Prob > F	0.000
R-squared	0.704
Adj R-squared	0.649
Root MSE	0.888

### ALL 50 AND UNDER PILOT PARTICIPANTS - MOSN CONSTRUCTS + DEMOGRAPHIC PREDICTORS (DIAGRAM)



50 And Under Pilot Participants (N-128)  
MOSN Constructs + Demographic Predictors

## 4-4 Original Construct Measures

### Original Construct Measures

Constructs	Constructs Measure	Scale	Source
<b>Hedonic Outcomes</b>	The computer provides many applications that are enjoyable (p.424)	1 Strongly disagree > 7 Strongly Agree	<b>MATH Brown &amp; Venkatesh (2005)</b>
	I enjoy playing computer games (p.424)	1 Strongly disagree > 7 Strongly Agree	
	My computer has applications that are fun (p.424)	1 Strongly disagree > 7 Strongly Agree	
	I am able to use my computer to have fun (p.424)	1 Strongly disagree > 7 Strongly Agree	

<b>Utilitarian Outcomes</b>	I find that the computer has tools for personal productivity (p.424)	1 Strongly disagree > 7 Strongly Agree	<b>MATH Brown &amp; Venkatesh (2005)</b>
	I find that computer has tools to support household activities (p.424)	1 Strongly disagree > 7 Strongly Agree	
	The computer is useful for me to work at home (p.424)	1 Strongly disagree > 7 Strongly Agree	
	The computer provides applications related to my job (p.424)	1 Strongly disagree > 7 Strongly Agree	

<b>Relative Advantage</b>	b 1 The VCR-Plus +TM would allow me to tape more shows (p.152)	Unlikely > Likely	<b>DTPB Taylor &amp; Todd (1995a)</b>
	b 2 The advantages of VCR-Plus +TM outweigh the disadvantages (p.152)	Unlikely > Likely	
	b 3 The VCR-Plus + TM will not offer me any new benefits (p.152)	Unlikely > Likely	
	b 4 The VCR-Plus +TM will fit well with how I use my VCR (for example, taping shows, watching movies, taping music) (p.152)	Unlikely > Likely	

<b>Social Outcomes</b>	People who use a computer at home have more prestige than those who do not (p.424)	1 Strongly disagree > 7 Strongly Agree	<b>MATH Brown &amp; Venkatesh (2005)</b>
	People who use a computer at home have a high profile (p.424)	1 Strongly disagree > 7 Strongly Agree	
	Using a computer is a status symbol (p.424)	1 Strongly disagree > 7 Strongly Agree	

<b>Primary Influence</b>	My friends think I should use a computer at home (p.424)	1 Strongly disagree > 7 Strongly Agree	<b>MATH Brown &amp; Venkatesh (2005)</b>
	Those in my social circle think I should use a PC at home (p.424)	1 Strongly disagree > 7 Strongly Agree	
	My family members think I should use a computer at home (p.424)	1 Strongly disagree > 7 Strongly Agree	
	My relatives think I should use a computer at home (p.424)	1 Strongly disagree > 7 Strongly Agree	

<b>Secondary Influence</b>	Information from newspapers suggest that I should use a computer at home (p.425)	1 Strongly disagree > 7 Strongly Agree	<b>MATH Brown &amp; Venkatesh (2005)</b>
	Information that I gather by watching TV encourages me to use a computer at home (p.425)	1 Strongly disagree > 7 Strongly Agree	
	Based on what I have heard on the radio, I am encouraged to use a computer at home (p.425)	1 Strongly disagree > 7 Strongly Agree	

<b>Technology F.C</b>	cb 5 I have the use of a VCR whenever I want it: ( p.153)	Unlikely > Likely	<b>DTPB Taylor &amp; Todd (1995a)</b>
	Pf5 Having the use of a VCR whenever I want it is: ( p.153)	Unimportant > important	
	Cb6 The VCR-Plus+ would work well with my brand of VCR ( p.153)	Unlikely > Likely	

<b>Resource F.C</b>	cb 7 I have the time and money needed to buy a VCR-Plus + TM (p.153)	Unlikely > Likely	<b>DTPB Taylor &amp; Todd (1995a)</b>
	cb 8 I have the time needed to set up the VCR Plus + TM (p.153)	Unlikely > Likely	
	cb 9 I have the time to use the VCR-Plus +TM (p.153)	Unlikely > Likely	

<b>Requisite Knowledge</b>	I feel comfortable using a computer on my own	1 Strongly disagree > 7 Strongly Agree	<b>MATH Brown &amp; Venkatesh (2005)</b>
	If I wanted to, I could easily operate a computer on my own	1 Strongly disagree > 7 Strongly Agree	
	I can use a computer even if no one is around to help me	1 Strongly disagree > 7 Strongly Agree	

## 4-5 Pretest Expert Feedback Form & Outcomes

### Instructions

#### Step One

Please complete the online survey which can be accessed at the following website address:

**[www.surveymonkey.com/s/\\*\\*\\*\\*\\*](http://www.surveymonkey.com/s/*****)**

**Before completing the online survey please consider the following:**

*How long (minutes) did it take you to complete the survey?*

*Can you suggest any changes that can be made to improve this survey in order to make it easier and more straightforward for a participant to follow and complete. This includes spelling or grammar errors.*

*Are there any questions that you found too intrusive or you thought may discourage people from taking part in this survey?*

#### Step Two

Please answer the three questions on the following page.

**NOTE: This is an ACTIVE word document, so you are able to select (mouse click) the GREY areas to enter your answers.**

#### Step Three

**SAVE this word document then attach your response to an email back**

---

**Please enter your name here >**

---

**(1) How long (minutes) did it take you to complete the survey?**

**(2) Can you please suggest any changes that can be made to improve this survey in order to make it easier and more straightforward for a participant to follow and complete. This includes spelling and grammar errors.**

**(3) Are there any questions that you found too intrusive or you thought may discourage people from taking part in this survey?**

## Expert Feedback

<b>Pretest: Feedback</b>
<b>1. Questions 18: Omit the word 'all'</b>
<b>2. Question 27: 'Very much' should be revised.</b>
<b>3. Instruct the users to PRESS NEXT at the end.</b>
<b>4. One typo ..... under "how long do you use internet " , the choice of MORE THAN 2 HOURS is missing (LESS THAN 2 HOURS is given twice ).</b>
<b>5. Question 25: Include LinkedIn?</b>
<b>6. Question 35: How do I find out my Internet speed?</b>
<b>7. On the last questions, in brackets explain to the user that they need to click NEXT, then DONE on the final page, I was a bit lost as to how to submit my survey.</b>
<b>8. I would suggest that you inform the participants to click NEXT after completing a page of questions. It sounds obvious but the next button is so small I fear some older participants won't see it! (Questions 13/25)</b>
<b>9. Questions 15/27 very little &gt; very much is incorrect English. I suggest: I know very little 1 2 3 4 5 I know a lot.</b>
<b>10. Question 7 'legislators/managers' should also have professionals in there. What choice would a lawyer or dentist have to choose?</b>
<b>11. I use the Internet for more than two hours a day in separate sittings. So question 13 not be 'Once a day (more than 2 hours)' it's should be DAILY (more than 2 hours)'</b>
<b>12. For questions 49 include an 'other' option, you might find out some interesting way people have become aware of online networks this way.</b>
<b>13. Question 27 : Very little / Very much -&gt; Quite a lot?</b>
<b>14. You have repeated the same answers in question 13, apart from that it runs nicely.</b>
<b>15. Include how long the survey take on the opening page.</b>
<b>16. Question 19: use or purchase?</b>
<b>17. Question 31: use or purchase?</b>
<b>18. Question 38: TV, newspapers... WHEN USING?</b>

<b>Pretest: Feedback</b>
<b>19. Q17: this question is ambiguous. 'Do you prefer face-to-face contact or Internet contact?' - First thought came to my mind is 'depending on situation and who we talk to'. Thus, do you think there should be two questions here? One asking 'Do you prefer face-to-face or Internet for work related contact?' and another 'Do you prefer face-to-face or Internet for non-work related contact?'</b>
<b>20. Q23: I'm using a 3G dongle, so, I'm wondering if 'Mobile internet' should be one of the choices here.</b>
<b>21. Q32: Minor asthetic issue: fifth bullet is missing; eighth bullet point's spelling is 'cannot' or 'can not'; ninth bullet is missing.</b>
<b>22. Q42: Should 'Mobile internet' be one of the choices here?</b>
<b>23. Q44: Why so specific 'within 12 months'? Is there a reason for being so specific about the timing?</b>
<b>24. Q60: Minor asthetic issue: Size of first bullet, different from the rest.</b>
<b>25. After Q62, under 'If you have any questions about this study ... Research student'. Should this be a small or captial 's' for student?</b>
<b>26. Q- 27: 'Very much' is not an appropriate word</b>
<b>27. The same answer options appear in questions 13, is this intentional?</b>
<b>28. There is no option for those 'self-employed'</b>
<b>29. I do not think Internet speed should be a complusory questions as very few actually know this.</b>
<b>30. Employment status: Meternity/Peternity leave?</b>
<b>31. Do you prefer face-to-face contact or internet contact: Answer options should read MOSTLY face-to-face &gt; MOSTLY Internet</b>
<b>32. Question 34: less then 6 months?</b>
<b>33. For question 28 consider workplace also</b>
<b>34. Internet frequency a user has to choose either daily or weekly, why not a few times per week? This also applies to social networking use.</b>
<b>35. If the only method you use to access the internet is 3G, what can someone answer for current speed of internet connection?</b>

<b>Pretest: Feedback</b>
<b>36. I would suggest separating influence TV, newspapers and Radio.</b>
<b>37. How much spare time do you have in the week? SPARE is very a ambiguous word to use.</b>
<b>38. Question 18: ,, on all your decisions regarding &gt; internet use&lt;</b>
<b>39. Question 31 - it may be easier for people if you order the options with the most likely answers to be selected first. E.G. Who uses Facebook for health related purposes?</b>
<b>40. When surveying the elderly questions about disabilities can be of great use</b>
<b>41. Reasons for using the internet.. where is internet shopping and Ebay??</b>
<b>42. Reasons for using Facebook where is video calling? That is the main reason I use it.</b>
<b>43. You have asked which devices are used on three occasions, this could become tedious for some.</b>
<b>44. A good questionnaire, a little longer than I expected. Are all those questions necessary?</b>

<b>Pretest: Survey Completion Times</b>			
<b>Dr.C : 15 mins</b>	<b>Mr.P : 18 mins</b>	<b>Dr.S : 16 mins</b>	<b>Mr.P : 15 mins</b>
<b>Dr.T : 15 mins</b>	<b>Mrs.M : 17 mins</b>	<b>Dr.W : 12 mins</b>	<b>Mr.M : 14 mins</b>
<b>Dr.Q : 17 mins</b>	<b>Mr.A : 15 mins</b>	<b>Mr.G : 13 mins</b>	<b>Ms.M : 15 mins</b>
<b>Dr.W : 11 mins</b>	<b>Mr.B : 9 mins</b>	<b>Mr.P : 11 mins</b>	<b>Ms.K : 12 mins</b>
<b>Dr.G : 16 mins</b>	<b>Dr.V : 17 mins</b>	<b>Mr.P : 14 mins</b>	<b>Ms.K : 16 mins</b>
<b>Average Completion Time: 14.3 Minutes</b>			

## 4- 6 Pilot Survey - Content Validity Results

### Section A - Demographics

Survey Item No	Essential	Useful, But..	Not Essential	CVR Value	Accepted / Rejected
1	10	0	0	1.00	Accepted
3	9	1	0	0.80	Accepted
4	9	1	0	0.80	Accepted
5	8	2	0	0.60	Accepted
6	8	2	0	0.60	Accepted
7	10	0	0	1.00	Accepted
8	9	1	0	0.80	Accepted
9	7	2	1	0.40	Rejected
10	5	3	2	0.00	Rejected
11	10	0	0	1.00	Accepted
12	9	1	0	0.80	Accepted
13	8	2	0	0.60	Accepted
14	10	0	0	1.00	Accepted

### Section B - Internet Usage

Survey Item No	Essential	Useful, But..	Not Essential	CVR Value	Accepted / Rejected
1	10	0	0	1.00	Accepted
2	8	1	1	0.60	Accepted
3	9	1	0	0.80	Accepted
4	10	0	0	1.00	Accepted
5	9	1	0	0.80	Accepted
6	8	2	0	0.60	Accepted
7	10	0	0	1.00	Accepted
8	9	1	0	0.80	Accepted
9	10	0	0	1.00	Accepted
10	9	0	1	0.80	Accepted
11	9	1	0	0.80	Accepted
12	10	0	0	1.00	Accepted
13	10	0	0	1.00	Accepted

### Section C – Online Social Networking

Survey Item No	Essential	Useful, But..	Not Essential	CVR Value	Accepted / Rejected
1	10	0	0	1.00	Accepted
2	10	0	0	1.00	Accepted
3	10	0	0	1.00	Accepted
4	10	0	0	1.00	Accepted
5	10	0	0	1.00	Accepted
6	10	0	0	1.00	Accepted
7	10	0	0	1.00	Accepted
8	10	0	0	1.00	Accepted
9	10	0	0	1.00	Accepted
10	9	1	0	0.80	Accepted
11	10	0	0	1.00	Accepted
12	9	0	1	0.80	Accepted
13	10	0	0	1.00	Accepted
14	9	0	1	0.80	Accepted
15	9	1	0	0.80	Accepted
16	9	0	1	0.80	Accepted
17	10	0	0	1.00	Accepted

## 4-7 Final Survey Questionnaire

# **A Facebook, Twitter, MySpace, LinkedIn (Online Social Networking) Survey**

THE UNIVERSITY OF HERTFORDSHIRE KINDLY ASKS PEOPLE

**>>>> AGED 50 YEARS AND ABOVE <<<<**

TO SPARE 10-15 MINUTES TO TAKE PART IN THIS RESEARCH. YOU DO NOT  
HAVE BE A CURRENT ONLINE SOCIAL NETWORKING USER OR INTERNET  
USER TO TAKE PART.

The reason for this research is that in recent years, for both work and social purposes, internet use has become a part of daily life. However, online social networks such as LinkedIn, Twitter and Facebook have experienced growth and fall in the public and media. Furthermore, for various reasons there has been ongoing apprehension and concern amongst the population aged 50+ about the use of online social networks. We believe that despite these concerns, online social networks can offer cost-free and easy-to-use benefits to the 50+ population.

As the UK's 50+ population is increasing significantly, researchers are seeking to explore how to assist older people and improve their quality of life. Therefore we kindly ask you and your household members aged 50 years or over to PLEASE give 15 minutes of your valuable time for this unique research project. The research team at the University of Hertfordshire would like to take this opportunity to thank you in advance for your time, patience and co-operation.

If you have any questions about this study, please contact the researchers at the following address: Mr Amit Vyas, research student. De Havilland campus, Hatfield, Herts, AL10 9AB. Email: a.2.vyas@herts.ac.uk or Dr Jyoti Choudrie, j.choudrie@herts.ac.uk. Please note that your contribution to this survey is confidential, and for academic research purposes only. The results will only be reported in aggregate terms, without any individual identifying information. (UH Ethics Protocol No: BS/R/015 10.) We would like to take this opportunity to thank you for your time and patience in completing this questionnaire.

## Demographics

### 1. Please select your age group:

- 50-55
- 56-60
- 61-65
- 66-70
- 71-75
- 76-80
- 81+

### 2. Please select your gender:

- Male
- Female

### 3. Please select your current highest academic qualification:

- Higher Degree/Postgraduate Degree (MBA PhD MD MA MSc)
- 1st Degree (BA / BSc)
- HND/HNC/Teaching
- A-Level
- BTEC/College Diploma
- GCSE/OLevel
- Other \_\_\_\_\_

### 4. Please select the area of Hertfordshire in which you live:

- |   |                                      |   |   |   |                                       |
|---|--------------------------------------|---|---|---|---------------------------------------|
| <input type="checkbox"/> Aldbury        | <input type="checkbox"/> Ardeley     | <input type="checkbox"/> Baker's End      | <input type="checkbox"/> Barkway          | <input type="checkbox"/> Bayfordbury    | <input type="checkbox"/> Bovington    |
| <input type="checkbox"/> Boxmoor        | <input type="checkbox"/> Broadwater  | <input type="checkbox"/> Bushey           | <input type="checkbox"/> Charlton         | <input type="checkbox"/> Cheshunt       | <input type="checkbox"/> Chipperfield |
| <input type="checkbox"/> Chorleywood    | <input type="checkbox"/> Clothall    | <input type="checkbox"/> Colney Heath     | <input type="checkbox"/> Croxley Green    | <input type="checkbox"/> Eastbury       | <input type="checkbox"/> Frogmore     |
| <input type="checkbox"/> Furneux Pelham | <input type="checkbox"/> Gosmore     | <input type="checkbox"/> Great Offley     | <input type="checkbox"/> Green End        | <input type="checkbox"/> Green Tye      | <input type="checkbox"/> Hadham C.    |
| <input type="checkbox"/> Hastoe         | <input type="checkbox"/> Hebing End  | <input type="checkbox"/> Hemel Hempstead  | <input type="checkbox"/> Heronsgate       | <input type="checkbox"/> Hertford Heath | <input type="checkbox"/> Hitchin      |
| <input type="checkbox"/> Knebworth      | <input type="checkbox"/> Langley     | <input type="checkbox"/> Little Gaddesden | <input type="checkbox"/> Little Wymondley | <input type="checkbox"/> Mill End       | <input type="checkbox"/> Nasty        |
| <input type="checkbox"/> Northaw        | <input type="checkbox"/> Northchurch | <input type="checkbox"/> Old Knebworth    | <input type="checkbox"/> Pirton           | <input type="checkbox"/> Potten End     | <input type="checkbox"/> Puckeridge   |
| <input type="checkbox"/> Redbourn       | <input type="checkbox"/> Roe Green   | <input type="checkbox"/> Sacombe          | <input type="checkbox"/> Sandon           | <input type="checkbox"/> Shephall       | <input type="checkbox"/> Smug Oak     |
| <input type="checkbox"/> South Mimms    | <input type="checkbox"/> St Albans   | <input type="checkbox"/> Tewin            | <input type="checkbox"/> Therfield        | <input type="checkbox"/> Throcking      | <input type="checkbox"/> Tring        |
| <input type="checkbox"/> Turnford       | <input type="checkbox"/> Wallington  | <input type="checkbox"/> Waterford        | <input type="checkbox"/> Watford          | <input type="checkbox"/> Welwyn         | <input type="checkbox"/> Welwyn G.C.  |
| <input type="checkbox"/> Weston         | <input type="checkbox"/> Widford     | <input type="checkbox"/> Willian          | <input type="checkbox"/> Wood End         | <input type="checkbox"/> Woodside       | <input type="checkbox"/> Wrotham P.   |

### 5. What is your current employment status?

- Pensioner 65+
- Retired (under 65 years old)
- Employed full time
- Employed part time
- Unemployed (for less than 6 months)
- Unemployed (for medical reasons)
- Unemployed (for more than 6 months)
- Student (part-time)
- Student (full-time)
- Redundant

**6. Please select your ethnic group:**

- White British
- Other White background
- Mixed White & Black African
- Mixed White and Asian
- Other mixed background
- Asian/Brit Indian
- Asian/Brit Pakistani
- Other Asian background
- Black/Brit African
- Other (please specify).....

**7. Please state your occupation. If you are of retired/pensioner status please select the occupation you held for the majority of your working life.**

- Student
- Legislator/Manager
- Academic/Teacher
- Craft/Trade
- Clerk
- Services/sales
- Agricultural/Forestry/Fishery
- Plant/Machine Operator
- Freelance

**8. Please select your marital status:**

- Single
- Engaged
- Married
- Widowed
- Divorced
- Separated
- Other \_\_\_\_\_

**9. Which of the following do you think best describes your state of health?**

- Excellent
- Good
- Poor

**10. How many adults above the age of 18 are living in your household (including yourself)?**

- 1
- 2
- 3
- 4+

**11. How many children (below 18 years) are living in your household?**

- 0
- 1
- 2
- 3
- 4+

## Internet Use

**You do not have to be an internet user to answer the following questions.**

**12. How often do you use the internet?**

- I DO NOT USE THE INTERNET
- Monthly
- Weekly
- Daily (less than 2 hours)
- Daily (more than 2 hours)

**13. Please select any of the following factors which led you to become an internet user:**

- I DO NOT USE THE INTERNET
- Influence of TV, newspapers, advertising or radio
- Influence of friends, family or co-workers
- Possessing the skills and knowledge required to become an internet user
- Having the time available to become an internet user
- Having the finances to purchase an internet subscription
- I possess a computer, laptop or iPad and wanted to use internet services on this device(s)
- Using the internet is fun and entertaining
- There are many benefits to using the internet compared to technologies I used prior to the internet
- Other \_\_\_\_\_

**14. How long have you had internet access in your household?**

- I DO NOT USE THE INTERNET IN MY HOUSEHOLD
- Less than 1 year
- 1-2 years
- 2-4 years
- 4-6 years
- 6-8 years
- More than 8 years

**15. What is the speed of the current internet connection in your household?  
(Mbps = Mega Bits Per Second)**

- I DO NOT USE THE INTERNET IN MY HOUSEHOLD
- 0-4Mbps
- 5-9Mbps
- 10-14 Mbps
- 15-20Mbps
- 20+ Mbps
- I do not know

**16. Which of the following statements best describes your household's internet service:**

- MY HOUSEHOLD DOES NOT HAVE ANY INTERNET SERVICE
- Fast and reliable
- Fast and unreliable

- Slow and reliable
- Slow and unreliable
- Other \_\_\_\_\_

**17. Who is the current Internet Service Provider (ISP) for your household?**

- MY HOUSEHOLD DOES NOT HAVE AN INTERNET SERVICE PROVIDER
- BT
- Virgin Media
- Sky
- Talk Talk
- Orange
- AOL
- 02
- Plus Net
- Other (please specify)

**18. Which of the following devices(s) do you use to access the internet in your household?  
(You may choose more than one option)**

- I DO NOT USE THE INTERNET
- Desktop PC
- Laptop
- Mobile phone
- Cable/satellite
- TV provider (Virgin/Sky)
- 3G Personal Desktop Assistant (e.g. iPad)
- Personal Desktop Assistant (Home Internet) (e.g. iPad)

**19. Do you use the internet (online service) for any of the following activities?  
(You may choose more than one option)**

- I DO NOT USE THE INTERNET
- Checking emails
- Searching Google
- YouTube
- Video calling (Skype)
- Paid work done at home
- Voluntary/unpaid work
- Education/coursework
- Leisure/general reading
- Instant Messaging (IM) services
- Personal financial accounts / home banking
- Purchasing insurance
- Car/home/pet/travel
- Government services (central)
- Government services (local)

## Online Social Networking

**Examples of online social networks include: Facebook, Twitter, LinkedIn, MySpace, Instagram, Flickr, Badoo, Google+ and Digg.**

**You do not have to use online social networking websites to answer the following questions.**

### **20. How often do you use online social networks?**

- I DO NOT USE ONLINE SOCIAL NETWORKS
- Monthly
- Weekly
- Daily (less than 2 hours)
- Daily (more than 2 hours)
- I USED TO USE ONLINE SOCIAL NETWORKS
- I WILL START USING ONLINE SOCIAL NETWORKS IN THE FUTURE

### **21. Please rate your agreement or disagreement with the following short statements. Please use the scale provided, where 1 is “strongly disagree” and 7 is “strongly agree”:**

1. Online social networks provide much enjoyment
2. Online social networks are fun to use
3. I use online social networks for entertainment
  
4. Online social networks are useful for personal reasons
5. Online social networks are useful for me to work at home
6. Online social networks are useful for my paid job
  
7. Online social networks provide additional benefits to e-mail, telephone calls & text messaging
8. There are benefits to using online social networks
9. Using online social networks improves communication with my contacts

### **22. Please rate your agreement or disagreement with the following short statements. Please use the scale provided, where 1 is “strongly disagree” and 7 is “strongly agree”:**

10. People who use online social networks have more friends than those who do not
11. People who use online social networks are highly respected by those they know
12. Using online social networks improves a person’s popularity
  
13. My friends think I should use online social networks
14. My family members think I should use online social networks
15. My colleagues (current or past) think I should use online social networks
  
16. Newspapers suggest that I should use online social networks
17. TV programmes, advertising and films encourage me to use online social networks
18. Based on what I have heard on the radio, I am encouraged to use online social networks

**23. Please rate your agreement or disagreement with the following short statements. Please use the scale provided, where 1 is “strongly disagree” and 7 is “strongly agree”:**

- 19. I have access to the internet whenever I want
- 20. I have access to a computer, laptop or iPad whenever I want
- 21. My internet is fast and reliable enough to use online social networks

- 22. I can afford to pay for the internet and a computer, laptop or iPad
- 23. I have the time needed to set up an online social networking account
- 24. I have the time to use online social networks

- 25. I feel comfortable using the internet on my own
- 26. If I wanted to, I could easily use the internet on my own
- 27. I can use the internet even if no one is there to help me

**24. Please rate your agreement or disagreement with the following short statements. Please use the scale provided, where 1 is “strongly disagree” and 7 is “strongly agree”:**

- 28. Using online social networks will cause me to lose control over the privacy of my personal information
- 29. Using online social networks could lead to my personal information being used without my knowledge
- 30. Criminals might take control of my personal information if I used online social networks

- 31. I intend to start using online social networks
- 32. I predict that I will start using online social networks
- 33. I expect to start using online social networks in the near future

**25. Where have you heard any discussion/news/information regarding online social networks? (Please select all that apply)**

- TV
- Newspapers
- Internet
- Radio
- Magazines
- Friends/family/coworkers
- Other (please specify) \_\_\_\_\_

**26. Which online social network(s) do you use?**

- I DO NOT CURRENTLY USE ONLINE SOCIAL NETWORKS
- Facebook
- Twitter
- LinkedIn
- Bebo
- Instagram
- Myspace
- Flickr
- Badoo
- Google+
- Digg
- Branch Out
- Other (please specify) \_\_\_\_\_

**27. Where do you access online social network(s) from? (Please select all that apply)**

- I DO NOT CURRENTLY USE ONLINE SOCIAL NETWORKS
- Home
- Office/work
- Library
- Friends/family home
- Internet café
- Restaurants
- Local community outlets
- Local school (evening)
- Coffee houses
- Fast food outlets
- Other \_\_\_\_\_

**28. How do you use online social networks? (Please select all that apply)**

- I DO NOT CURRENTLY USE ONLINE SOCIAL NETWORKS
- Writing picture comments and wall posts
- Messaging friends
- For paid work
- For voluntary work
- Facebook 'places'
- Health-related purposes (e.g. subscribing to NHS quit smoking Facebook page)
- "Friending/adding" those you know in real life
- Uploading photos
- Viewing photos
- Uploading videos
- Viewing videos
- Central government purposes (contact/subscribe)
- Local government purposes (contact/subscribe)
- Promoting yourself/your work/events
- Forming new relationships online
- Sending private messages to friends
- Forming groups
- Finding out about events
- Finding new or unique information/media
- Posting to message boards
- Promoting yourself, your business & events
- Other (please specify) \_\_\_\_\_

**29. Do you have a profile picture of yourself on your online social networking account(s)?**

- I DO NOT CURRENTLY USE ONLINE SOCIAL NETWORKS
- Yes
- Not at the moment but I intend to
- No

**30. Which of the following device(s) do you use to access online social networks? (Please select all that apply)**

- I DO NOT CURRENTLY USE ONLINE SOCIAL NETWORKS
- iPod (all models)
- Desktop PC
- Laptop
- Mobile phone
- Cable/satellite TV provider (Virgin/Sky)
- 3G MOBILE INTERNET Personal Desktop Assistant (e.g. iPad)
- HOME INTERNET Personal Desktop Assistant (e.g. iPad)

**31. How long have you been using online social networks?**

- I DO NOT CURRENTLY USE ONLINE SOCIAL NETWORKS
- Less than 1 year
- 12 years
- 24 years
- 46 years
- 68 years
- More than 8 ears

**32. Do you intend to continue using online social networks?**

- I DO NOT CURRENTLY USE ONLINE SOCIAL NETWORKS
- Yes
- No

## 4-8 Final Survey Cover Letter

University of Hertfordshire  
Systems Management Research Unit (SyMRU)  
Business School  
Hatfield  
Herts  
AL10 9EU



**Your household has been randomly chosen by the University of Hertfordshire to participate in an important internet research project.**

This research project is being conducted by Amit Vyas, a research student, Dr Jyoti Choudrie, Reader in Information Systems (IS) and Dr Nick Tsitsianis, Principal Lecturer in Economics at the University of Hertfordshire Business School, located at De Havilland Campus, Hatfield, Hertfordshire, AL10 9EU.

The University of Hertfordshire kindly requests members of your household **AGED 50 YEARS OR ABOVE** for 15 minutes of their time to complete a multiple-choice online survey regarding internet services. We do not ask for any personal or private household information. Please be assured that any information you provide will be used for academic research purposes only. Your survey response for this research will be identified using only a code. The aim of this research project is to obtain the views and opinions of the UK's 50+ population in order to understand their internet and technology use.

The online survey can be accessed from all computers, PCs, laptops, iPads and Smartphones at the following website address:

**[www.surveymonkey.com/s/\\*\\*\\*\\*\\*](http://www.surveymonkey.com/s/*****)**

The reason for this research is that in recent years, for both work and social reasons, internet use has become a part of daily life. However, online social networks such as LinkedIn, Twitter and Facebook have experienced growth and fall in the public and media. Furthermore, for various reasons there has been ongoing apprehension and concern amongst the population aged 50+ about the use of online social networks. We believe that despite these concerns, online social networks can offer cost-free and easy-to-use benefits to the 50+ population.

As the UK's 50+ population is increasing significantly, researchers are seeking to explore how to assist older people and improve their quality of life. **Therefore we ask you and your household members aged 50 years or above to PLEASE give 15 minutes of your valuable time for this unique research project.**

The research team at the University of Hertfordshire would like to take this opportunity to thank you in advance for your time, patience and co-operation. Survey participants are welcome to enquire about the outcomes of this research project by emailing one of the researchers (contact details below).

If you have any questions about this study, please contact the principal researcher: Mr Amit Vyas, research student, De Havilland campus, Hatfield, Herts, AL10 9AB. Email: \*\*\*@herts.ac.uk. All responses are anonymous. The information you provide will be reported only in aggregate terms, without any information identifying specific individuals. UH Ethics Protocol No: BS/R/015 10.

## 5-1 Final Survey Demographic Data

Age/Gender - All Participants ( <i>n</i> -1080)			
Age	Gender		Total
	Male	Female	
50-55	94	90	184
56-60	76	108	184
61-65	90	84	174
66-70	116	94	210
71-75	117	95	212
76-80	62	44	106
81+	9	1	10
<b>Total</b>	<b>564</b>	<b>516</b>	<b>1080</b>

Education - All Participants ( <i>n</i> -1080)								
Age	Education							Total
	Other	Higher Degree	1st Degree	HND/HNC	A-Level	BTEC/College Diploma	GCSE/O-Level	
50-55	3	24	64	22	15	31	25	184
56-60	3	25	51	25	20	29	31	184
61-65	9	19	63	21	14	22	26	174
66-70	2	26	59	24	18	37	44	210
71-75	7	23	63	19	14	41	45	212
76-80	5	5	31	6	10	13	36	106
81+	1	4	0	2	1	0	2	10
<b>Total</b>	<b>30</b>	<b>126</b>	<b>331</b>	<b>119</b>	<b>92</b>	<b>173</b>	<b>209</b>	<b>1080</b>

Employment Status - All Participants (n-1080)								
Employment Status	Age							Total
	50-55	56-60	61-65	66-70	71-75	76-80	81+	
Employed (full time)	137	106	51	15	1	0	0	310
Employed (part time)	23	23	24	19	1	1	0	91
Pensioners 65+	0	0	19	174	208	105	10	516
Retired (under 65)	8	35	71	2	2	0	0	118
Unemployed (< 6 months)	3	1	1	0	0	0	0	5
Unemployed (medical reasons)	5	2	6	0	0	0	0	13
Unemployed (+ 6 months)	7	16	2	0	0	0	0	25
Redundant	1	1	0	0	0	0	0	2
<b>Total</b>	<b>184</b>	<b>184</b>	<b>174</b>	<b>210</b>	<b>212</b>	<b>106</b>	<b>10</b>	<b>1080</b>

Occupation - All Participants (n-1080)								
Occupation	Age							Total
	50-55	56-60	61-65	66-70	71-75	76-80	81+	
Student	0	0	1	0	0	0	0	1
Legislators/Manager/Professional	69	77	74	72	84	36	4	416
Academic/Teacher	11	11	13	21	17	7	1	81
Craft/Trade	15	19	15	33	36	13	0	131
Clerk	13	6	17	20	18	12	1	87
Service/Sales	49	44	17	31	25	13	2	181
Agriculture/Forestry/Fishery	5	11	10	9	6	10	0	51
Plant/Machine	2	0	2	4	7	13	1	29
Freelance	20	16	25	20	19	2	1	103
<b>Total</b>	<b>184</b>	<b>184</b>	<b>174</b>	<b>210</b>	<b>212</b>	<b>106</b>	<b>10</b>	<b>1080</b>

Race - All Participants ( <i>n</i> -1080)								
Race	Age							Total
	50-55	56-60	61-65	66-70	71-75	76-80	81+	
Other	1	1	2	0	2	1	0	7
White British	133	137	133	170	161	79	9	822
Other White Background	10	9	8	12	11	6	1	57
Mixed White and Black African	4	4	5	4	0	1	0	18
Mixed White and Asian	3	4	2	0	4	0	0	13
Other Mixed Background	4	2	7	6	7	7	0	33
Asian/Brit Indian	10	13	5	8	14	2	0	52
Asian/Brit Pakistani	4	3	4	3	1	0	0	15
Other Asian Background	2	4	2	2	3	3	0	16
Black/Brit African	13	7	6	5	9	7	0	47
<b>Total</b>	<b>184</b>	<b>184</b>	<b>174</b>	<b>210</b>	<b>212</b>	<b>106</b>	<b>10</b>	<b>1080</b>

Marital Status - All Participants ( <i>n</i> -1080)								
Marital Status	Age							Total
	50-55	56-60	61-65	66-70	71-75	76-80	81+	
Other	1	3	2	1	0	0	0	7
Single	6	6	5	1	2	1	0	21
Engaged	1	0	1	0	0	0	0	2
Married	151	157	146	188	190	87	3	922
Widowed	1	0	5	3	11	15	6	41
Divorced	10	10	11	10	4	2	0	47
Separated	14	8	4	7	5	1	1	40
<b>Total</b>	<b>184</b>	<b>184</b>	<b>174</b>	<b>210</b>	<b>212</b>	<b>106</b>	<b>10</b>	<b>1080</b>

<b>Health - All Participants (n-1080)</b>				
<b>Age</b>	<b>Health</b>			<b>Total</b>
	<b>Excellent</b>	<b>Good</b>	<b>Poor</b>	
50-55	59	124	1	184
56-60	55	126	3	184
61-65	35	134	5	174
66-70	40	165	5	210
71-75	26	173	13	212
76-80	7	84	15	106
81+	1	6	3	10
<b>Total</b>	<b>223</b>	<b>812</b>	<b>45</b>	<b>1080</b>

<b>HH Members 18+ - All Participants (n-1080)</b>					
<b>Age</b>	<b>HH Members 18+</b>				<b>Total</b>
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4+</b>	
50-55	13	65	66	40	184
56-60	15	89	62	18	184
61-65	23	106	41	4	174
66-70	13	178	14	5	210
71-75	23	177	12	0	212
76-80	17	81	4	4	106
81+	6	4	0	0	10
<b>Total</b>	<b>110</b>	<b>700</b>	<b>199</b>	<b>71</b>	<b>1080</b>

<b>HH Members 18 Below - All Participants (n-1080)</b>					
<b>Age</b>	<b>HH Members 18 Below</b>				<b>Total</b>
	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	
50-55	132	34	13	5	184
56-60	166	13	5	0	184
61-65	169	5	0	0	174
66-70	207	1	1	1	210
71-75	211	0	1	0	212
76-80	105	1	0	0	106
81+	10	0	0	0	10
<b>Total</b>	<b>1000</b>	<b>54</b>	<b>20</b>	<b>6</b>	<b>1080</b>

## 5-2 Final Survey Sampling List

<b>Final Survey - Sample</b>		
<b>Town/Area</b>	<b>Frequency</b>	<b>Percent</b>
Aldbury	21	1.9
Ardeley	10	.9
Barkway	32	3.0
Bovingdon	37	3.4
Boxmoor	27	2.5
Broadwater	28	2.6
Bushey	36	3.3
Charlton	5	.5
Chestnut	25	2.3
Chipperfield	15	1.4
Chorleywood	33	3.1
Colney Heath	29	2.7
Croxley Green	31	2.9
Eastbury	30	2.8
Frogmore	19	1.8
Green End	14	1.3
Hadham.C	14	1.3
Hebing End	3	.3
Hemel Hempsted	40	3.7
Hertford Heath	21	1.9
Hitchin	34	3.1
Knebworth	32	3.0
Langley	4	.4
Little Gaddesden	14	1.3
Little Wymondly	6	.6
Mill End	16	1.5
Northaw	35	3.2

<b>Town/Area</b>	<b>Frequency</b>	<b>Percent</b>
Northchurch	23	2.1
Old Knebworth	21	1.9
Potten End	11	1.0
Puckeridge	22	2.0
Redbourn	26	2.4
Sandon	6	.6
Shephall	28	2.6
Smug Oak	1	.1
South Mimms	25	2.3
St Albans	34	3.1
Tewin	27	2.5
Therfield	5	.5
Throcking	2	.2
Tring	34	3.1
Turnford	23	2.1
Wallington	1	.1
Waterford	13	1.2
Watford	33	3.1
Welwyn	34	3.1
Welwyn Garden City	30	2.8
Weston	15	1.4
Widford	5	.5
Wood End	1	.1
Wood Side	15	1.4
Potter Bar	34	3.1
<b>Total</b>	<b>1080</b>	<b>100.0</b>

## 5-3 Final Survey Sampling Process

### Systematic Random Sampling Process & Simple Random Process

STAGE 1		STAGE 2		
Town/Area (Alphabetical Order)	Randomly Assigned Number	Town/Area (Random Order)	Randomly Assigned Number (Smallest To Largest)	Cardinal Starting point
Abbots Langley	470413	Benington	132	4
Albury	287453	Stanstead Abbots	2082	1
Aldbury	370600	Sacombe (K)	5681	3
Aldenham	174529	Potters Crouch	6593	1
Allen's Green	473862	Caldecote	9321	2
Anstey	206344	Kimpton	10495	3
Apsley	432029	Barkway	11816	3
Ardeley	441988	Buckland	12414	3
Ashwell	433944	Bendish	14586	2
Aspenden	346490	Potters Bar	14915	2
Aston	223942	Welwyn Garden City	17217	3
Aston End	348034	Tonwell	17579	3
Ayot St Lawrence	264543	Flamstead	23317	1
Ayot St Peter	484092	Markyate	23808	1
Baker's End	61855	Woodside	24673	2
Baldock	25900	Baldock	25900	2
Barkway	11816	Much Hadham	27022	1
Barley	385574	Brookmans Park	31139	1
Barleycroft End	179045	Northaw	34682	1
Batchworth	345810	Ickleford	36257	1
Batchworth Heath	148957	Piccotts End	37994	2
Bayford	454362	Felden	38642	3
Bayfordbury	317048	Widford	41405	2
Bedmond	323471	Radlett	44462	4
Bell Bar	158205	Great Amwell	50207	4
Bendish	14586	Flaunden	50487	1
Bengeo	74801	South Mimms	52313	4
Benington	132	Hertford	56430	4
Berkhamsted	249570	Bushey Heath	59326	3
Bishop's Stortford	422373	Church End	61241	3

Blackmore End	444867
Borehamwood	461814
Bourne End	315428
Bovingdon	278976
Boxmoor	294669
Bragbury End	497594
Bramfield	370760
Braughing	148446
Breachwood Green	310926
Brent Pelham	147060
Bricket Wood	271135
Broadwater	180642
Brookmans Park	31139
Broxbourne	390398
Buckland	12414
Bucks Hill	429861
Bull's Green	401413
Buntingford	380081
Burnham Green	382942
Bury Green	214054
Bushey	216424
Bushey Heath	59326
Bygrave	253611
Caldecote	9321
Chandler's Cross	224827
Chapmore End	179268
Charlton	91230
Cheshunt	347955
Cheverell's Green	348726
Childwick Green	331910
Chipperfield	376011
Chipping	260644
Chiswell Green	309334
Chorleywood	188240
Church End	61241
Churchgate	188384
Clothall	196467
Cockernhoe	143934
Codicote	199328

Baker's End	61855	2
Hunsdon	63766	3
Graveley	64157	3
Harpenden	65997	2
Pirton	70724	1
Huntonbridge	73937	2
Bengeo	74801	1
Eastwick	77696	3
St Albans	78012	1
Leverstock Green	78797	3
Maple Cross	79745	1
Whitwell	80749	4
Puckeridge	85520	3
Long Marston	86079	1
Collier's End	87108	1
Gaddesden Row	90929	3
Charlton	91230	2
Welham Green	93377	2
Spitalbrook	95799	1
Wareside	97545	2
Hertford Heath	105056	1
Radwell	108019	2
Great Hormead	111399	3
Thundridge	111414	3
Hadham Cross	112265	3
Oaklands	113130	4
Datchworth Green	115827	3
Sandridge	117801	1
Smug Oak	119015	1
Hammond Street	121814	3
Rushden	122344	3
Wyddial	124677	4
Heronsgate	125925	3
Lemsford	126117	4
Sarratt	128408	4
Thorley	130751	4
Furneux Pelham	131910	3
Stanborough	132709	1
Wildhill	133154	4

Cole Green	145897
Collier's End	87108
Colney Heath	326325
Colney Street	440159
Cottered	382035
Cromer	371385
Cromer Hyde	492128
Croxley Green	175543
Cuffley	251231
Dane End	398797
Datchworth	396175
Datchworth Green	115827
Digswell	297242
East End	314524
Eastbury	139417
Eastwick	77696
Elstree	278605
Epping Green	180667
Essendon	224667
Felden	38642
Flamstead	23317
Flamstead End	152677
Flaunden	50487
Frogmore	395388
Furneux Pelham	131910
Gaddesden Row	90929
Gilston Park	384514
Goff's Oak	199728
Gosmore	305407
Graveley	64157
Great Amwell	50207
Great Gaddesden	460789
Great Horstead	111399
Great Offley	288397
Great Wymondley	415837
Green End	483956
Green Street	414708
Green Tye	447458
Hadham Cross	112265

Trowley Bottom	138998	4
Eastbury	139417	4
Newgate Street	140456	4
Woolmer Green	141605	2
Cockernhoe	143934	4
Welwyn	144171	4
Cole Green	145897	1
Brent Pelham	147060	4
Braughing	148446	2
Batchworth Heath	148957	2
Flamstead End	152677	2
Little Horstead	154176	4
Bell Bar	158205	3
Sandon	164790	1
Water End	174145	4
Aldenham	174529	4
Nuthampstead	174833	3
Croxley Green	175543	4
St Stephens	178032	1
Barleycroft End	179045	2
Chapmore End	179268	2
Broadwater	180642	1
Epping Green	180667	4
Ridge	186958	3
Reed	187255	3
Chorleywood	188240	1
Churchgate	188384	1
Newnham	191588	1
Park Street	191685	2
Clothall	196467	2
Hatfield Hyde	198310	4
Codicote	199328	3
Goff's Oak	199728	1
Nasty	199962	3
Letchworth	200910	2
Puttenham	201342	2
Hadham Ford	202423	1
Little Gaddesden	204541	4
Anstey	206344	2

Hadham Ford	202423
Hailey	408371
Hall's Green	390970
Hammond Street	121814
Hare Street	323826
Harmer Green	293096
Harpenden	65997
Hastoe	244888
Hatching Green	273618
Hatfield	325337
Hatfield Hyde	198310
Haultwick	490517
Hay Street	427104
Hebing End	311256
Hemel Hempstead	461524
Heronsgate	125925
Hertford	56430
Hertford Heath	105056
Hertingfordbury	404695
Hexton	237165
High Cross	391914
High Wych	208248
Hinxworth	233347
Hitchin	450514
Hoddesdon	212172
Holwell	254643
Hunsdon	63766
Huntonbridge	73937
Ickleford	36257
Kelshall	292234
Kimpton	10495
Kings Langley	406691
King's Walden	464572
Kinsbourne Green	326161
Knebworth	457236
Langley	226339
Lemsford	126117
Letchmore Heath	439960
Letchworth	200910

Preston	207959	1
High Wych	208248	4
Mill End	210421	1
Hoddesdon	212172	1
Bury Green	214054	1
West Hyde	215688	3
Bushey	216424	4
The Node	217096	3
Rickmansworth	217347	3
Wigginton	221579	2
Watford	221675	2
Aston	223942	1
Essendon	224667	4
Chandler's Cross	224827	3
Langley	226339	1
Wormley	231893	3
Hinxworth	233347	3
Hexton	237165	1
Hastoe	244888	4
Berkhamsted	249570	2
Cuffley	251231	3
Bygrave	253611	3
Tewin	253680	1
Holwell	254643	3
Walsworth	256576	4
Chipping	260644	3
Old Knebworth	263278	1
Ayot St Lawrence	264543	2
Bricket Wood	271135	2
Hatching Green	273618	4
Weston	275122	3
New Mill	275811	1
St Paul's Walden	277020	4
Elstree	278605	4
Bovingdon	278976	4
Sawbridgeworth	280826	4
Meesden	281231	3
Albury	287453	4
Great Offley	288397	1

Letty Green	485922
Leverstock Green	78797
Ley Green	484771
Lilley	447725
Little Amwell	337393
Little Berkhamsted	414284
Little Gaddesden	204541
Little Hadham	306902
Little Hormead	154176
Little Wymondley	324472
London Colney	358497
Long Marston	86079
Maple Cross	79745
Markyate	23808
Marshall's Heath	361317
Meesden	281231
Merry Hill	382413
Mill End	210421
Much Hadham	27022
Nasty	199962
Nettleden	456095
New Mill	275811
Newgate Street	140456
Newnham	191588
Northaw	34682
Northchurch	412680
Norton	301808
Nuthampstead	174833
Oaklands	113130
Old Knebworth	263278
Park Street	191685
Patmore Heath	418298
Perry Green	289146
Peter's Green	399317
Piccotts End	37994
Pirton	70724
Potten End	418057
Potters Bar	14915
Potters Crouch	6593

Perry Green	289146	4
Kelshall	292234	2
Harmer Green	293096	1
Boxmoor	294669	3
Digswell	297242	4
South Oxhey	297321	2
Norton	301808	2
Gosmore	305407	1
Little Hadham	306902	1
Chiswell Green	309334	1
Breachwood Green	310926	1
Hebing End	311256	1
East End	314524	4
Bourne End	315428	1
Rye Park	315491	1
Bayfordbury	317048	4
Whelpley Hill	321130	1
Bedmond	323471	2
Hare Street	323826	4
Little Wymondley	324472	1
Hatfield	325337	3
Wadesmill	325982	3
Kinsbourne Green	326161	3
Colney Heath	326325	1
Royston	331240	1
Childwick Green	331910	1
Little Amwell	337393	2
Waterford	340723	1
Shenleybury	341568	1
Batchworth	345810	4
Aspenden	346490	3
Cheshunt	347955	3
Aston End	348034	1
Cheverell's Green	348726	1
Ware	351952	3
Tring	357848	2
London Colney	358497	3
Stapleford	360695	3
Marshall's Heath	361317	3

Preston	207959
Puckeridge	85520
Puttenham	201342
Radlett	44462
Radwell	108019
Redbourn	428589
Reed	187255
Rickmansworth	217347
Ridge	186958
Ringshall	451113
Roe Green	382620
Royston	331240
Rushden	122344
Rye Park	315491
Sacombe	5681
Sandon	164790
Sandridge	117801
Sarratt	128408
Sawbridgeworth	280826
Shenley	449136
Shenleybury	341568
Shephall	387521
Smug Oak	119015
South Mimms	52313
South Oxhey	297321
Spellbrook	498637
Spitalbrook	95799
St Albans	78012
St Ippollitts	488577
St Margarets	488834
St Paul's Walden	277020
St Stephens	178032
Stanborough	132709
Standon	442654
Stanstead Abbots	2082
Stapleford	360695
Stevenage	471830
Stocking Pelham	445624
Tewin	253680

Aldbury	370600	3
Bramfield	370760	2
Cromer	371385	3
Wilstone	372113	3
Chipperfield	376011	1
Buntingford	380081	1
Cottered	382035	3
Merry Hill	382413	3
Roe Green	382620	1
Burnham Green	382942	1
Gilston Park	384514	2
Barley	385574	3
Shephall	387521	1
Broxbourne	390398	3
Hall's Green	390970	1
High Cross	391914	3
Frogmore	395388	2
Datchworth	396175	3
Dane End	398797	4
Peter's Green	399317	1
Turnford	401053	4
Bull's Green	401413	3
Watton-at-Stone	403274	4
Hertingfordbury	404695	1
Wood End	405638	4
Kings Langley	406691	3
Hailey	408371	1
Waltham Cross	410261	2
Northchurch	412680	1
Little Berkhamsted	414284	1
Green Street	414708	4
Great Wymondley	415837	4
Potten End	418057	2
Patmore Heath	418298	2
Bishop's Stortford	422373	4
Hay Street	427104	2
Redbourn	428589	4
Bucks Hill	429861	3
Apsley	432029	3

The Folly	448701
The Node	217096
Therfield	435783
Thorley	130751
Thorley Street	460964
Throcking	491082
Thundridge	111414
Tonwell	17579
Tring	357848
Trowley Bottom	138998
Turnford	401053
Wadesmill	325982
Walkern	461256
Wallington	487787
Walsworth	256576
Waltham Cross	410261
Ware	351952
Wareside	97545
Water End	174145
Waterford	340723
Watford	221675
Watton-at-Stone	403274
Welham Green	93377
Welwyn	144171
Welwyn Garden City	17217
West Hyde	215688
Westmill	481664
Weston	275122
Wheathampstead	440379
Whelpley Hill	321130
Whitwell	80749
Widford	41405
Wigginton	221579
Wildhill	133154
Willian	499868
Wilstone	372113
Wood End	405638
Woodside	24673
Woolmer Green	141605

Ashwell	433944	3
Therfield	435783	1
Letchmore Heath	439960	1
Colney Street	440159	4
Wheathampstead	440379	4
Ardeley	441988	1
Standon	442654	4
Blackmore End	444867	1
Stocking Pelham	445624	2
Green Tye	447458	3
Lilley	447725	3
The Folly	448701	3
Shenley	449136	4
Hitchin	450514	4
Ringshall	451113	3
Bayford	454362	3
Nettleden	456095	1
Knebworth	457236	1
Great Gaddesden	460789	3
Thorley Street	460964	3
Walkern	461256	4
Hemel Hempstead	461524	4
Borehamwood	461814	3
King's Walden	464572	4
Abbots Langley	470413	1
Wrotham Park	471444	2
Stevenage	471830	2
Allen's Green	473862	3
Westmill	481664	4
Green End	483956	3
Ayot St Peter	484092	4
Ley Green	484771	4
Letty Green	485922	4
Wallington	487787	4
St Ippollitts	488577	4
St Margarets	488834	3
Haultwick	490517	4
Throcking	491082	2
Cromer Hyde	492128	4

Wormley	231893	Bragbury End	497594	2
Wrotham Park	471444	Spellbrook	498637	4
Wyddial	124677	Willian	499868	3

**KEY:** Cardinal Starting Point: 1=North / 2=South /3=West / 4=East

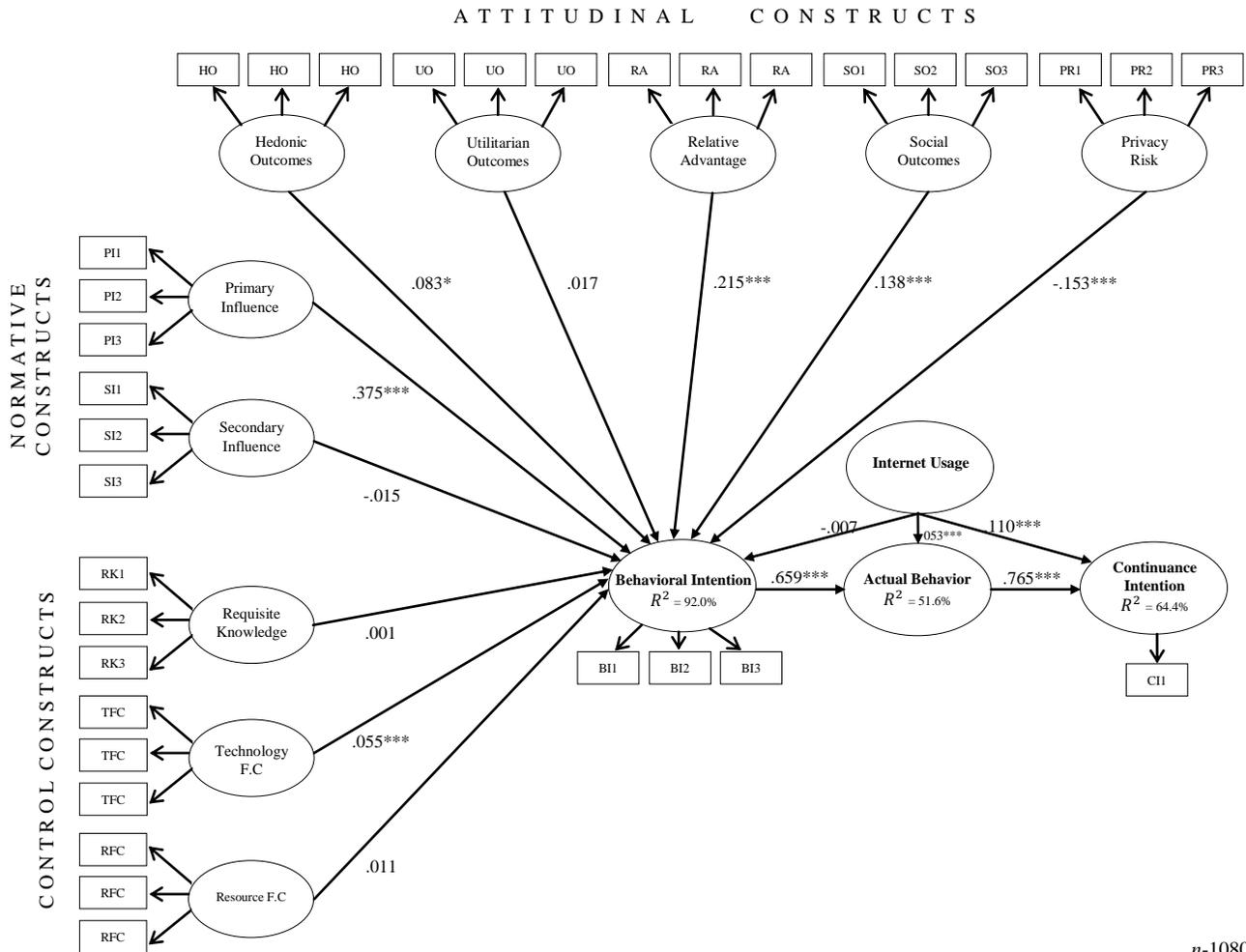
Selected town/area to be sampled

## 5-4 Final Survey Letters (Photo)



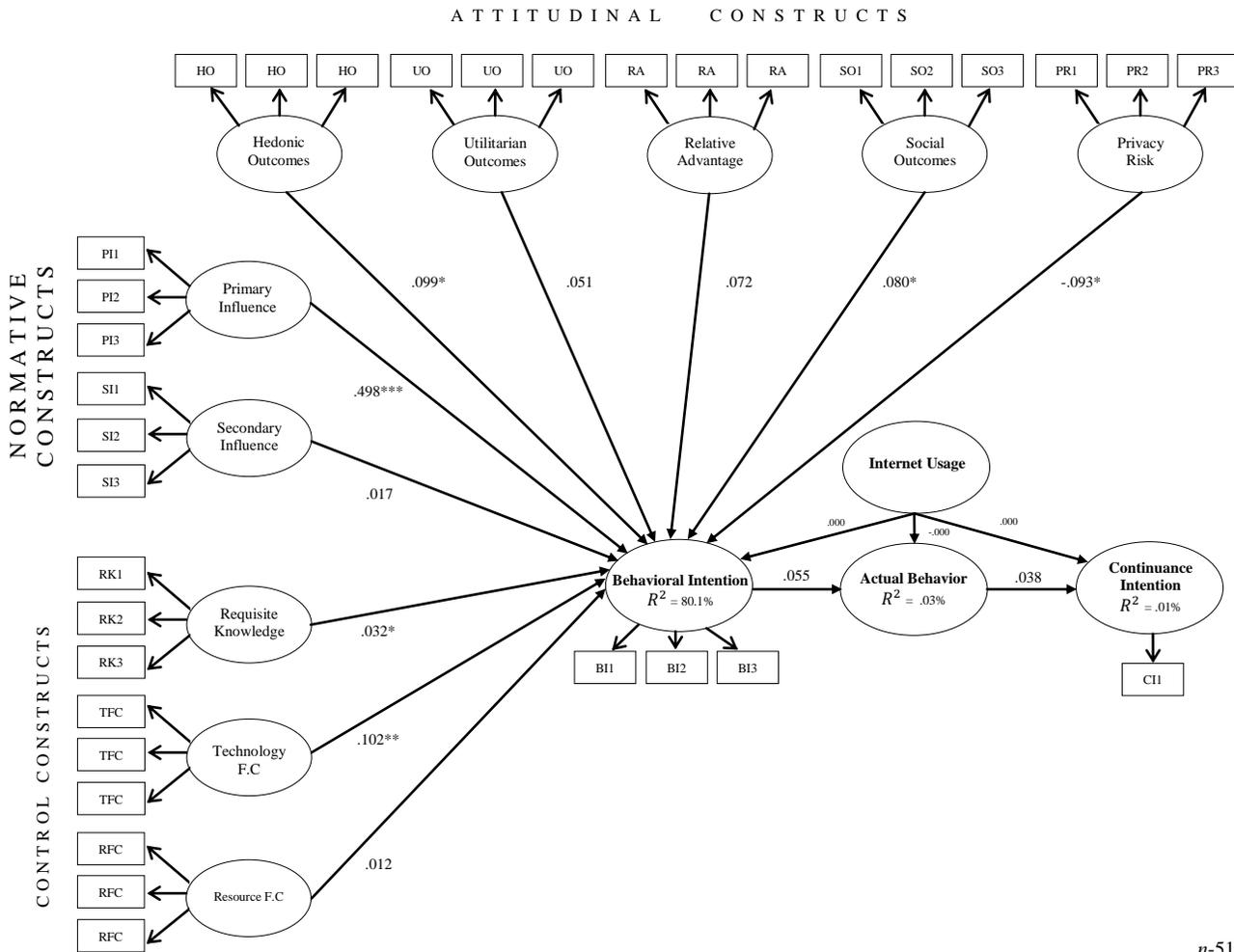
## 5-5 Final Survey – All Sub-Sample MOSN – SEMs

### MOSN Path Analysis- All Participants (n- 1080)



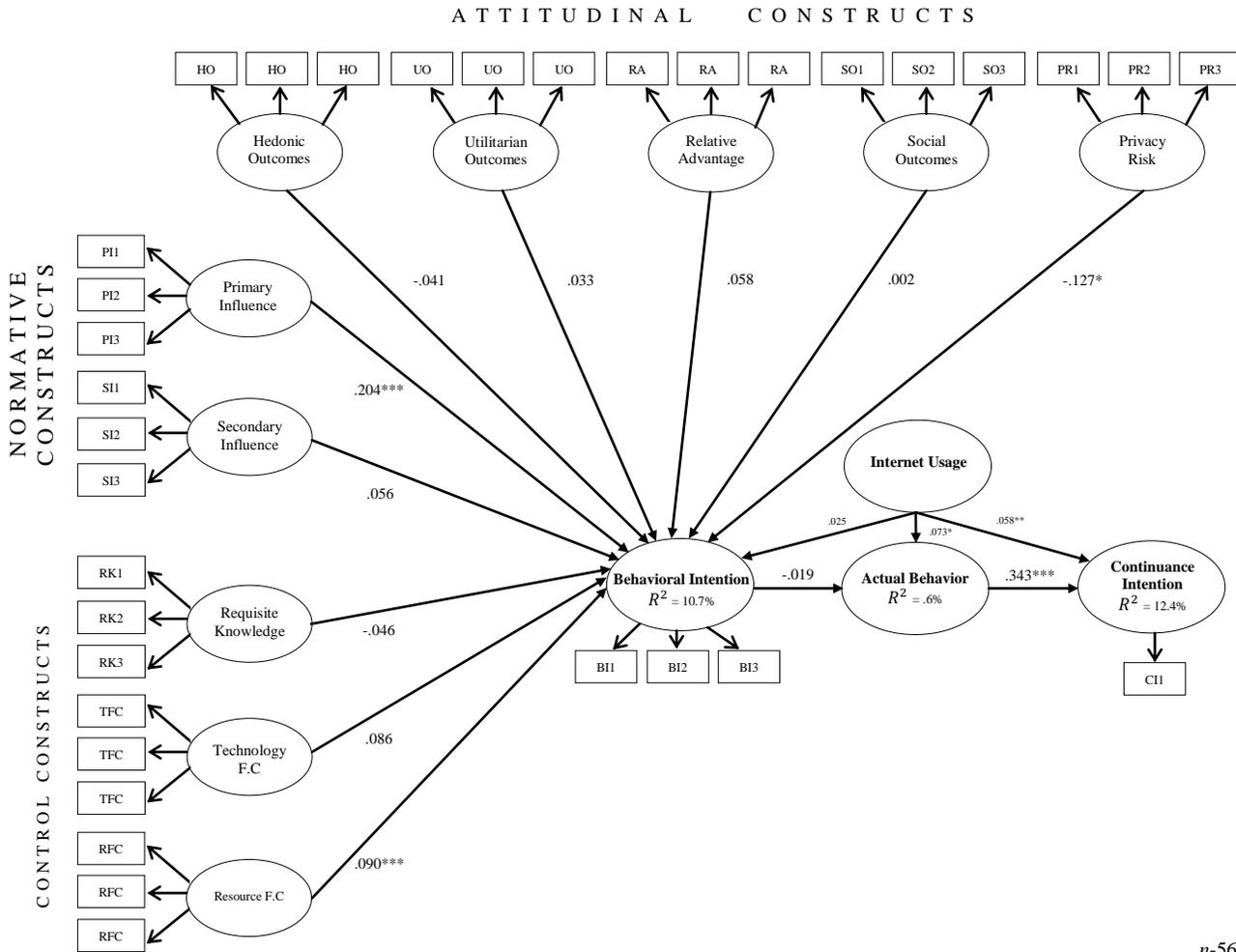
n-1080  
 \*P < 0.05 \*\*P < 0.01 \*\*\*P < 0.001  
 MOSN - All Participants

## MOSN Path Analysis- All OSN Adopters (n- 519)



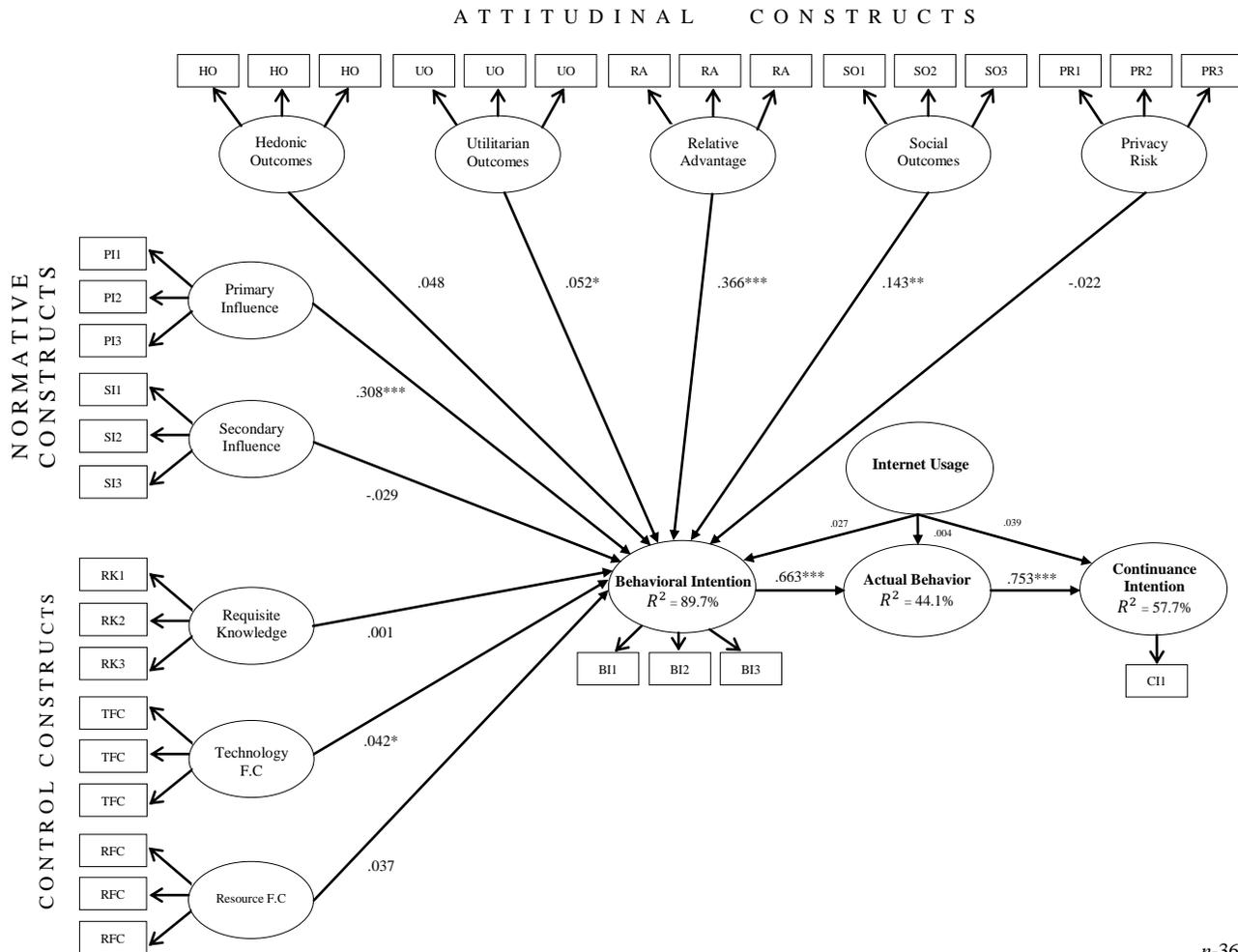
n-519  
 \*P < 0.05 \*\*P < 0.01 \*\*\*P < 0.001  
 MOSN - All OSN Adopters

# MOSN Path Analysis- All OSN Non-Adopters (n- 561)



n-561  
 \*P < 0.05 \*\*P < 0.01 \*\*\*P < 0.001  
 MOSN - All OSN Non-Adopters

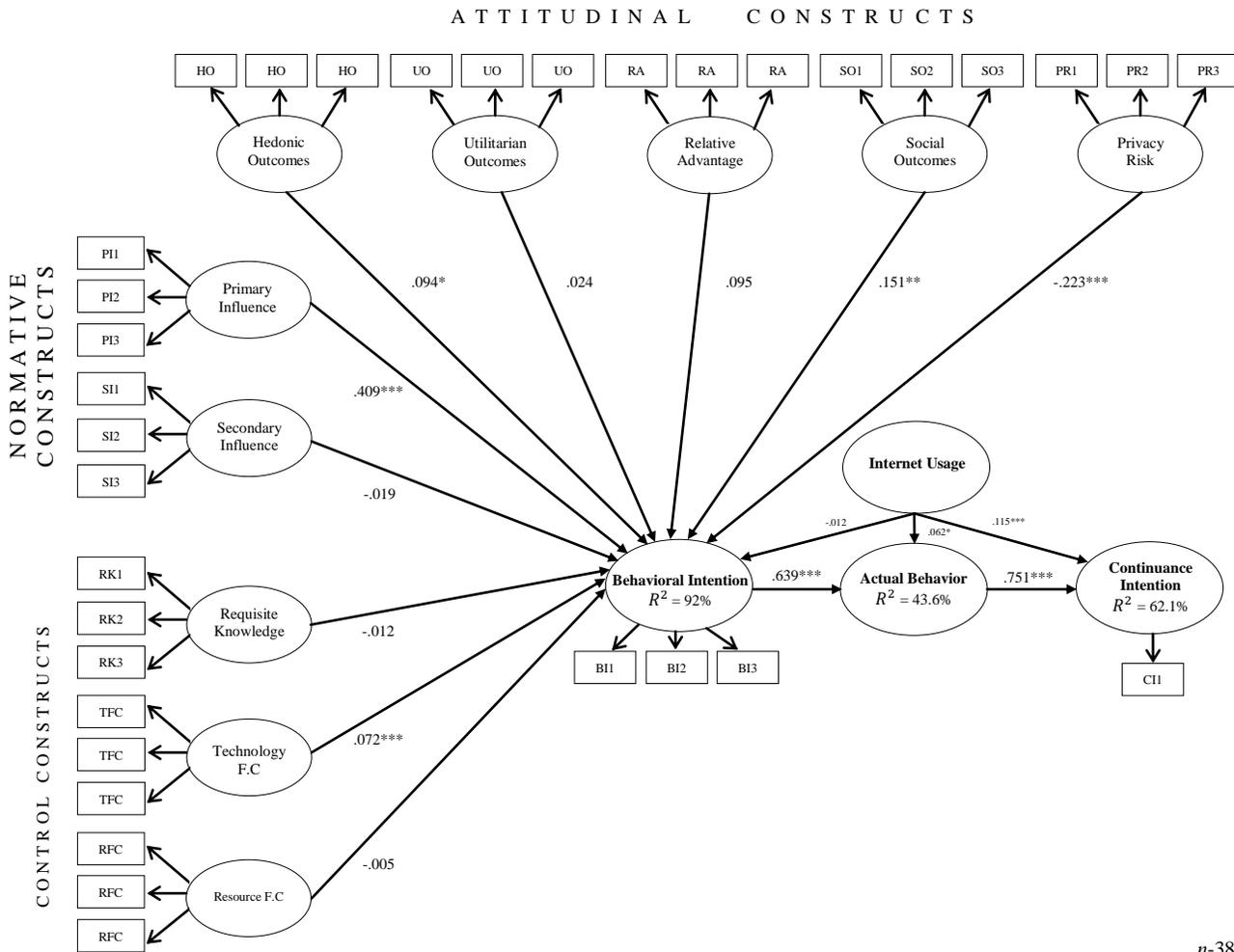
## MOSN Path Analysis- All 50-60s (n- 368)



n-368

\*P < 0.05 \*\*P < 0.01 \*\*\*P < 0.001  
MOSN - All 50-60 Participants

## MOSN Path Analysis- All 61- 70s (n-384)

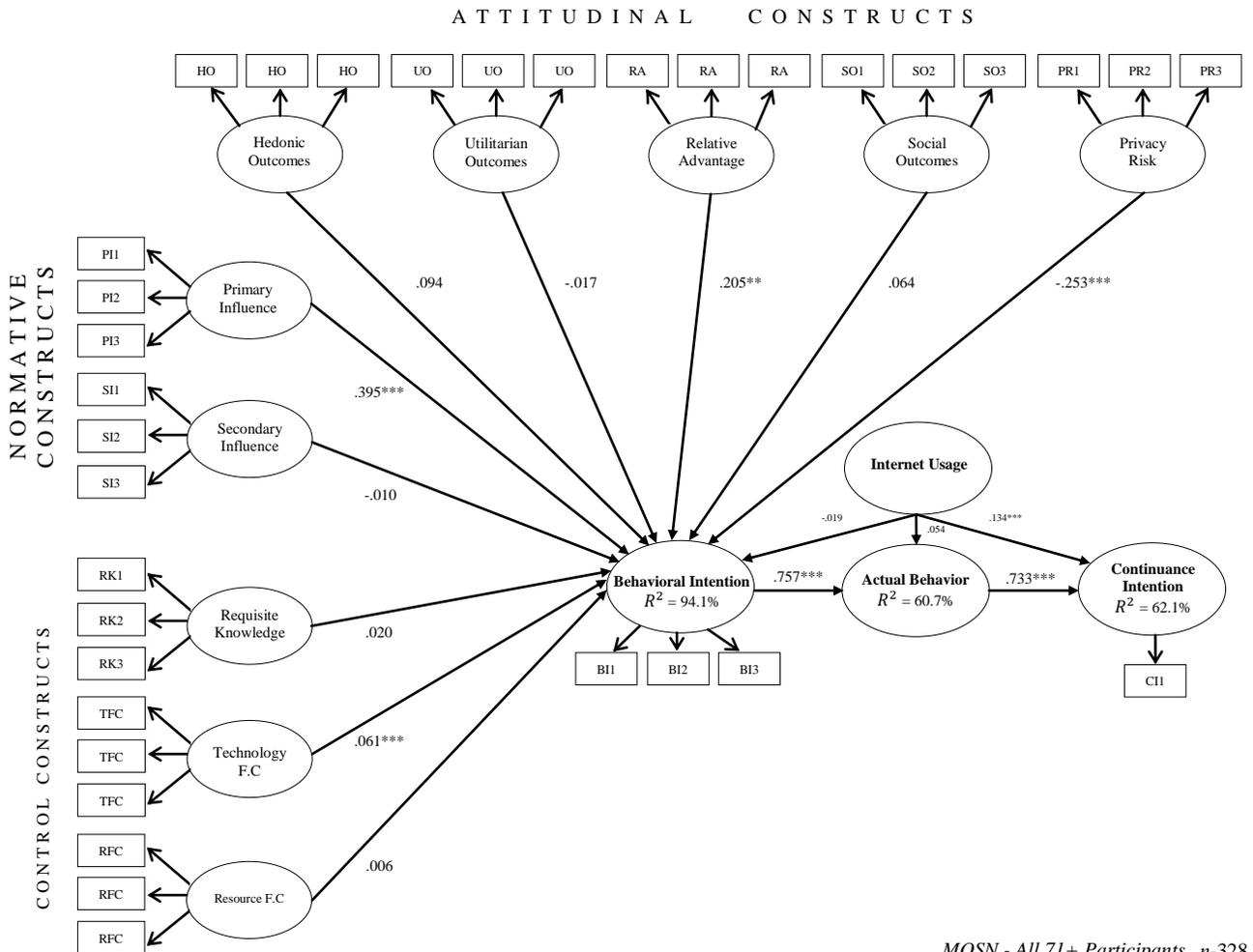


n-384

\*P < 0.05 \*\*P < 0.01 \*\*\*P < 0.001

MOSN - All 61-70 Participants

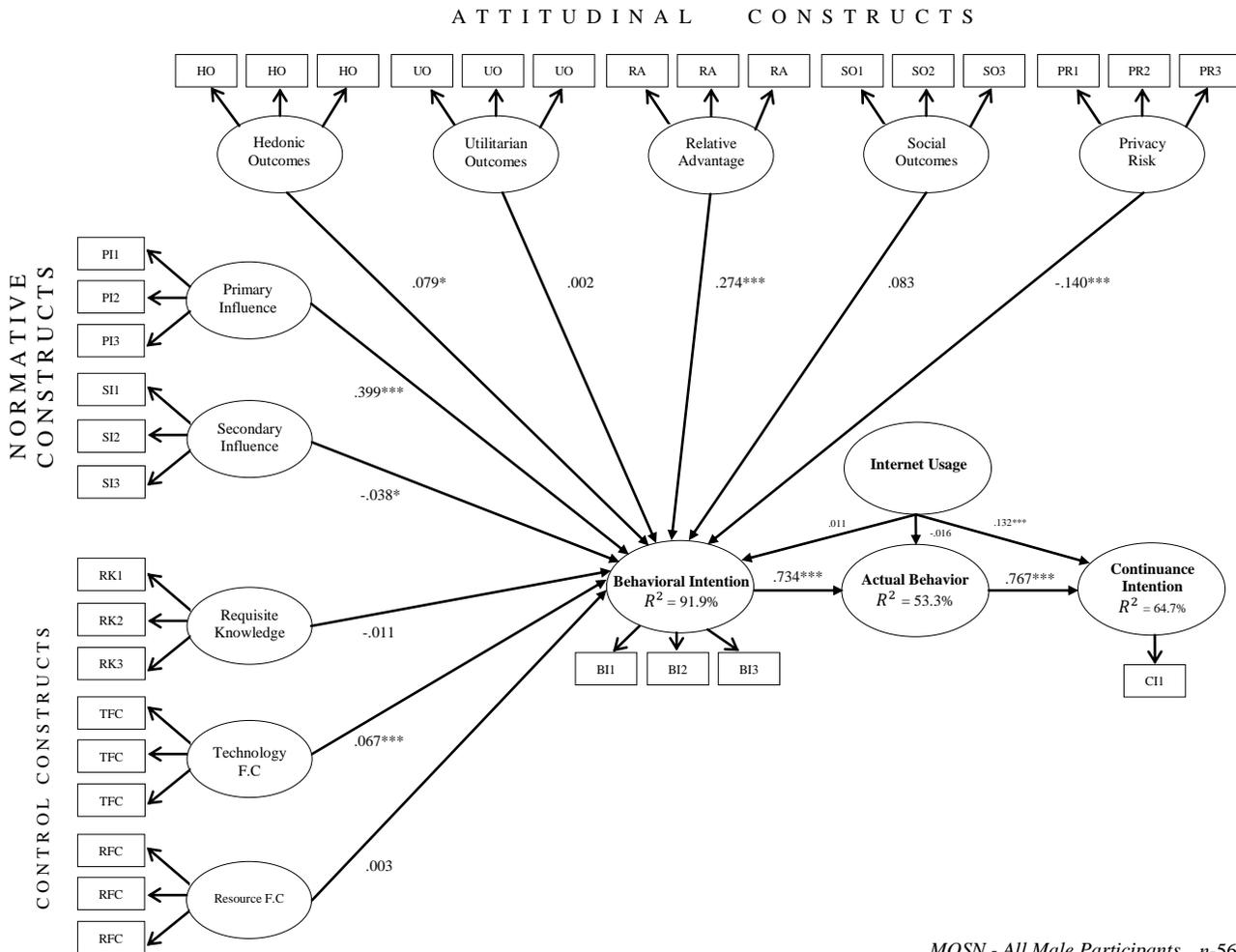
## MOSN Path Analysis- All 71+ (n- 328)



MOSN - All 71+ Participants n-328

\*P < 0.05 \*\*P < 0.01 \*\*\*P < 0.001

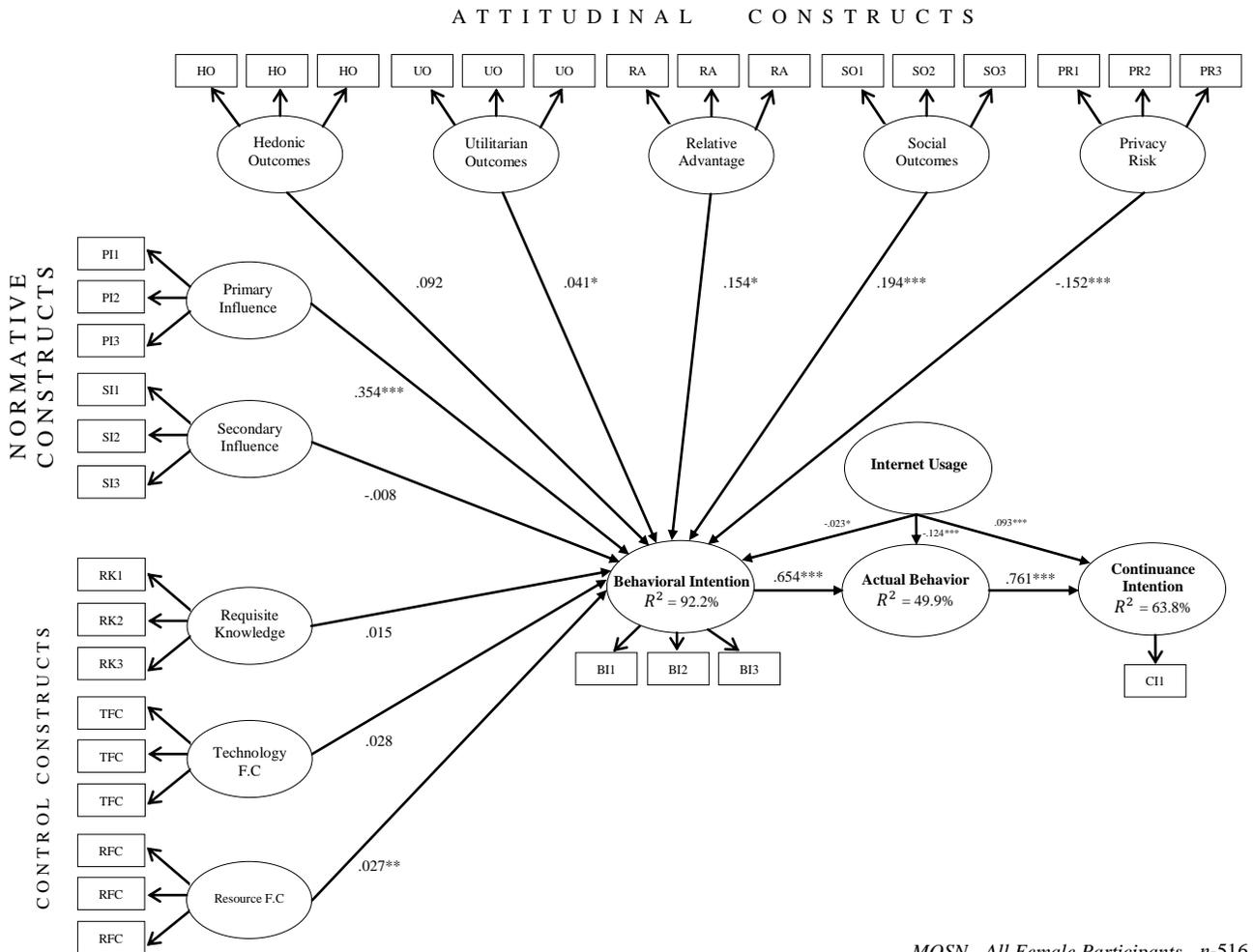
## MOSN Path Analysis- All Male Participants (n- 564)



MOSN - All Male Participants n-564

\*P < 0.05 \*\*P < 0.01 \*\*\*P < 0.001

## MOSN Path Analysis- All Female Participants (n- 516)



MOSN - All Female Participants n-516

\*P < 0.05 \*\*P < 0.01 \*\*\*P < 0.001

## 5-6 Final Survey – All Sub-Sample MOSN – SEMs – Model Validity Results

### Construct Validity

Summary of MOSN Construct Validations								
MOSN Construct	All Participants (n-1080)	OSN Adopters (n-519)	OSN Non-Adopters (n-561)	All 50-60s (n-368)	All 61-70s (n-384)	All 71+ (n-328)	All Males (n-564)	All Females (n-516)
Behavioral Intention(BI) <sup>a</sup>	Demonstrated	Demonstrated	Demonstrated	Demonstrated	Demonstrated	Demonstrated	Demonstrated	Demonstrated
Hedonic Outcomes (HO) <sup>a</sup>	Demonstrated	Demonstrated	Demonstrated	Demonstrated	Demonstrated	Demonstrated	Demonstrated	Demonstrated
Primary Influence (PI) <sup>a</sup>	Demonstrated	Demonstrated	Demonstrated	Demonstrated	Demonstrated	Demonstrated	Demonstrated	Demonstrated
Privacy Risk (PR) <sup>a</sup>	Demonstrated	Demonstrated	Demonstrated	Demonstrated	Demonstrated	Demonstrated	Demonstrated	Demonstrated
Relative Advantage (RA) <sup>a</sup>	Demonstrated	Demonstrated	Demonstrated	Demonstrated	Demonstrated	Demonstrated	Demonstrated	Demonstrated
Resource F.C (RFC) <sup>a</sup>	✗	Demonstrated	✗	✗	✗	✗	✗	✗
Requisite Knowledge (RK) <sup>a</sup>	Demonstrated	Demonstrated	Demonstrated	Demonstrated	Demonstrated	Demonstrated	Demonstrated	Demonstrated
Secondary Influence (SI) <sup>a</sup>	✗	Demonstrated	Demonstrated	✗	Demonstrated	✗	✗	✗
Social Outcomes (SO) <sup>a</sup>	Demonstrated	Demonstrated	Demonstrated	Demonstrated	Demonstrated	Demonstrated	Demonstrated	Demonstrated
Technology F.C (TFC) <sup>a</sup>	Demonstrated	Demonstrated	Demonstrated	Demonstrated	Demonstrated	Demonstrated	Demonstrated	Demonstrated
Utilitarian Outcomes (UO) <sup>a</sup>	Demonstrated	✗	Demonstrated	Demonstrated	Demonstrated	Demonstrated	Demonstrated	Demonstrated

P\* <.05 P\*\* <.01 P\*\*\* <.001

### Composite Reliability

Summary of MOSN Construct: Composite Reliabilities								
MOSN Construct	All Participants (n-1080)	OSN Adopters (n-519)	OSN Non-Adopters (n-561)	All 50-60s (n-368)	All 61-70s (n-384)	All 71+ (n-328)	All Males (n-564)	All Females (n-516)
Behavioral Intention(BI) <sup>a</sup>	.9979	.9966	.9370	.9985	.9974	.9972	.9977	.9980
Hedonic Outcomes (HO) <sup>a</sup>	.9890	.9733	.9284	.9846	.9877	.9917	.9870	.9907
Primary Influence (PI) <sup>a</sup>	.9812	.9652	.8620	.9795	.9818	.9766	.9804	.9817
Privacy Risk (PR) <sup>a</sup>	.9888	.9693	.9577	.9837	.9885	.9905	.9866	.9911
Relative Advantage (RA) <sup>a</sup>	.9851	.9633	.8859	.9846	.9808	.9862	.9832	.9868
Resource F.C (RFC) <sup>a</sup>	.8392	.8806	.8192	.8447	.8534	.8147	.8340	.8458
Requisite Knowledge (RK) <sup>a</sup>	.9704	.9736	.9653	.9660	.9683	.9708	.9694	.9718
Secondary Influence (SI) <sup>a</sup>	.6819	.9146	.8549	.7804	.8732	.6872	.8533	.6231
Social Outcomes (SO) <sup>a</sup>	.9917	.9794	.9463	.9869	.9930	.9947	.9920	.9914
Technology F.C (TFC) <sup>a</sup>	.8781	.8706	.8488	.8917	.9088	.8040	.8624	.9114
Utilitarian Outcomes (UO) <sup>a</sup>	.8641	.5485	.8847	.8458	.8535	.8385	.8856	.8415

Accepted (>= 0.6) (Henselar et al , 2009) P\* <.05 P\*\* <.01 P\*\*\* <.001

## Average Variance Extracted (AVEs)

<b>Summary of MOSN Construct: AVEs</b>								
MOSN Construct	All Participants (n-1080)	OSN Adopters (n-519)	OSN Non- Adopters (n-561)	All 50-60s (n-368)	All 61-70s (n-384)	All 71+ (n-328)	All Males (n-564)	All Females (n-516)
Behavioral Intention(BI) <sup>a</sup>	.9936	.9898	.8322	.9954	.9921	.9918	.9931	.9940
Hedonic Outcomes (HO) <sup>a</sup>	.9677	.9239	.8138	.9551	.9640	.9756	.9621	.9727
Primary Influence (PI) <sup>a</sup>	.9456	.9025	.6759	.9409	.9473	.9329	.9435	.9470
Privacy Risk (PR) <sup>a</sup>	.9673	.9133	.8830	.9527	.9664	.9721	.9610	.9737
Relative Advantage (RA) <sup>a</sup>	.9567	.8976	.7215	.9551	.9446	.9597	.9513	.9614
Resource F.C (RFC) <sup>a</sup>	.6618	.7149	.6332	.6643	.6799	.6422	.6577	.6679
Requisite Knowledge (RK) <sup>a</sup>	.9162	.9249	.9027	.9045	.9106	.9173	.9136	.9201
Secondary Influence (SI) <sup>a</sup>	.4524	.7812	.6629	.5738	.6996	.4669	.6664	.3869
Social Outcomes (SO) <sup>a</sup>	.9756	.9406	.8546	.9616	.9793	.9842	.9763	.9748
Technology F.C (TFC) <sup>a</sup>	.7061	.6921	.6614	.7332	.7689	.5808	.6764	.7744
Utilitarian Outcomes (UO) <sup>a</sup>	.6798	.3653	.7192	.6473	.6608	.6359	.7207	.6402

Accepted ( $\Rightarrow$  0.5) (Henselar et al , 2009) P\* <.05 P\*\* <.01 P\*\*\* <.001

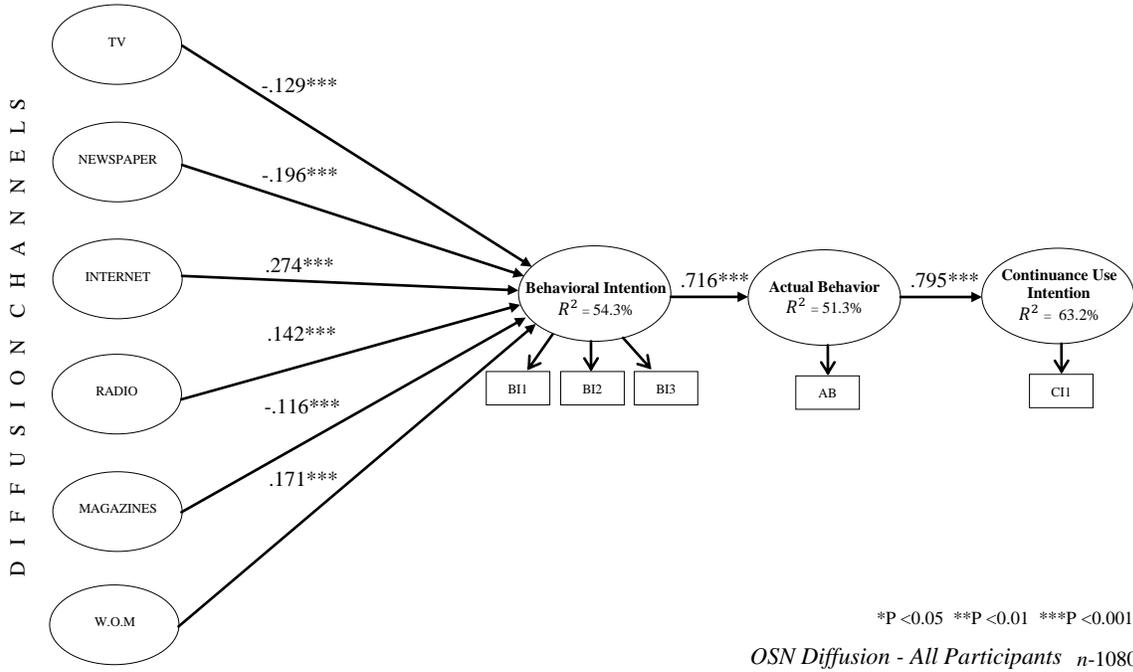
## Cronbachs *a*

<b>Summary of MOSN Construct: Cronbachs <i>a</i></b>								
MOSN Construct	All Participants (n-1080)	OSN Adopters (n-519)	OSN Non- Adopters (n-561)	All 50-60s (n-368)	All 61-70s (n-384)	All 71+ (n-328)	All Males (n-564)	All Females (n-516)
Behavioral Intention(BI) <sup>a</sup>	.9968	.9948	.8989	.9977	.9960	.9958	.9965	.9970
Hedonic Outcomes (HO) <sup>a</sup>	.9833	.9587	.8862	.9764	.9813	.9875	.9803	.9859
Primary Influence (PI) <sup>a</sup>	.9712	.9458	.7672	.9686	.9722	.9640	.9700	.9720
Privacy Risk (PR) <sup>a</sup>	.9831	.9525	.9338	.9752	.9826	.9856	.9797	.9865
Relative Advantage (RA) <sup>a</sup>	.9774	.9428	.8102	.9765	.9707	.9790	.9744	.9799
Resource F.C (RFC) <sup>a</sup>	.6988	.7906	.6392	.7168	.7310	.6258	.6842	.7166
Requisite Knowledge (RK) <sup>a</sup>	.9542	.9607	.9505	.9507	.9511	.9547	.9528	.9565
Secondary Influence (SI) <sup>a</sup>	.8197	.8615	.7625	.8329	.8311	.7481	.8086	.8330
Social Outcomes (SO) <sup>a</sup>	.9875	.9684	.9148	.9800	.9894	.9920	.9878	.9871
Technology F.C (TFC) <sup>a</sup>	.7969	.7769	.8016	.8176	.8511	.6782	.7669	.8580
Utilitarian Outcomes (UO) <sup>a</sup>	.7953	.5377	.8171	.7677	.7836	.7613	.8258	.7616

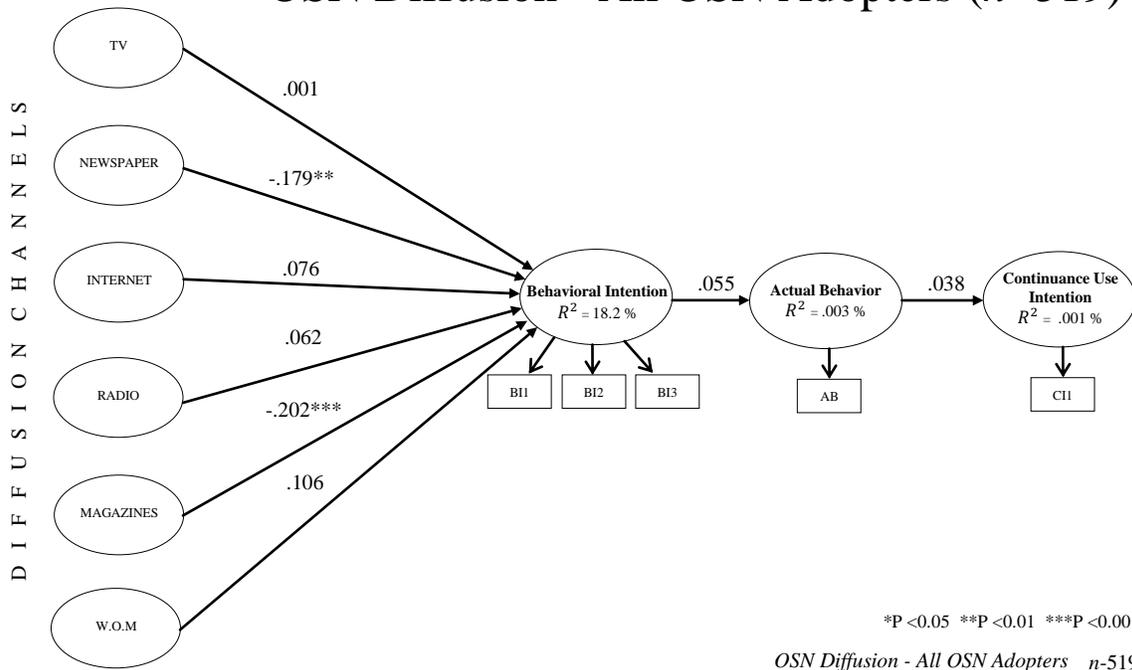
Acceptable ( $\Rightarrow$  0.7) (Litwin, 1995) P\* <.05 P\*\* <.01 P\*\*\* <.001

### 5-7 All Sub-Sample Diffusion SEMs

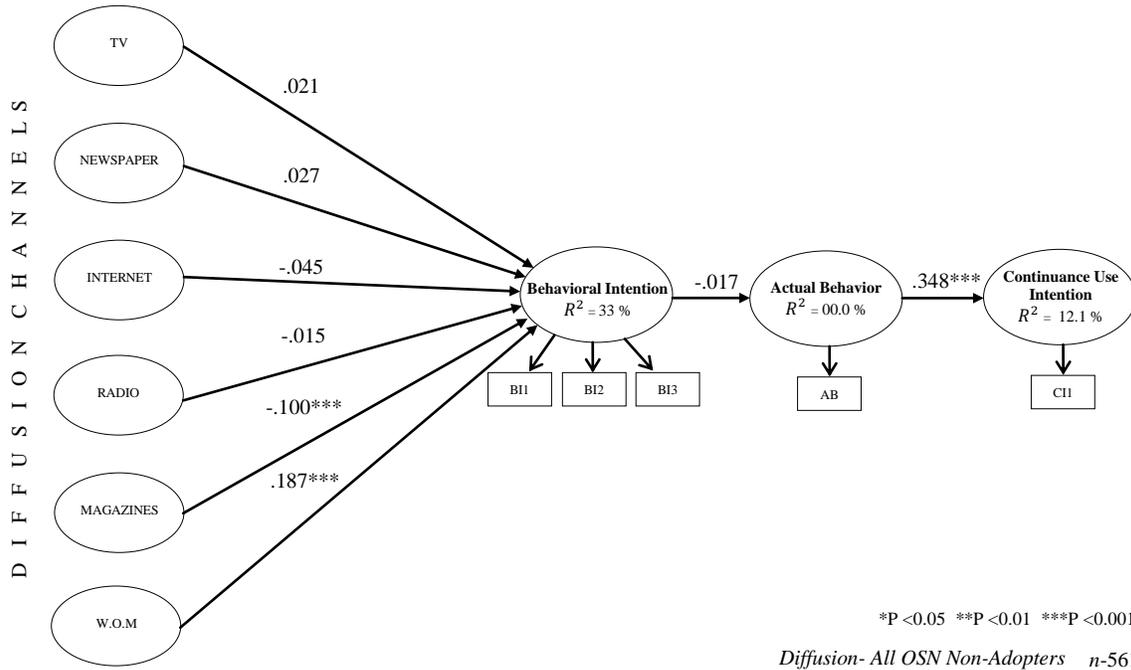
#### OSN Diffusion - All Participants (n- 1080)



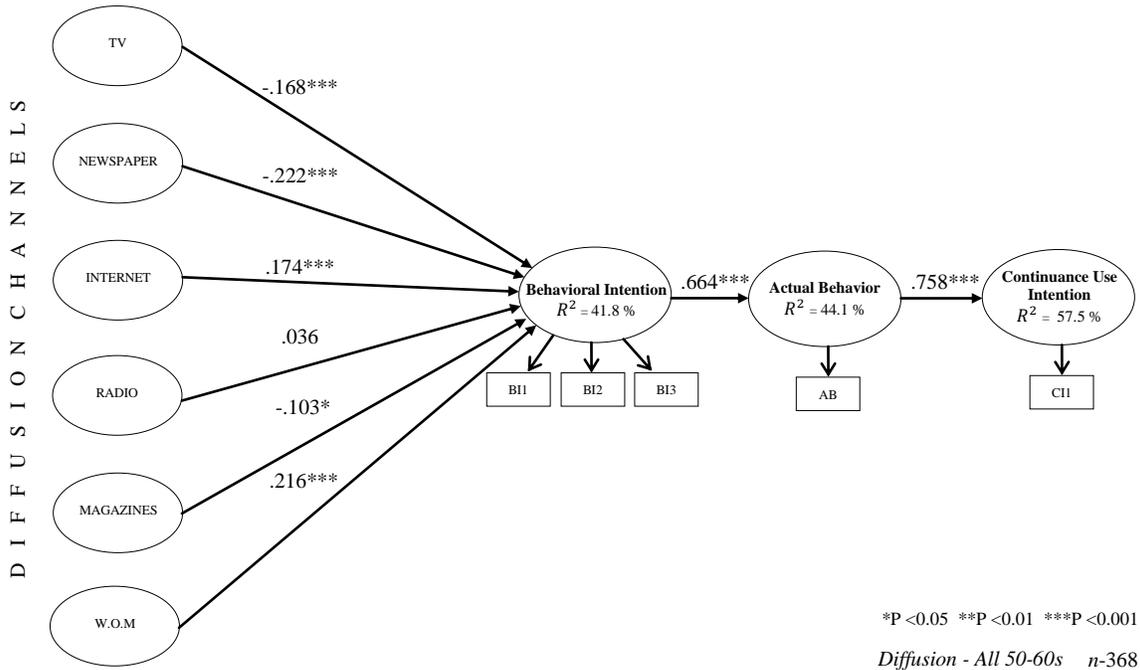
#### OSN Diffusion - All OSN Adopters (n- 519)



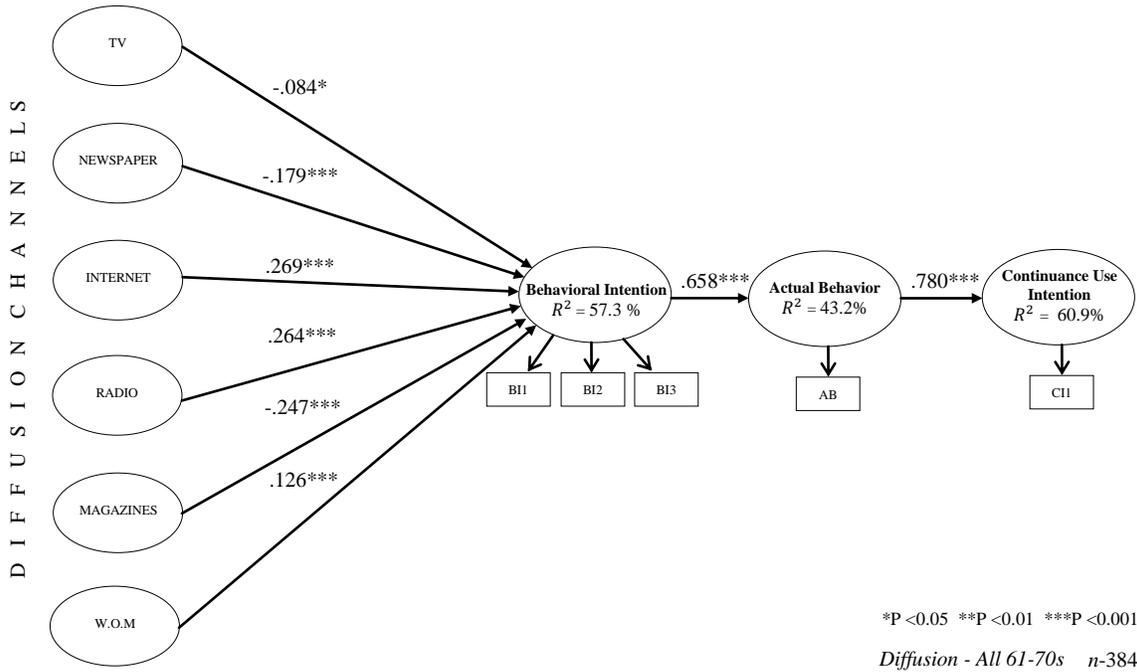
### OSN Diffusion - All OSN Non-Adopters (n- 561)



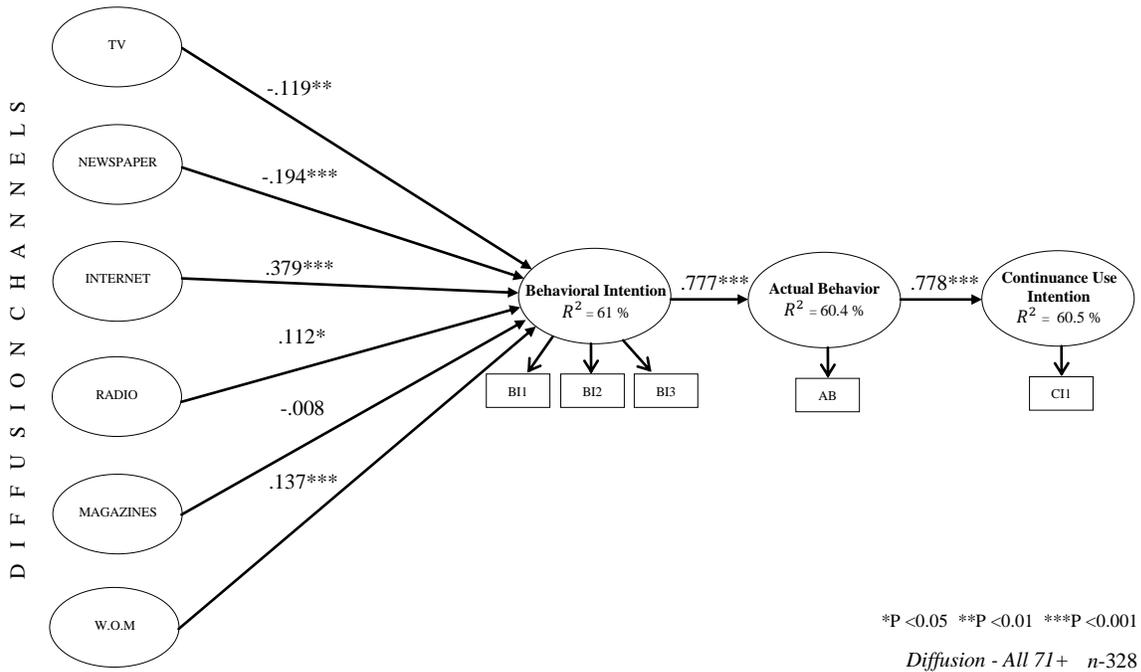
### OSN Diffusion - All 50-60s (n- 368)



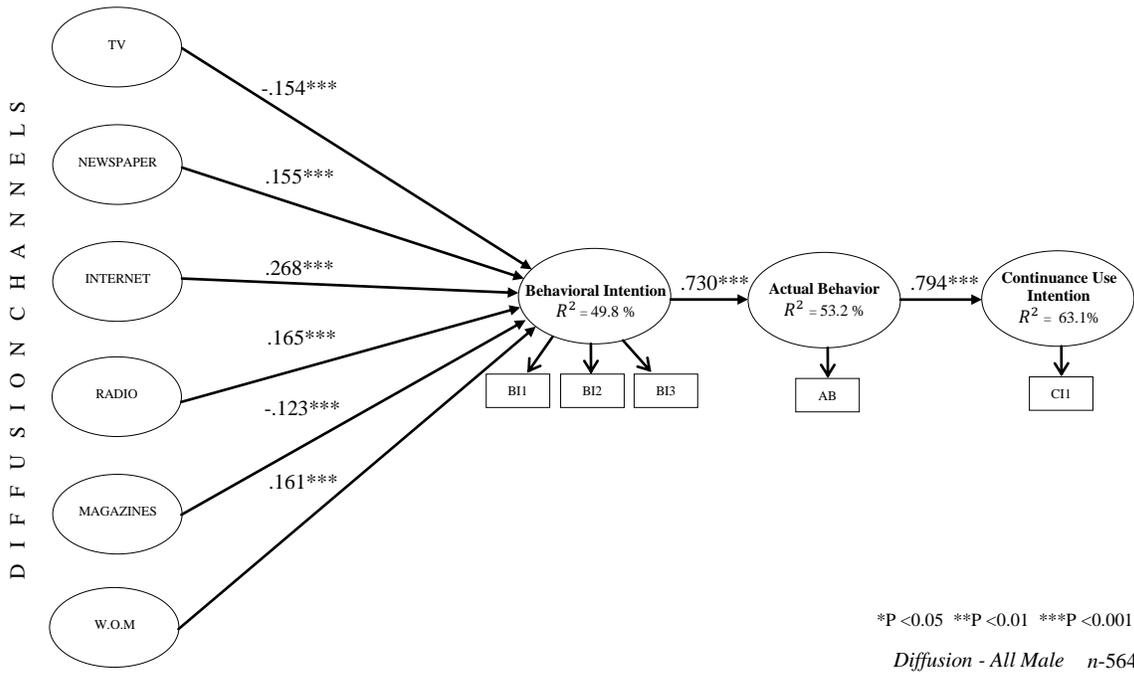
### OSN Diffusion - All 61-70s (n- 384)



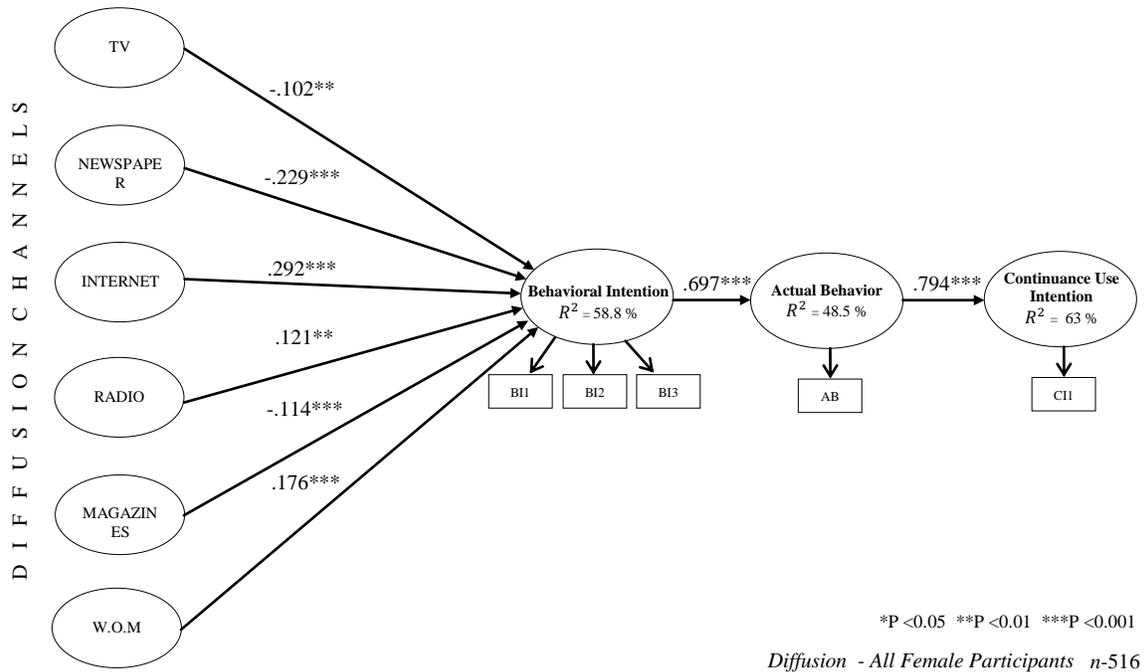
### OSN Diffusion - All 71+ (n- 328)



### OSN Diffusion - All Male Participants - (n- 564)

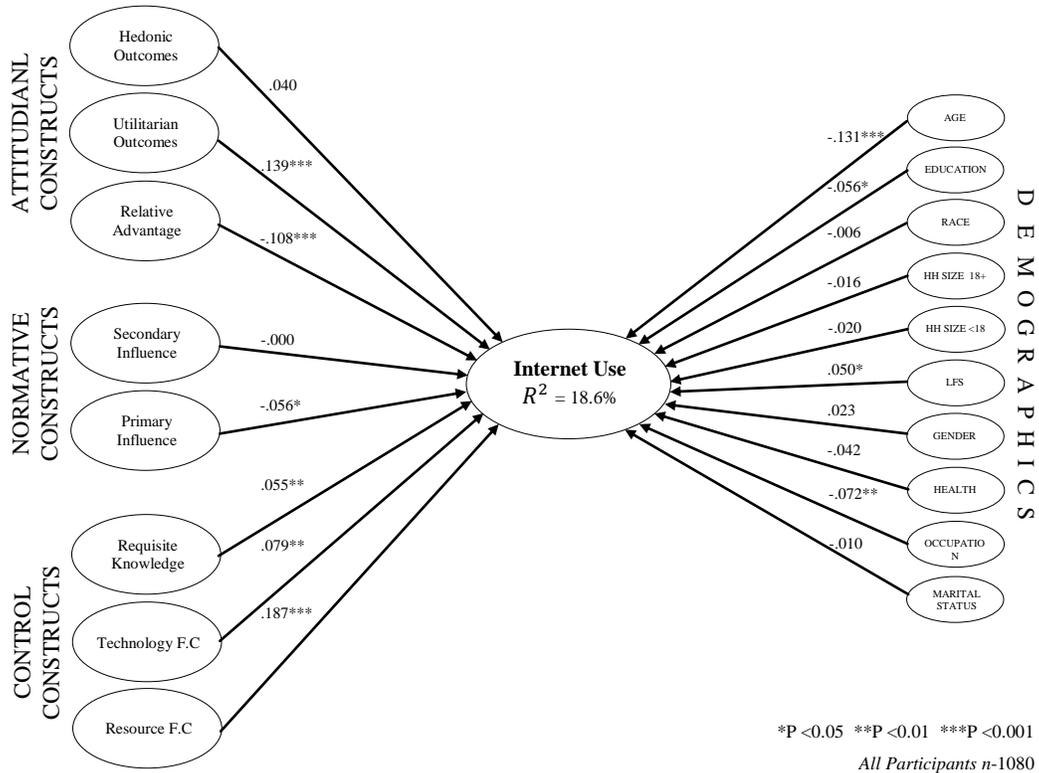


### OSN Diffusion - All Female Participants (n- 516)

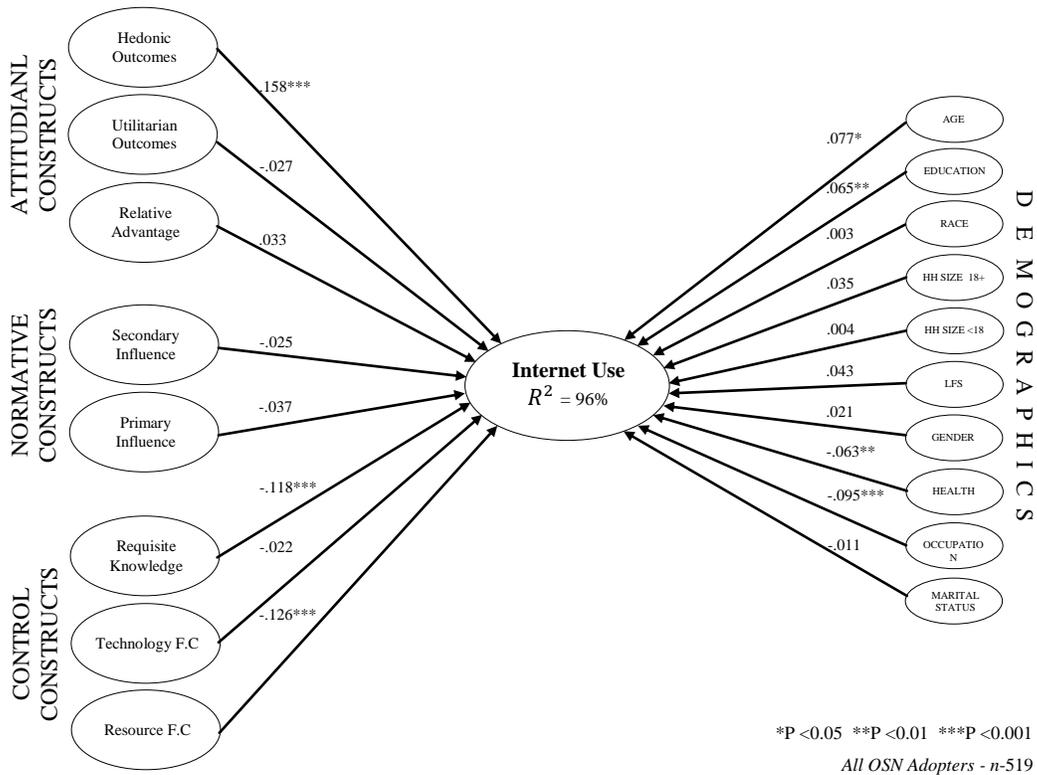


## 5-8 All Sub-Sample Internet Usage Regression Models

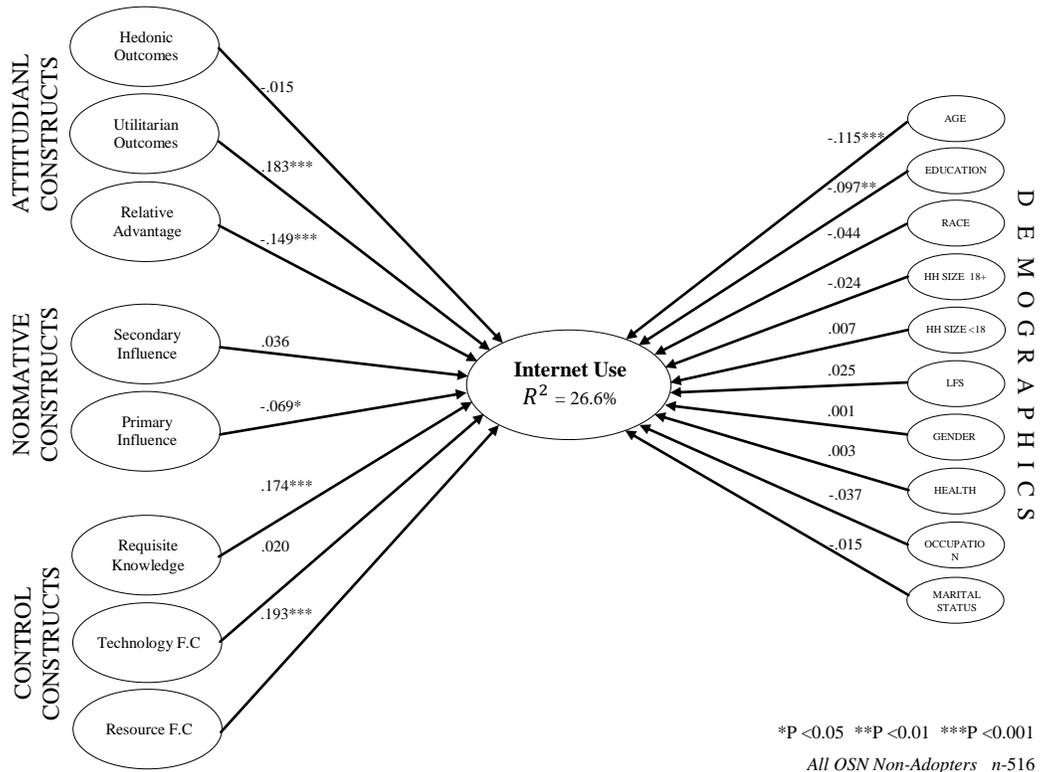
### Internet Adoption - All Participants (n- 1080)



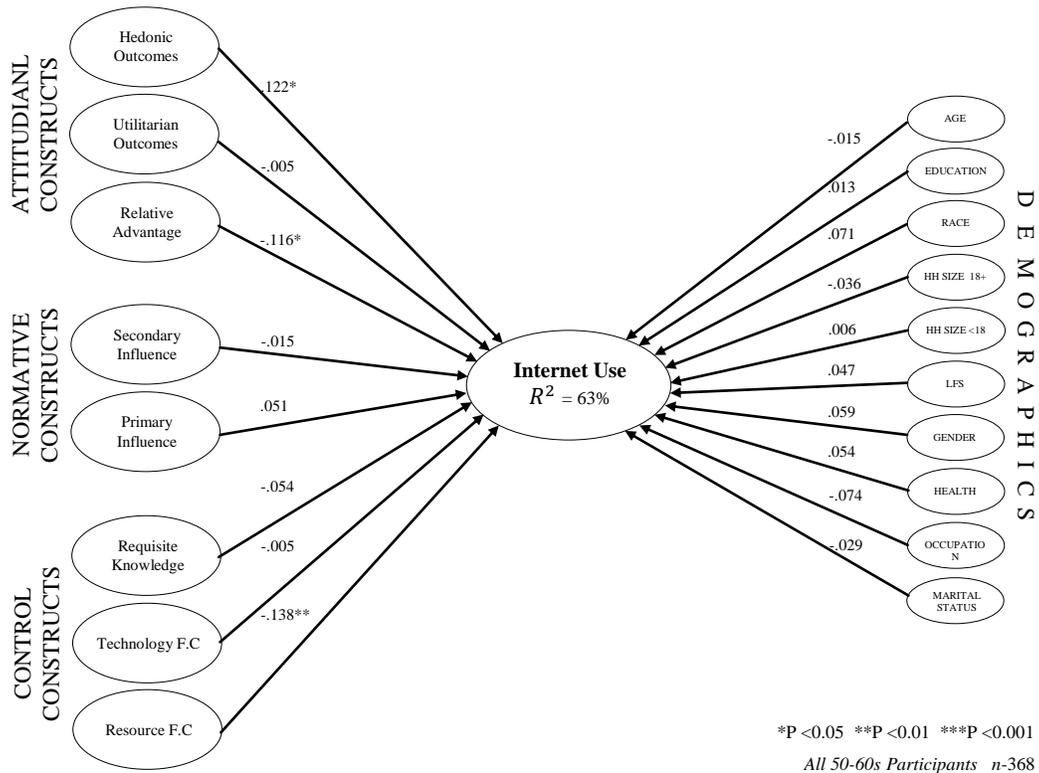
## Internet Adoption - All OSN Adopters (n- 519)



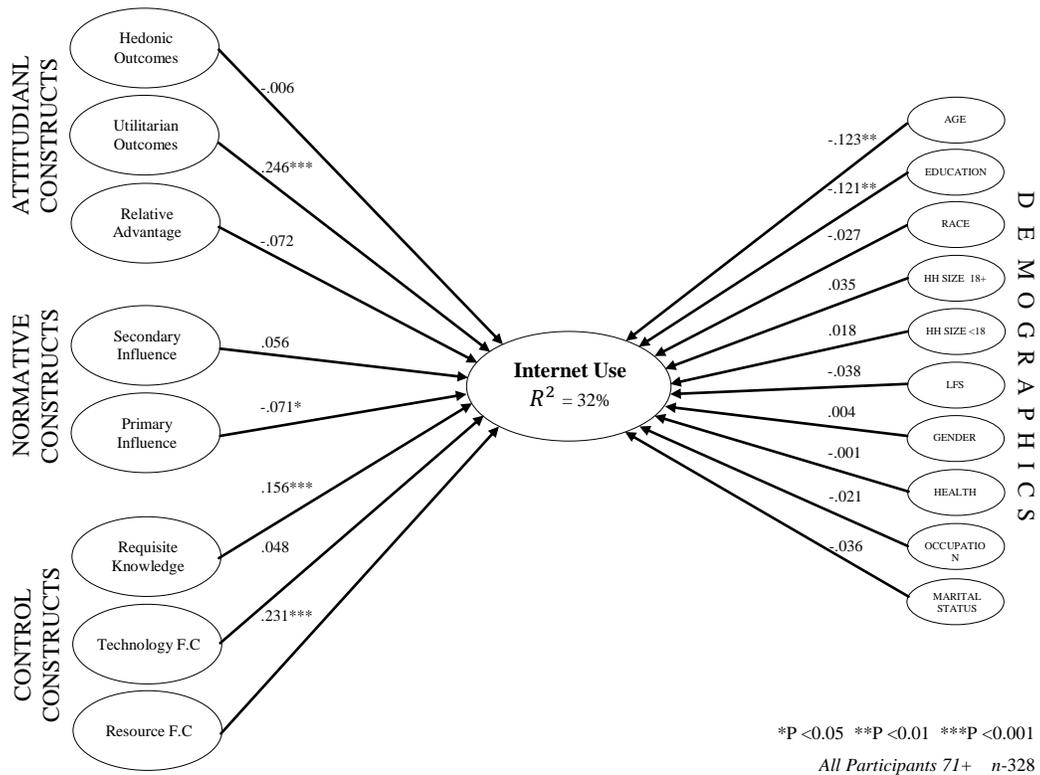
## Internet Adoption - All OSN Non-Adopters (n- 561)



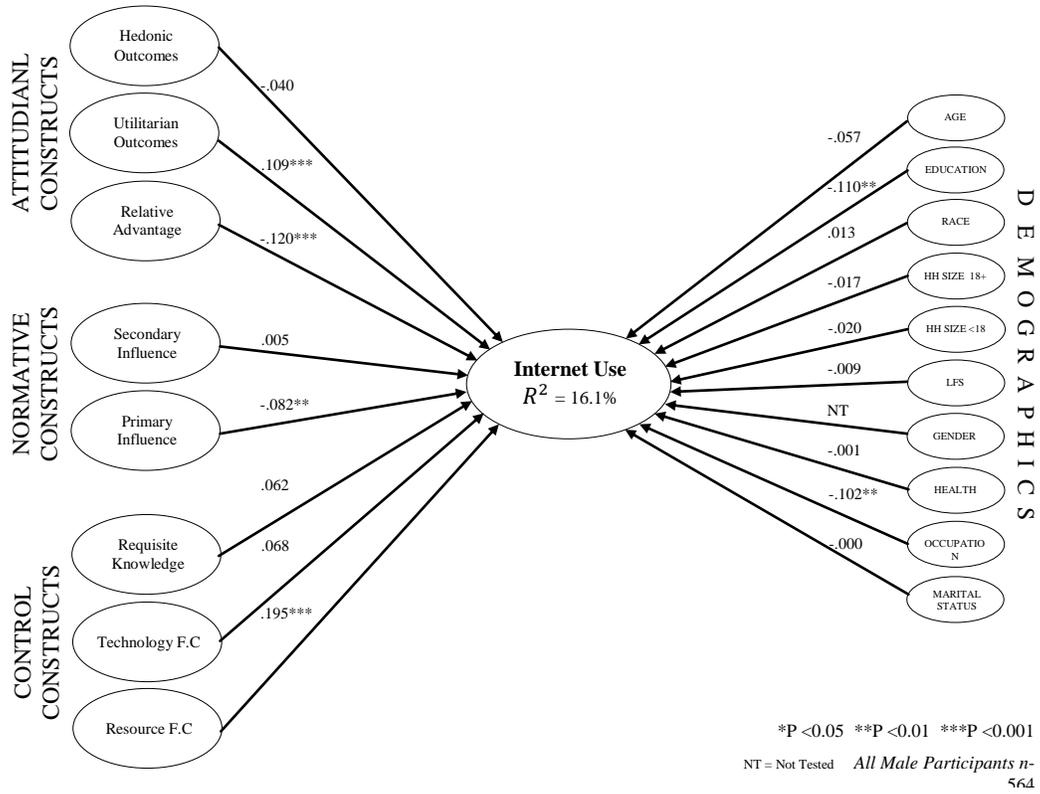
## Internet Adoption - All 50-60s (n- 368)



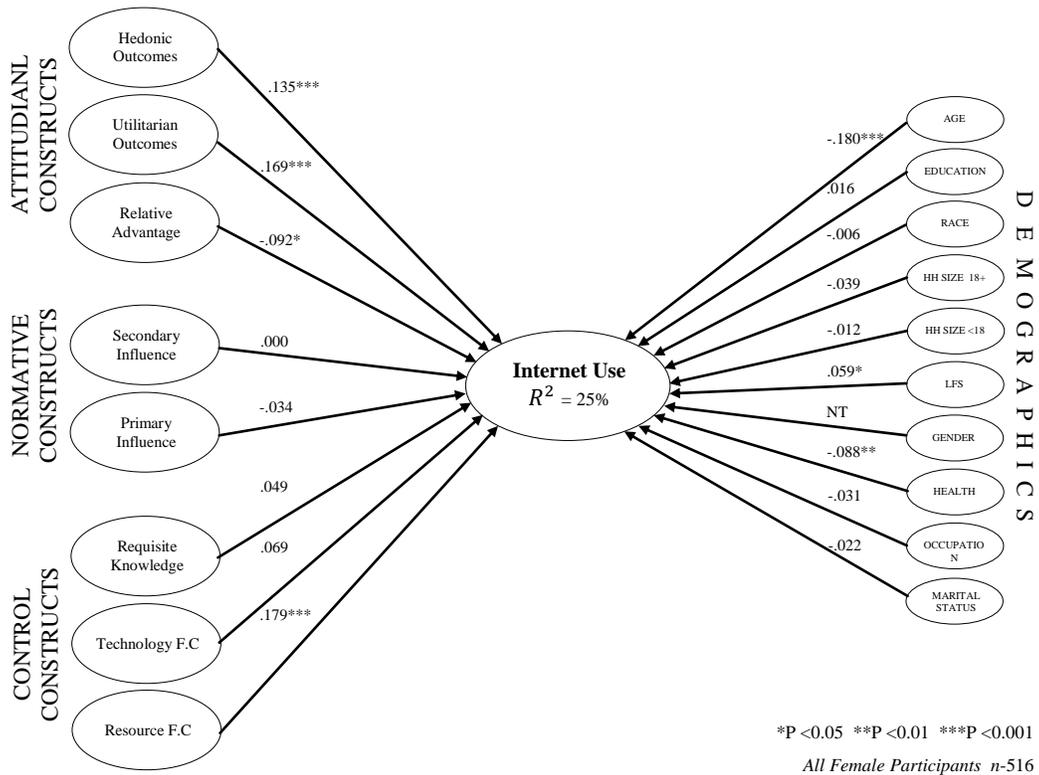
## Internet Adoption - All 71+ (n- 328)



## Internet Adoption - All Male Participants (n= 564)



## Internet Adoption - All Female Participants - (n- 516)



## 5 -9 Summaries of All Final Phase Results

### MOSN (Demographics)

Summary of Significant Results - MOSN (Demographics)								
	All Participants (n-1080)	OSN Adopters (n-519)	OSN Non- Adopters (n-561)	All 50-60s (n-368)	All 61-70s (n-384)	All 71+ (n328)	All Males (n-564)	All Females (n516)
Actual Behavior $R^2$	18.4%	85%	29%	82%	73%	14%	19%	17.6%
Age	*** <sup>-</sup>	*** <sup>-</sup>		*** <sup>-</sup>	** <sup>-</sup>	*** <sup>-</sup>	*** <sup>-</sup>	*** <sup>-</sup>
Gender	*** <sup>+</sup>			*** <sup>+</sup>		** <sup>+</sup>		
Occupation	** <sup>-</sup>		*** <sup>-</sup>			*** <sup>-</sup>		** <sup>-</sup>
Education	*** <sup>-</sup>	* <sup>-</sup>			*** <sup>-</sup>	* <sup>-</sup>	*** <sup>-</sup>	** <sup>-</sup>
Race			*** <sup>-</sup>			* <sup>+</sup>		
Health						* <sup>-</sup>		
Household Size 18+	*** <sup>+</sup>						** <sup>+</sup>	
Household Size <18			*** <sup>-</sup>	*** <sup>+</sup>			*** <sup>+</sup>	** <sup>+</sup>
Labor Force Status								
Marital Status	** <sup>+</sup>				*** <sup>+</sup>		** <sup>+</sup>	

P\* <.05 P\*\* <.01 P\*\*\* <.001

### OSN Adoption (MOSN Constructs)

Summary of Significant Results - MOSN (Constructs)								
MOSN Construct	All Participants (n-1080)	OSN Adopters (n-519)	OSN Non- Adopters (n-561)	All 50-60s (n-368)	All 61-70s (n-384)	All 71+ (n328)	All Males (n-564)	All Females (n516)
Behavioral Intention $R^2$	92%	80.1%	10.7%	89.7%	92%	94.1%	91.9%	92.2%
Hedonic Outcomes	* <sup>+</sup>	* <sup>+</sup>			* <sup>+</sup>		* <sup>+</sup>	
Utilitarian Outcomes				* <sup>+</sup>				* <sup>+</sup>
Relative Advantage	*** <sup>+</sup>			*** <sup>+</sup>		** <sup>+</sup>	*** <sup>+</sup>	* <sup>+</sup>
Social Outcomes	*** <sup>+</sup>	* <sup>+</sup>		** <sup>+</sup>	** <sup>+</sup>			*** <sup>+</sup>
Privacy Risk	*** <sup>-</sup>	* <sup>-</sup>	* <sup>-</sup>		*** <sup>-</sup>	*** <sup>-</sup>	*** <sup>-</sup>	*** <sup>-</sup>
Primary Influence	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>
Secondary Influence							* <sup>-</sup>	
Requisite Knowledge		* <sup>+</sup>						
Technology F.C	*** <sup>+</sup>	** <sup>+</sup>		* <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	
Resource F.C			*** <sup>+</sup>					** <sup>+</sup>
BI --> AB	*** <sup>+</sup>			*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>
Actual Behavior $R^2$	51.6%	.03%	.6%	44.1%	43.6%	60.7%	53.3%	49.9%
AB --> CI	*** <sup>+</sup>		*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>
Continuence Intention $R^2$	64.4%	.01%	12.4%	57.7%	62.1%	62.1%	64.7%	63.8%
IU --> BI								* <sup>-</sup>
IU --> AB	*** <sup>+</sup>		* <sup>+</sup>		* <sup>+</sup>			*** <sup>-</sup>
IU --> CI	*** <sup>+</sup>		** <sup>+</sup>		*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>

P\* <.05 P\*\* <.01 P\*\*\* <.001

## OSN Diffusion Table

<b>Summary of Significant Results - Diffusion (Media Channels)</b>								
Diffusion Channel	All Participants (n-1080)	OSN Adopters (n-519)	OSN Non- Adopters (n-561)	All 50-60s (n-368)	All 61-70s (n-384)	All 71+ (n328)	All Males (n-564)	All Females (n516)
<b>Behavioral Intention <math>R^2</math></b>	<b>54.3%</b>	<b>18.2%</b>	<b>33%</b>	<b>41.8%</b>	<b>57.3%</b>	<b>61%</b>	<b>49.8%</b>	<b>58.8%</b>
TV	*** <sup>-</sup>			*** <sup>-</sup>	* <sup>-</sup>	** <sup>-</sup>	*** <sup>-</sup>	** <sup>-</sup>
Newspaper	*** <sup>-</sup>	** <sup>-</sup>		*** <sup>-</sup>	*** <sup>-</sup>	*** <sup>-</sup>	*** <sup>+</sup>	*** <sup>-</sup>
Internet	*** <sup>+</sup>			*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>
Radio	*** <sup>+</sup>				*** <sup>+</sup>	* <sup>+</sup>	*** <sup>+</sup>	** <sup>+</sup>
Magazines	*** <sup>-</sup>	*** <sup>-</sup>	*** <sup>-</sup>	* <sup>-</sup>	*** <sup>-</sup>		*** <sup>-</sup>	*** <sup>-</sup>
W.O.M	*** <sup>+</sup>		*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>
BI --> AB	*** <sup>+</sup>			*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>
<b>Actual Behavior <math>R^2</math></b>	<b>51.3%</b>	<b>.003%</b>	<b>0.00%</b>	<b>44.1%</b>	<b>43.2%</b>	<b>60.4%</b>	<b>53.2%</b>	<b>48.5%</b>
AB --> CI	*** <sup>+</sup>		*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>
<b>Continuence Intention <math>R^2</math></b>	<b>63.2%</b>	<b>.001%</b>	<b>12.1%</b>	<b>57.5%</b>	<b>60.9%</b>	<b>60.5%</b>	<b>63.1%</b>	<b>63%</b>

P\* <.05 P\*\* <.01 P\*\*\* <.001

# Internet Adoption

Summary of Significant Results - Internet Adoption (Constructs)								
MOSN Construct	All Participants (n-1080)	OSN Adopters (n-519)	OSN Non-Adopters (n-561)	All 50-60s (n-368)	All 61-70s (n-384)	All 71+ (n328)	All Males (n-564)	All Females (n516)
<b>Internet Usage R<sup>2</sup></b>	<b>18.6%</b>	<b>96%</b>	<b>26.6%</b>	<b>63%</b>	<b>21.7%</b>	<b>32%</b>	<b>16.1%</b>	<b>25%</b>
Hedonic Outcomes		*** <sup>+</sup>		* <sup>+</sup>				*** <sup>+</sup>
Utilitarian Outcomes	*** <sup>+</sup>		*** <sup>+</sup>		*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>
Relative Advantage	*** <sup>-</sup>		*** <sup>-</sup>	* <sup>-</sup>	*** <sup>-</sup>		*** <sup>-</sup>	* <sup>-</sup>
Secondary Influence								
Primary Influence	* <sup>-</sup>		* <sup>-</sup>		** <sup>-</sup>	* <sup>-</sup>	** <sup>-</sup>	
Requisite Knowledge	** <sup>+</sup>	*** <sup>-</sup>	*** <sup>+</sup>		** <sup>+</sup>	*** <sup>+</sup>		
Technology F.C	** <sup>+</sup>							
Resource F.C	*** <sup>+</sup>	*** <sup>-</sup>	*** <sup>+</sup>	** <sup>-</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>	*** <sup>+</sup>
Summary of Significant Results - Internet Adoption (Demographics)								
Age	*** <sup>-</sup>	* <sup>+</sup>	*** <sup>-</sup>			** <sup>-</sup>		*** <sup>-</sup>
Gender								
Occupation	** <sup>-</sup>	*** <sup>-</sup>					** <sup>-</sup>	
Education	* <sup>-</sup>	** <sup>+</sup>	** <sup>-</sup>			** <sup>-</sup>	** <sup>-</sup>	
Race								
Health		** <sup>-</sup>			*** <sup>-</sup>			** <sup>-</sup>
Household Size 18+								
Household Size <18								
Labor Force Status	* <sup>+</sup>							* <sup>+</sup>
Marital Status								

P\* <.05 P\*\* <.01 P\*\*\* <.001

## 6 – 1 OXiS Probit Analysis Variable Specification

- Age dummies to show the effect of different age groups on the probability of using the internet. The age dummies were preferred to continuous age (and age square) variable because this particular functional form of age produces better goodness of fit and eliminates the multicollinearity in the model. *Reference category: Age 14-18*
- North. Dummy variable (1: North 0: Otherwise).
- Wales. Dummy variable (1: Wales 0: Otherwise).
- Scotland. Dummy variable (1: Scotland 0: Otherwise).
- South (*reference category*). Dummy variable (1: South 0: Otherwise).
- Gender. Dummy variable (1: Male 0: Female).
- PT Employment. Dummy variable (1: PT Employment 0: Otherwise).
- Unemployed. Dummy variable (1: Unemployed 0: Otherwise).
- Student. Dummy variable (1: Student 0: Otherwise).
- Retired. Dummy variable (1: Retired 0: Otherwise).
- OLF (Out-of-Labour-Force). Dummy variable (1: OLF 0: Otherwise).
- FT Employment (*reference category*). Dummy variable (1: FT Employment 0: Otherwise).
- GSCE or O Levels. Dummy variable (1: GSCE or O Levels 0: Otherwise).
- Vocational Qualifications. Dummy variable (1: Vocational Qualifications 0: Otherwise).
- A Levels. Dummy variable (1: A Levels 0: Otherwise).
- Higher/Highest Education. Dummy variable (1: Higher/Highest Education 0: Otherwise).
- No Qualification (*reference category*). Dummy variable (1: No Qualification 0: Otherwise).
- Single. Dummy variable (1: Single 0: Otherwise).
- Divorced or Widowed. Dummy variable (1: Divorced or Widowed 0: Otherwise).
- Married (*reference category*). Dummy variable (1: Married 0: Otherwise).
- White. Dummy variable (1: White 0: Otherwise).
- Non-white (*reference category*). Dummy variable (1: Non-white 0: Otherwise).
- Met someone through: Social network sites. Dummy variable. (1 Yes 0: No)
- How distracting are: Social networking applications (Facebook, Bebo, LinkedIn)? Ordered categorical variable. 1 Not at all distracting; 2 Not distracting; 3 Distracting; 4 Very distracting.

## UH Ethics Approval

Thursday 6th 2011: 11.38am

Amit Vyas

This is to confirm that your ethics application has been approved and your protocol number is BS/R/015 10.

Deputy Faculty Registrar  
Business School  
De Havilland Campus



## 6- 2 Evaluation - ONS Variables

### ONS DATA

DEPENDENT VARIABLE		
Variable Description	Values	Frequency
Frequency of internet use – last 3 months.	1 Less than once a month 2 At least once a month (but not every week) 3 At least once a week (but not every day) 4 Everyday, or almost everyday	Year 2007 Year 2009 Year 2010

INDEPENDENT/EXPLANATORY VARIABLES		
Variable Description	Values	Frequency
Age of Respondent	In years	Year 2007 Year 2009 Year 2010
Sex of Respondent	Male / Female	Year 2007 Year 2009 Year 2010
Marital Status of Respondent	1 Single, never married 2 Married, living with spouse 3 Married, separated from spouse 4 Divorced 5 Widowed 6 In a legally - recognised civil partnership 7 In a legally-recognised civil partnership and separated from his/her partner	Year 2007
Marital Status of Respondent	1 Single, that is never married 2 Married/Civil Partnership living with spouse/partner 3 Married/Civil Partnership separated from spouse/partner 4 Divorced/Civil Partnership now dissolved 5 Widowed/surviving Civil Partner whose partner has since died	Year 2009 Year 2010
Highest Educational Attainment	1 Degree or higher degree 2 Higher educational qualification below degree level 3 A levels or Highers 4 ONC/BTEC 5 O level or GCSE equivalent (that is Grade A-C); O Grade or C 6 GCSE grade D-G or CSE grade 2-5 or Standard Grade level 4-6 7 Other qualifications 8 No formal qualifications	Year 2007 Year 2009 Year 2010
Employment Status	1 Self-employed: large (25+ employees) 2 Self-employed: small (1-24 employees) 3 Self-employed: no employees 4 Manager: large (25+ employees) 5 Manager: small (1-24 employees) 6 Foreman or supervisor 7 Employee (not classified) 8 No employment status info given	Year 2007 Year 2009 Year 2010
Ethnicity	1 White British 2 Any other White background	Year 2007 Year 2009

	3 Mixed - White and Black Caribbean 4 Mixed - White and Black African 5 Mixed - White and Asian 6 Any other Mixed background 7 Asian or Asian British - Indian 8 Asian or Asian British - Pakistani 9 Asian or Asian British - Bangladeshi 10 Asian or Asian British - Any other Asian background 11 Black or Black British - Black Caribbean 12 Black or Black British - Black African 14 Chinese 15 Any other	Year 2010
Gross Income	1 Up to £519 2 £520 up to £1,039 3 £1,040 up to £1,559 4 £1,560 up to £2,079 5 £2,080 up to £2,599 6 £2,600 up to £3,119 7 £3,120 up to £3,639 8 £3,640 up to £4,159 9 £4,160 up to £4,679 10 £4,680 up to £5,199 11 £5,200 up to £6,239 12 £6,240 up to £7,279 13 £7,280 up to £8,319 14 £8,320 up to £9,359 15 £9,360 up to £10,399 16 £10,400 up to £11,439 17 £11,440 up to £12,479 18 £12,480 up to £13,519 19 £13,520 up to £14,559 20 £14,560 up to £15,599 21 £15,600 up to £16,639 22 £16,640 up to £17,679 23 £17,680 up to £18,719 24 £18,720 up to £19,759 25 £19,760 up to £20,799 26 £20,800 up to £23,399 27 £23,400 up to £25,999 28 £26,000 up to £28,599 29 £28,600 up to £31,199 30 £31,200 up to £33,799 31 £33,800 up to £36,399 32 £36,400 up to £38,999 33 £39,000 up to £41,599 34 £41,600 up to £44,199 35 £44,200 up to £46,799 36 £46,800 up to £49,399 37 £49,400 up to £51,999 38 £52,000 or more	Year 2007 Year 2009 Year 2010
Household Size	Household sizes are ranging from 1 to 9. The most common values are 1, 2, 3 and 4. (making up 94.7% of the sample size in 2010)	Year 2010
Health in General	1 Very Bad 2 Bad 3 Fair 4 Good 5 Very Good	Year 2010

## 6- 3 Evaluation - OXiS Variables List

### OXiS DATA

DEPENDENT VARIABLE		
Variable Description	Values	Frequency
Personal Use of Internet	0 No 1 Yes	Year 2003 Year 2005 Year 2007 Year 2009
How often use Internet to: social network site	0 Never 1 Less than monthly 2 Monthly 3 Weekly 4 Daily 5 Several times a day	Year 2009

INDEPENDENT/EXPLANATORY VARIABLES		
Variable Description	Values	Frequency
Age of Respondent	In years	Year 2003 Year 2005 Year 2007 Year 2009
Region	1 Scotland 2 North West 3 South West 4 Wales 5 South 6 South East 7 London 8 Anglia 9 East Midlands 10 West Midlands 11 Yorkshire 12 North East	Year 2003 Year 2005 Year 2007 Year 2009
Sex of the Respondent	Male / Female	Year 2003 Year 2005 Year 2007 Year 2009
Employment Status	1 Full time (30 hours a week or more) 2 Part time (8-29 hours a week) 3 Unemployed and wanting to work 4 Undergraduate Student 5 Post graduate student 6 At School 7 Retired 8 Not working or seeking work (eg. housewife)	Year 2003 Year 2005 Year 2007 Year 2009
Marital Status	1 Single 2 Married 3 Living together with a partner 4 Divorced, separated 5 Widowed	Year 2005 Year 2007 Year 2009
Highest Educational Qualification	0:None of these 1:GCSE/O-level/CSE 2:Vocational (NVQ 1+2 or time-served apprentice or ONC 3:A level or equivalent 4:University BA or its equivalent 5:Higher degree as well as BA	Year 2003 Year 2005 Year 2007 Year 2009
Ethnic group membership	1 Asian: of indian origin	Year 2009

	2 Asian: of pakistani origin 3 Asian: of bangladeshi origin 4 Asian: of chinese origin 5 Asian: of other origin 6 Black: of african origin 7 Black: of caribbean origin 8 Black: of other origin 9 White: of british origin 10 White: of other origin 11 Other	
Met someone through: Social network sites	0: No 1: Yes	Year 2009
How distracting are: Social networking applications (Facebook, Bebo, LinkedIn)?	1 Not at all distracting 2 Not distracting 3 Distracting 4 Very distracting	Year 2009
Household access to Internet via: Telephone line	0: No 1: Yes	Year 2009
Household access to Internet via: Cable	0: No 1: Yes	Year 2009
Household access to Internet via: Wireless	0: No 1: Yes	Year 2009
Household access to Internet via: Digital TV	0: No 1: Yes	Year 2009
Household access to Internet via: Handheld device	0: No 1: Yes	Year 2009