

Elderly People in eHealth: Investigating Internet Self-Efficacy and the Role of Occupational Internet Usage

Emergent Research Forum papers

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Abstract

eHealth initiatives are constantly evolving, supporting consumers to take active control of their health and well-being through access to health information and through communication with experts and peers via the internet. Although particularly elderly people could benefit from eHealth, they often feel unable to use the internet. Drawing on social cognitive theory, we seek to understand how internet self-efficacy affects the usage of eHealth among elderly people. As many elderly people nowadays are required to use the internet in their workplaces, we aim to explore the impact of prior occupational internet usage on self-efficacy. By conducting a representative study on 2,000 participants in the age of 55 to 75 in Germany, we seek to contribute to the knowledge on eHealth adoption and social inclusion of elderly people, as well as on prior occupational internet usage as a novel determinant of internet self-efficacy.

Keywords

E-health, Digital divide, Elderly people, Self-efficacy

Introduction

Electronic Health (eHealth) are measures to support healthcare through information and communication technologies (ICT) (Rozenkranz et al. 2013). Although the term originally encompassed a broad diversity of technologies targeted at different stakeholders, eHealth initiatives became increasingly consumer-directed. Nowadays, eHealth offerings generally aim at enabling consumers to take active control of their health and well-being by making health resources accessible via the web (Agarwal et al. 2010; Rozenkranz et al. 2013). Such web-based eHealth offerings include information portals, self-service applications, patient platforms (e.g. PatientsLikeMe.com), and special interest groups on social media platforms to name just a few (Rozenkranz et al. 2013). Furthermore, eHealth allows to engage in discussions with health experts and peers in similar situations (Eysenbach et al. 2004; Leimeister and Krcmar 2005).

Given these advantages, it is not surprising that web-based eHealth offerings gained popularity in recent years. For instance, in 2009, 61% of the adults in the United States used the internet to access information about their illnesses and treatment options (Fox and Jones 2009). In Germany, the number of people using the internet for health information nearly doubled from 34% in 2006 to 58% in 2013 (EUROSTAT 2014). Subsequently, the internet is regarded as a major source for health information and medical decision support for private individuals (Kummervold et al. 2008).

In parallel to the constant evolution of eHealth, most developed economies face a significant shift in their age structure through steady increase of elderly people (OECD 2007; OECD 2011; OECD 2013). In Germany, the demographic change poses a tremendous challenge for the country's healthcare system as

chronic illnesses usually increase with age (Robert-Koch-Institut 2006). Subsequently, elderly people are usually the heaviest users of the healthcare system.

Given the ongoing increase of global healthcare spending (World Health Organization 2012) and the expected advantages of eHealth initiatives, such offerings seem to be ideally suited to improve health and well-being while saving resources in the healthcare system. However, although elderly people's internet usage increased steadily in recent years (ARD/ZDF 2014), more than the half of Germany's elderly population do not use the internet and thereby leave the potential of eHealth virtually untapped. They particularly state a lack of technical access and perceptions about missing computer skills as reasons for not using the internet (BITKOM 2014; Wagner et al. 2010).

This inequality between elderly and the younger generation regarding general access to ICTs and their ability to use ICTs creates a gap in many societies, frequently denoted as the 'digital divide' (Dewan and Riggins 2005). Particularly, the 'digital capability divide' referring to differences in skill levels (Dewan and Riggins 2005; Wei et al. 2011), is assumed to be of central importance to understand and improve the aging society's usage of eHealth in developed countries. In this regard, research introduced the concept of computer self-efficacy (CSE) referring to individuals' judgment of their capabilities to use computers (Compeau and Higgins 1995). As a task-specific derivative of CSE, internet self-efficacy (ISE) refers to the self-assessment of individuals about their abilities relevant to the internet (Lam and Lee 2006). Prior research demonstrates that CSE serves as a strong explanatory mechanism regarding the adoption and usage of ICT (Compeau and Higgins 1995; Marakas et al. 1998).

Since internet usage is necessary for utilizing eHealth offerings and empirical evidence points out that a large part of the elderly population in developed countries does not use the internet, we propose following research question:

RQ1: Does internet self-efficacy impact the intention of elderly people to use web-based eHealth offerings?

Prior computer usage was identified as a critical determinant of CSE (Marakas et al. 1998). However, many elderly people do not feel themselves able to use the internet (BITKOM 2014), although they make up an increasing portion of the workforce in organizations and, hence, are increasingly in the need to use computers and the internet to perform their jobs (Wagner et al. 2010). Since prior literature does not indicate how occupational internet usage by elderly people affects their self-efficacy, we further propose following research question:

RQ2: Does prior occupational internet usage affect the internet self-efficacy of elderly people?

The goal of this research is to apply the general concept of internet self-efficacy to the study of eHealth usage among elderly people. We aim to enhance theory by examining the impact of prior occupational internet usage on internet self-efficacy. Through a representative study among 2,000 elderly people in Germany, we further expect to contribute to the knowledge on social inclusion of elderly people.

The next section presents the theoretical background on (internet) self-efficacy and how the concept is related to individuals' ICT adoption and usage. Subsequently, we propose our guiding research model followed by our methodological research approach and the next steps to be taken. Lastly, we will discuss expected outcomes of our study and potential implications for theory and practice.

Theoretical Background

Self-efficacy in information systems

Social cognitive theory (SCT) (Bandura 1982; Bandura 1997) assumes that personal factors, behavior, and environmental factors reciprocally interact and influence each other (Bandura 1986). Self-efficacy (SE), defined as "the belief in one's capability to organize and execute the courses of action required to manage prospective situations" (Bandura 1997, p. 2), is considered as key determinant of human behavior (Bandura 1982; Bandura 1997). As it changes through the continuous acquisition of complex social, cognitive, and physical skills through experience, SE is dynamic in nature. Particularly the experience of mastery is considered as the most important determinant of SE (Bandura 1982; Torzadeh et al. 2006). It is important to note, however, that SE is "concerned not with the skills one has but with judgments of

what one can do with whatever skills one possesses” (Bandura 1986, p. 391). SCT further argues that an individual’s belief to successfully execute a behavior significantly impacts his/her expectations about the outcomes of performing the behavior (Compeau et al. 1999).

SCT has been widely accepted and empirically validated in a diversity of IS research contexts investigating the effect of SE on computer-related reactions of individuals and influential determinants of SE (e.g. Agarwal and Prasad 1999; Hsu and Chiu 2004; Weeger and Gewald 2014). As such, the concept of computer self-efficacy (CSE), defined as the “judgment of one’s capability to use a computer” (Compeau and Higgins 1995, p. 192), has been found to play a significant role in one’s decision to use computers (Marakas et al. 1998). CSE has been extended by internet self-efficacy (ISE), reflecting individual’s self-assessment of their abilities relevant to the internet (Hsu and Chiu 2004; Torkzadeh et al. 2006). Various determinants of CSE have been found along individual factors (e.g. training, usage, experience, successful interactions, age, and gender) and environmental factors (e.g. organizational support or encouragement from others) (Marakas et al. 1998).

Self-efficacy in the context of elderly people

As illustrated above, the concept of self-efficacy has been subject of extant research in the IS domain (Marakas et al. 1998; Thatcher and Perrewe 2002; Thatcher et al. 2008). Age is commonly seen as a key variable in technology adoption research (Venkatesh et al. 2003). Empirical evidence shows that elderly people have less CSE and ISE compared to younger individuals (e.g. Czaja et al. 2006; Mead et al. 2000). Hereunto, Lam and Lee (2006) applied SCT to examine internet adoption decisions of elderly people and revealed that ISE and outcome expectations are significant predictors of older peoples’ internet usage intention. Similarly, Niehaves and Plattfaut (2014) found self-efficacy to be the strongest determinant of internet usage behavior of people aged 65 and above.

However, Tams et al. (2014) state that further research is needed specifically focusing on how self-efficacy among elderly is shaped. In this regard, Wei et al. (2011) propose a model based on SCT encompassing causal relationships between access to ICT, CSE and related outcomes. Albeit targeted at the investigation of the access to ICT in school and home, the proposed model as such revealed great explanatory power. Most interestingly in the context of our research, Wei et al. (2011) revealed that school IT access and usage “had a significantly stronger impact on CSE for students without home computers than students with home computers” (p. 179). Following this argument, it seems to be reasonable to investigate the impact of occupational internet usage on ISE of elderly people and its effect on eHealth usage.

Research Model

In line with SCT (Compeau et al. 1999) and the work of Lam and Lee (2006), we propose that ISE and outcome expectations regarding the usage of web-based eHealth offerings are the primary determinants of eHealth usage. Moreover, we follow Wei et al. (2011) and focus on the effect of prior internet usage on ISE. Subsequently, our research model (Figure 1) aims to examine the causal relationships and effects between occupational internet usage, ISE and outcome expectations and their impact on the intention to use eHealth by elderly people. The relationships and their hypotheses will be discussed as follows.

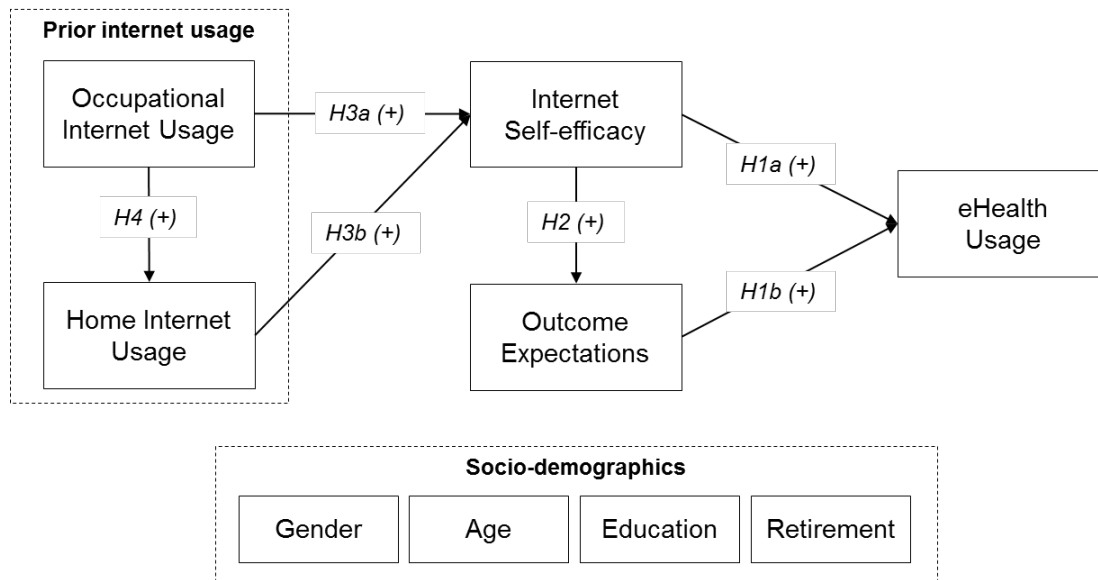


Figure 1: Research Model

Since our study does not focus on environmental factors such as access to technology or subjective norms, we confine our examination to the effect of outcome expectations and self-efficacy on eHealth usage. SCT's argument that individual behaviour is shaped by outcome expectations and self-efficacy (Compeau et al. 1999), has been similarly confirmed in the context of internet usage by elderly people (Lam and Lee 2006; Niehaves and Plattfaut 2014). Consequently, we propose that elderly's eHealth usage behaviour is particularly dependent on an individual's ISE and beliefs on how using eHealth offerings will positively impact health status and well-being (H1a, H1b).

Besides the notion that individuals are more likely to perform behaviors that they feel they are good at and to avoid those that they perceive to be not good at, self-efficacy judgments have been found to influence outcome expectations in general IS behavior (Compeau et al. 1999) and in the context of elderly's internet use alike (Lam and Lee 2006). It is argued that "the outcomes one expects derive largely from judgments as to how well one can execute the requisite behavior" (Bandura 1978, p. 241). Following this argument, we argue that higher ISE leads to higher outcome expectations of elderly people (H2).

Experience of mastery is considered as major determinant of one's self-efficacy (Bandura 1982). As to that, prior research has found positive effects of prior successful interactions with technology (e.g. training) on elderly people's self-efficacy perceptions (Lam and Lee 2006). As higher internet usage serves as an indicator for experience (Limayem et al. 2007), we, hence, hypothesize that the degree to which elderly people use the internet positively impacts their ISE perceptions (H3a, H3b).

As today's workplaces increasingly rely on internet usage, we assume that elderly people, who already used the internet at work are more familiar with the internet and are more likely to use the internet at home (H4). Subsequently, we argue that the effect of prior occupational internet usage on ISE perceptions is partly mediated through home internet usage. We further assume that for those elderly people with occupational internet experience, the effect of occupational internet usage on self-efficacy exceeds the effect of prior home internet usage on ISE.

Recognizing that there are divides in access to ICT by gender, age, income, education, and race (Dewan and Riggins 2005), we further integrate socio-demographic factors as control variables.

Research Methodology

In order to test our hypotheses, we will conduct a representative quantitative study among approximately 2,000 elderly Germans (aged 55-75) through a computer assisted telephone interview (CATI), where measurement items are asked over the telephone. The sample consists of individuals within the transition

from occupation to post-occupation life phases and, thus, will contain both employed and retired individuals. The study is scheduled for May to June 2015 and funding is secured.

Prior research on adoption, usage and self-efficacy offers a rich body of well-developed and established measurement items (e.g. Compeau et al. 1999; Hsu and Chiu 2004; Lam and Lee 2006; Marakas et al. 2007; Torkzadeh and Van Dyke 2001). Nevertheless, these items have to be adapted in order to be suitable for a CATI questionnaire.

A pre-test of the measurement instrument is planned by discussing the questionnaire with experts from the information systems field as well as with people of the targeted sample. The collected data will be then analyzed using Partial Least Squares (PLS), including assessment of common method biases etc.

Expected Outcomes and Contribution

The representative study and the targeted sample allow us to gain rich insights by providing a broader perspective on the mechanisms explaining eHealth usage by elderly people. The rich data set will enable us to analyze various facets of the targeted sample of the proposed model. Moreover, our research advances knowledge on the effects of occupational internet usage on the adoption of eHealth offerings through the lens of SCT. As such, this research will shed light on how the self-efficacy perceptions of elderly people can be explained. While prior research largely demonstrated that age generally has an impact on several IS phenomena, our research takes place within the segment of elderly people, and, thus allows us to enhance our understanding through fine-grained comparisons between age groups and differences within their occupational internet usage (Tams et al. 2014). Moreover, we aim to contribute to SCT by exploring the impact of prior occupational internet usage as a determinant of self-efficacy.

As a practical outcome of our research, we aim to reveal the impact of organizational working conditions on the digital divide and as such, on the ability of elderly people to make use of eHealth. The results are expected to have a notable impact on the well-being of elderly people and shaping of our society.

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