Master Thesis communication studies

New Media and Communication

University of Twente

Targeting Silver Surfer:

E-Shopping 2.0: Factors that support or impede the participation of Silver Surfer

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Düsseldorf, 24th of November 2016

Abstract

Demographic change is affecting our lives in many ways. The economy, in particular, must transform itself to secure its future by conforming to new conditions. Next to demographic change, the impact of digitization has increased enormously in the past few years: e-commerce and, in particular, e-shopping are already expanding, and soon e-commerce will be at the centre of the modern economy. Although demographic change and its consequences are well known, as well as the financial power of the elderly—called Silver Surfer in online marketing parlance—what is little known is how to target them right now. The question is: What are the factors that support or affect their access to and participation in e-shopping?

The aim of this research is to investigate those determining factors that support the intention of Silver Surfers in Germany to participate in e-shopping. Based on a theoretical framework, it has been assumed that factors such as usability, website structure, digital skills, knowledge, trust, privacy, service quality, frequency, interactivity and relative advantage would influence the dependent variable 'intention to participate online.' To measure the impact of those possible factors a online survey based on a Likert scale was created. A total of 176 Silver Surfers participated in the survey. Later on, the results of the survey were described and interpreted through both, factor analysis and regression.

The results showed that initially supposed dependent variables exercise any influence on the intention to participate online. However, factor analysis showed that new composed factors do influence the intention to participate. Ultimately, this study showed that the factors 'digital literacy,' 'customer service benefits' and 'relative advantage' decisively influence the intentions of Silver Surfer to participate online. Moreover, a comparison with younger users has been conducted, which showed that the factors contributing to participation differ between the age groups.

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1. Introduction

Digitization and demographic change both have had a serious impact on markets, business and society. Since the mid- 1970s, the birth rate in Germany is persistently low. The constantly increasing life expectancy has led to a drastic change in the size relationship between the generations. The proportion of under -20s in the population decreased 1960-2011 from 28.4 to 18.2 percent. At the same time, the proportion of individuals who were 60 years and older increased from 17.4 to 26.6 percent (ECC, 2013).

However, while demographic change is very slow and its full impact will be considerable after many years, societal change can be seen already when the advances in technology companies and markets, occurring at breath-taking speed, are considered. Companies and organizations that want to get ready today for the changes tomorrow have to realign their views to manage the many unexpected opportunities that arise when one thinks of digitization and demographic change at once.

One of the areas of digitization affected the most is e-shopping, a form of electronic commerce that enables consumers to immediately buy goods or services from a seller by using the internet. With the increasing success of the internet, e-shopping has also benefited, and in the last 15 years, the growth of e-commerce has been rapid. While the German sales volume of e-commerce in 1999 was only around a billion Euros, in 2013 the amount has increased and the sales volume was around 44 billion Euros (HDE, 2013). This volume is more than double the figure of 2011 and the predictions for continuous increase are still enormous. In 2018, the sales volume of e-commerce is expected to grow up to 84 billion Euros (Statista, 2015).

The elderly account for a significant share of this development because they are, proportionally, the biggest group of the German population, and have the highest purchasing power (Rößing,2010).

elders seems to be different in contrast to younger age groups. Although the proportion of older users is increasing, however, the elderly focus on other online benefits. Schwabe (2013) found that older people focus mainly on searching for information and in addition they make use of online banking functions. However, their share of online shopping is very low. It also points out that the elderly have different digital information skills than younger user . It could be assumed that differences would occur in accordance with the participation in online shopping within the population: In particular, between the group of Silver Surfers, which has been mainly examined, and the control group of younger participants under 50 years. It had to be assumed that they would have different views within the different constructs. Thus, with the moderating variable, possible differences could be analysed. In addition to the factors that could prevent the participation of the Silver Surfers, the participation certificates which can be considered important factors in the perception of younger participants could be measured. Thus, it was able to predict whether subsequent implications of the study are consistent with the interests of different target groups by using the age as a moderating variable.

There are many studies that deal with age and internet usage. Most studies of this topic have in common that 50+ users rarely use the internet compared to younger users. Pencun found in their study (2005) that internet usage is definitely associated with age. Within this study, also tested was the participation among various channels, including online shopping channels. The analysis led to the same results, viz., participation differs from age group to age group. If it is assumed that participation is moderated by the age of users, for the underlying notion it can be assumed, too, that the variable age influences the independent variables as well as the intention to participate. Thus, it can be assumed—thanks to the theoretical

basis—that between Silver Surfers and younger users, different factors determine whether they participate in online shopping.

The term ‘Silver Surfer’ has been created to describe older internet users from about 50 years onwards. Silver Surfers are characterized as the group with the highest purchasing power. For instance, the 60-year-olds command around 50% of the total income and assets in Germany, according to information from the Federal Statistical Office (Statistisches Bundesamt Wiesbaden, 2013). The number of Silver Surfers online is still increasing, and they tend to be responsible for the recent growth of the internet. In terms of internet use, they had in 2014 the highest increase (+4.7%). However, in toto, just every other 50+ person is online right now. In comparison, almost 96% users between 14 and 29 are online. The number of online users between 30 and 49 is about 87% (Initiative 21, 2014). The participation in e-shopping by Silver Surfers has increased in the past few years; but according to recent studies, their frequency of buying online is minimal and infrequent compared to younger users (PwC, 2014). Nonetheless, because of the much higher purchasing power of Silver Surfers, it is necessary to know why they spend less money on e-shopping than poorer age groups. Interests and attitudes of the Silver Surfers towards certain characteristics of the internet sometimes differ from those of other age groups. Based on literature, the limited activity in web 2.0 networks and e-shopping has been considered mainly on the basis of two factors: Firstly, Silver Surfers have particular expectations of privacy and security in the network (Wydler, 2008). Further, their lack of confidence in the handling of the data provided has been noted, and a lot of researchers assume that the elderly differ in their digital skills. Finally, uncertainty and disability may tend to be factors that conceal the access to use, particularly as far as e-shopping is concerned. The aim of this research is to investigate those factors that support the e-shopping of Silver Surfers and, in addition, the factors that impede the use of online shopping. Further,

this research tries to investigate about the differences between the elderly and younger users online. Hence, the research question is:

"*What are the factors that support or prevent the intention to participate in online shopping by Silver Surfers?*

In this study, the model of Ajzen & Fishbein is adapted the online behaviour of Silver Surfer. The focus is on attitude towards the behaviour and perceived behavior control. Subjective norm are not considered in the study, since it cannot be assumed that social pressure can affect the online behaviour of Silver Surfer.

The present study examines the influence of the potentially independent variables *digital skills, digital knowledge, frequency, service quality, interaction, trust, privacy* and *relative advantage.*

2. Theoretical Framework

This chapter will discuss a theoretical framework in connection with the topic of the present study. First, some communication theories about the use and adaption of technology will be connected to the present topic. Afterwards, previous literature regarding the dependent and independent variables will be presented. Based on the literature review, the respective hypotheses for each variable will be devised. At the end of this chapter, a research model for the present study will be drawn up.

2.1 The Theory of Planned Behaviour

Attitude towards behaviour is described as the individual's positive or negative feelings about performing a certain behaviour. It is posited through an evaluation of an individual's beliefs concerning the consequences arising from a behaviour and an evaluation of the desirability of those consequences. Summing up, the overall attitude can be suggested as the sum of the individual evaluations of consequence desirability for all expected consequences of the behaviour (Eagly & Chalken, 1993).

In this study, attitude towards the behaviour is used as one of two basic constructs. The independent variables *usability, website structure, service quality, interaction, trust, privacy and relative advantage* are added and used as indicators of online Intentions.

Based on the assumption that Silver Surfer‘s digital skills are low, it can be assumed that their attitude is negative. All factors that influence the content of a site potentially influence the attitude of Silver Surfer in a negative way. Especially those factors are usability, content and structure. If the usability is poor in terms of not appropriate for using by Silver Surfer, it could lead to frustration. In addition, if the website structure is confusing in terms of information overload or unclear signs e.g. , also this could demotivate the Silver Surfer. If the interaction options are limited or no adequate service is

provided, Silver Surfer could be helpless and finally they could quit the website. Thus, the factors potentially could all decrease the attitude towards the behavior and thus the chance of intention to participate would decrease, too. Negative effects of these factors would certainly affect the expectations of the Silver Surfer negative in terms of the medium.

Next to this, we have to consider opportunities and resources that are available for an individual do influence his/her actual behavior (Ajzen, 1991). The behaviour is also exercised by the perceived difficulty or ease of behaviour influences. An indicator for a positive response of the individual is the likely extent to which the practice is successful. The more resources and opportunities an individual possesses and the fewer obstacles and hurdles he/she perceives the greater should be the extent of his/her 'perceived behavioural control' (Ajzen, 1991).

Perceived behavioural control is the second adapted construct. The independent variable 'Digital skills, knowledge and frequency are added here as authoritative indicators of control. Perceived behavioral control refers to people's perceptions of their ability to perform a given behaviour.

If Silver Surfers do not feel able to command online shopping according to their digital skills and their digital knowledge , so the probability of an intention to participate online also decreases. Thus, digital skills and knowledge are a set of accessible control beliefs. Frequency can be seen as well as a control belief because someone's aversion to a medium decreases the more often there are boundary points. The less the Silver Surfer feel to be able to command adequately the medium the lower is the change of online participation.

The crux of the theory of planned behavior in relation to this case is the following : The Silver Surfers must be both digitally savvy as well as a

perceived control over the media have to get a positive attitude which ultimately leads to an actual intention .

The Theory of Planned Behaviour (Ajzen & Fishbein, 1977) is an extension of the Theory of Reasoned Action (Ajzen, 1975). In this theory, the 'behavioural intention' (BI) has become the central component, and thus, the outcome. Behavioural intention can be described as an indication of an individual's willingness to perform a given behaviour. BI is supposed to be an immediate influencer of actual behaviour. It is postulated that three conceptually different components influence BI. These components are 'attitude towards the behaviour,' 'subjective norm' and 'perceived behavioural control.' The general assumption is: The more positive the attitude to a behaviour and the subjective norm and the greater the 'perceived behavioural control,' the more strongly the 'behavioural intention' of an individual manifests itself. It is also assumed that the relative importance of the three factors varies, depending on the prediction of the 'behavioural intention' of any situation and the behaviour of time.

2.2 Intention to Participate in Online Shopping

The dependent variable in this research is 'intention to participate in e-shopping' because, all in all,the conditions under which Silver Surfers are becoming potential online buyers has to be investigated, as well as the factors that determine or impede their participation. Djoub (2013) recognized that digital ICTs are able to support the independence of the elderly by promoting social inclusion and facilitating access to commercial and government services.

Starting from the basic motivation of the Silver Surfers, it is crucial to determine the factors influencing their online behavior. The relationship between 'intentions' and behaviour was investigated in numerous studies and

for different behaviour patterns. If, for a certain behaviour, there are no fundamental problems with regard to its controllability, it can be accurately predicted (Ajzen, Brown & Carvajal, 2004; Ajzen & Fishbein, 1977). A much-studied example is the 'choice intention' of people just before an election. Ajzen and Fishbein (1980) were able to show a correlative link between the 'choice intention' and the actual voting behaviour. Online behaviour, therefore, should be able to determine the intention to participate online.

2.3 Independent Variables

2.3.1 Usability

Older users have special requirements for websites. For one, they have certain physical conditions. Further, they have less experience in dealing with the internet. This must be taken into account when designing online services (Hunke, 2011).

Just the design can be decisive when a user makes a judgment about a website. The complexity of the layout has a great impact on satisfaction with a website. The simpler, clearer and more structured the pages are, the more positive they are valued by older users (Bernard et Al., 2001). The elderly place special demands on the font size. Hence, Silver Surfers prefer a large font online, which should be sans serif as well (Kurniawan, 2005). The elderly have a special requirements set, especially with regard to the use of colors and the compatibility of the application. According to Kurniawan, the elderly value reticently used colours and clear contrasts (e.g. a clear separation of blues and greens), as well as on unchanging background colours. They also prefer a background that is not pure white.

Schulz (2004) focuses on the special requirements of websites in terms of usability and accessibility. In this context, she also considers the legislation and the DIN specifications for websites. According to her conclusions, many sites are

not geared to the personalized management of the elderly, as they sometimes have disabilities, simply based on age and natural physical decline. The elderly are experiencing age-specific barriers in the use of online media, which can be similar to those for disabled persons. Furthermore, Silver Surfers have difficulties when reading small print. To click on tiny font or icons entail, for them a special challenge due to disorders. In addition, the elderly had physical difficulties in following pull-down menus and in using link hierarchies that can only be controlled with push-through mouse-clicks. Schulz expressed some advice for the interface design of websites: Websites should have a generally understandable vocabulary and avoid new-fangled and hip language. Error messages should clearly explain what went wrong and how the error can be corrected.

Generally, age-appropriate physical handicaps in the usability should be considered as well. Here, we come to the specific issue of access. Since older people may be affected by disability, a now legally regulated aspect of internet use should be considered: Accessibility. The elderly are experiencing age-specific barriers in the use of online media that may be similar to those for the disabled. Thus, it is important to consider usability issues and criteria for accessible web design. According to the Act on Equal Opportunities for Disabled People (2002), program surfaces, therefore, have to be designed in such a way that they can be used by disabled people without problems. Based on the study of Schulz, the physical disabilities of Silver Surfers have to be respected. This can be done mainly by avoiding search fields and, if possible, by avoiding following up own entries on the website as well.

We can conclude that a website has to be easy to use with special respect to the physical abilities of the target group. This ease includes bright colours, clear contrast and bright fonts. Furthermore, the website should allow users to get tailored information in a way that is not complicated. In addition, the theory indicates that

pull-down menus have to be avoided when designing age-based websites. If these factors are considered, the following hypothesis can be done:

H1: Usability positively influences the intention to participate in e-shopping.

2.3.2 Website structure

Also, the information architecture should not be too complex. Instead, it should be devised on the basis of the maxim: Content is king and less is more. The content of websites and their treatment are important for Silver Surfers (Trobisch, 2007).

A clear, understandable language and the absence of extraneous information are critically important (Bernard et al., 2001)). Interestingly, Silver Surfers emphasize the need to have important content at the centre of the page. Left alignment, line spacing, larger, short phrases and lines and a clear text outline, including large headings and sub-headings, are listed by elderly subjects as important criteria for good content.

Older users have more orientation problems on websites than younger users (Nielsen, 2002). The Silver Surfers spent a lot of unnecessary time on websites because they accidentally click on wrong webpages and they are overstrained to click return buttons.

Next to this, an online shopping platform should be used to contain an understandable structure and content. Structure and content include not only the website's text, which has to be understandable, by avoiding technical terms or hip language. In addition, the website labels have to be easy to understand as well. Finally, it is necessary to provide accurate information about the product delivery (duration, package tracking).

By their general distrust Silver Surfer simply want detailed information about all possible information (Etrillard ,2001).If these factors are considered, the following hypothesis can be assumed.

H2: Structure and Content positively influence participation in e-shopping.

2.3.3 Digital Skills

Choudrie, Ghinea and Songonuga (2013) have investigated a shift in the conventional mode of public service delivery from the face-to-face and telephone modes to electronic means by concerning global providers of e-government, online products and services to citizens. A lack of knowledge and skills in the use of computers or internet appeared as hidden factors that affect silver surfers participation.

Van Deursen & Van Dijk (2015) state as age increases, internet skill levels decreases by analyzing operational internet skills which can be considered as basic skills required to use the internet. Further, Van Deursen (2011) found out that age has a negative influence of medium related skills. Those skills need to be developed by educational attainment and people do not learn digital skills in practice. Due to this assumption it can be considered that Silver Surfer need to be educated online to participate online successfully.

Further, Van Deursen et. Al. (2011) state that the elderly perform better at content-related skills in comparison with younger users but due to a lack of medium related skills it is difficult to use their content related ability for the elderly. Silver Surfer seem to be able to fulfill their information needs online, so they should dispose about information internet skills. On the other hand, Silver Surfer seem to have a lack of operational internet skills; they are not unable to completely use the internet technology. As a consequence, the elderly seem to have either a lack of formal internet skills as well as strategic internet skills. Formal internet skills refer to the hypermedia structure of the internet which requires the skills of navigation and orientation (Van Deursen, 2010) ; strategic internet skills are the ability to reach online goals. So, it can be assumed that information skills alone are insufficient to effectively participate online.

Search engines are the most powerful contact points for all information seekers on the internet. But in addition to the use for general information, search engines are being increasingly used as a ‘shopping tool’ for products and services—both by private users (business-to-consumer, short B2C) as well as business seekers (business-to-business, short B2B). Search engines are also the most important research tool when searching on the World Wide Web in general (Machill, 2007). Understanding search engines and using them, therefore, can be seen as an important part of digital skills and also for participation in online shopping. In addition to search engines, price comparisons are also acquiring increasing popularity and importance. With regard to participation in online shopping, in particular, the skills to use price comparisons online should be considered as well.

Schulz (2004) found out that search engines and forms were found to be intolerant in terms of requests in the perception of the elderly. Older users had problems to adjust their inputs to the specifications of forms—a clip or a dash too much—and the interaction failed.

It is further assumed that good digital skills would affect participation in e-shopping. Conversely, poor digital skills should reduce participation. If digital skills are considered, at least the possibilities to operate on the internet and of course comparison of shopping sites need to be identified.

H3: Digital skills positively influence the participation in e-shopping.

2.3.4 Digital Knowledge

The variable ‘knowledge’ thematically refers to product comparison machines and search engines as well as general knowledge about purchases of products online. However, there is a significant difference between the terms ‘skills’ and ‘knowledge.’ Skills describe the actual application, and so the ability to implement the knowledge in practice, while knowledge describes the theoretical capacity. This means that users may have the theoretical knowledge, but not the ability to

implement this knowledge. Nevertheless, the motivation to participate in online shopping by Silver Surfers could be high because their knowledge is high, too. Older users often have a good theoretical understanding, but they do not know how to put this into practice (Meyer-Hentschel, 2004). Even though it has been suggested that 'knowledge' and 'skills' are related, a separate consideration is useful.

There is a difference between operating skills and knowledge. While digital skills consider the actual operative skills, knowledge focuses on the general possibility to use the internet with special respect to online shopping platforms by regarding their general knowledge about the possibilities of the internet. It can be assumed that higher knowledge, in general, would lead to higher participation. Here, it is a necessity that respondents need to know the basic functions of buying products online, product comparisons and search engines. If there is a basic level of knowledge, the following hypothesis can be assumed:

H4: (Online) Knowledge positively influences the participation in e-shopping.

2.3.5 Frequency

Charness & Olson et al. (2011) have argued about ‘the common misconception that older adults do not want to use or cannot use technology’ because for a large group of the elderly, the statement is not applicable. The researchers assumed that the elderly do use technologies similar to their younger counterparts but the rate of usage was different. They also criticized that previous research in the field of digital inequality between young and old due to technology as usage has focused on the ‘used’ or ‘not used’ standpoint. Hence, this study has considered age-related differences in overall usage of technologies, as well as frequency of technology usage. The results show that younger users make more widespread use of technologies than the elderly.

In addition, Choudrie, Grey et al. (2010) tried to explore factors that increase the adoption and usage of online products and services by Silver Surfers. They

found that technical factors do not have importance in comparison with non-technical factors, which were assumed to be crucial and necessary to encourage the (online) interactivity of Silver Surfers. Apart from technical factors, the researchers mentioned the factors ‘interest’ and ‘communication’ as suitable for the adoption and use of technology.

Mahn (2006) deals with general barriers that prevent Silver Surfers from taking an active part online. She found out that the more often seniors use the internet, the more improved their digital skills are. Improved digital skills also increase motivation. In addition, Farke (1998) found in her study that frequent use of chat and email definitely cause massive increases in internet consumption. Kreuzer (2014) has considered another study by the ACTA that attests that there are more and more repetitive buyers on the internet. This suggests the hypothesis that experience in online shopping leads to a higher online readiness.

It seems hardly a subject of argument that frequent use leads to greater participation. Of course, in this case, the individual channels are interesting because the more the number of channels that a user uses, the greater is his/her experience. Therefore, it is likely that frequent computer use, frequent use of email and chat systems, and the online purchase of products online contribute to greater participation. After taking into consideration these three factors cumulatively, the following hypothesis can be made:

H5: A high frequent use of the internet positively influences the participation in e-shopping.

2.3.6 Website Service Quality

There are many interfaces between traditional trade and e-shopping, especially due to the evaluation of services in the perceptions of costumers. For this purpose, Nassen and Stöckler (2012) have carried out an investigation in order to determine the

factors that are crucial to satisfy customers. They developed their own measurement based on the Kano model for service quality and added some extra values. Eventually, they created three dimensions of factors that are necessary to satisfy customers. Two of these factors can be important for this research: Users want accurate information when delivery occurs. Further, manifold selectable payment methods would increase the customer's image review and eventually lead to higher participation. Also, if this research had not explicitly focused on Silver Surfers, but on general customers, it seems plausible that Silver Surfers use the same criteria to judge service quality.

The research of the E-Commerce Center Cologne (2014) has shown results of the same tenor. Consulting and speedy services as well as problem-solving are important to convince customers. Furthermore, the researchers investigated that more and more customers appreciate multi-channel services. The mere possibility to contact the service provider in various ways would be satisfactory. Old channels, such as e-mail and phone, have achieved good results, but especially a click-to-chat function seems to be very important and is highly appreciated by online customers.

Dieter (2007) focused on information about products on websites. They found out that product and price information often are too complex, which leads to a rejection of the customer. Thus, a good website should focus on accurate and non-complex information about products and prices. A high comprehensibility of texts and accurate explanations of examples improve the user's willingness to buy; thus, texting acquires enormous importance, suggested by a study of Jacobsen (2005). Therefore, the factor 'Website Service Quality' also includes the experience of a good usability.

Concerning the website service quality, it is known from literature that the shop vendor has to provide speedy service to customers. Furthermore, specific needs of the customer should be specifically tailored and the user also desires manifold

selectable payment methods. On including this, the following hypothesis can be made:

H6: Website service quality positively influences participation in e-shopping.

2.3.7 Interactivity

Schulz (2004) has considered the need for interactive support on the part of the elderly. Communication should be transmitted in an age-based and clear manner. An appropriate medium can help improve effective communication. Seniors face bigger problems than younger users and have to learn new things.

However, they can apply existing knowledge well. Through interactive support, this knowledge can be applied in an enhanced manner. The more communication channels are offered in a supportive manner, the more successful is the chance that older users can act.

Feedback systems, in general, seem to be an important requirement of users. Multichannel feedback and contact options have to be named here as well as interactive features like chat systems. Furthermore, it is important to deliver information accurately and centrally like FAQs and contact buttons. With respect to these factors, it can be assumed that:

H7: Interactivity positively influences participation in e-shopping.

2.3.8 Trust

Eventually, what most internet users have in common is that they want to be safe during transactions. First, users are concerned that personal data would be given to third parties. Furthermore, just during the online payments, users are afraid that someone could be able to spy out and abuse data (Duscha & Klees, 2012). To obtain knowledge about the requirements of internet users related to security, the initiative ‘digital middle-class’ (2014) commissioned several researches to recommend practicable actions to web stores. According to their findings, verified cachets and trust signs are trustworthy. In addition, users feel confident if they can choose their

preferred method of payments. It can be assumed that these findings are also affecting the Silver Surfer because they attach special importance to security: they are uncertain and do not have enough digital skills in their own perception (Pompe, 2007).

The importance of labels and certificates online is also becoming increasingly important. The study of ECC (2015) shows that confidence-building measures are generally appreciated. The comparative analysis also shows that the seal of approval and payment procedures are respected more by older age groups. Experienced online shoppers pay more, depending on whether a shop is certified by a seal of approval or not. The online survey of over 1,000 online shoppers found that nearly 74 per cent consider seals of quality when choosing a shop. Further, 64 per cent said they buy even more in a certified web shop, as in a shop without labels.

The EHI Retail Institute published its online payment study in 2014; the study assumed that only 14.8 per cent of German online purchases are paid with credit cards. In the previous year, the figure was 17.9 per cent. The purchase on account is still most popular. The fact that direct debit is widespread has a simple reason: Amazon.de generates an estimated 85 per cent of its sales from the electronic direct debit and, through the increasing market share of Amazon, the general use of direct debit grows, too. PayPal has been another growing payment method; it has increased from 16.1 to 19.9 per cent.

For online merchants, the results show the need to reconsider their offered payment options. Those who continue to rely on a limited supply could lose customers and find it difficult to attract new customers. Silver Surfers especially do not feel safe about credit cards because they worry about a potential abuse of their data (Kiefer, 2014).

Another construct that is considered as important is trust. Trust means, according to literature, the product quality of vendors. The quality is an important indicator for the website performance and users tend not to participate online if the quality is bad.

Furthermore, the terms and conditions of the website could be considered as an important construct as well as certifications and trust signs. So, if these factors are considered, it can be suggested that:

H8: Trust positively influences the participation in e-shopping.

2.3.9 Privacy

Privacy is not insignificant for the elderly. They are suspicious because they do not know what information they give and to whom. In the internet, especially, privacy has acquired high importance for users: Three-quarters of internet users do not know what organizations or website operators do with their data. More than half are worried about the fact that the website operators record their surfing habits. In particular, for older users who are technically less versed, this is a problem. In particular, the elderly are concerned how to deal with money. For this financially strong group of users, financial transactions are quite important, because the elderly are unschooled, especially with transactions on the internet.

Next to trust, of course, privacy seems to be an influential factor. Safe transactions, a careful use of personal data and worries about credit card information have been mentioned as factors in the literature. These have to be mentioned as the factors indicated for the following hypothesis:

H9: Privacy positively influences the participation in e-shopping.

2.3.10 Relative Advantage

Finally, the relative advantage of a medium has to be considered; the degree to which a new service is more advantageous to the users than competing services (Shimp, 2013). Silver Surfer need to believe that the internet is better at some function to participate, especially in comparison with traditional media. So, the shopping website includes its possibility when completing business with the company. It has to be an improvement when regarding classical platforms, if it is to be considered an

advantage in the perception of the target group. If such an advantage can be considered, it can be said that:

H10**:** A relative advantage of the shopping platform positively influences the participation in e-shopping.

2.4 Differences between age groups

The main target group consisted of German people aged 50 and up. This decision was made because several literature reviews have determined this age as a requirement for Silver Surfer (also called 'generation fifty plus,' 'fifty plussers'). Furthermore, people between 50 and 59 are the second biggest sub-population in Germany; people between 60 and 69 are the third biggest. In addition, people between 50 and 59 have the highest spending power in Germany, closely followed by the age group 60–69. Overall, in 2013, the amount of people aged 50 and up was about 47% in Germany (Statista, 2013). Owing to that, the aim of the present study was to target an equal amount of Silver Surfers and younger people.

Silver Surfer differ not only demographically and in terms of wealth from younger users, but also in dealing with the Internet. By definition, younger users can be rather assigned to the segment of so called 'heavy users'. Thus, they are users who are online above average (Bünte, 2006). They are online more often concerning social networks, forums, virtual games but also in particular at e-commerce stores. Here, younger users spend money higher-than-average. However, Silver Surfer belong to the category of light users and spend accordingly less time online. They also spend less money, even though they have the necessary capital as opposed to younger users. Accordingly, it is already economically interesting to analyze to what extent the factors differ between the different age groups.

H11: The factors that support participation in e-shopping differ between Silver Surfers and younger users.

2.5 Conceptual Research Model

The research model Figure 1 is conducted to draw a visual overview of the present study. Again, the theory of planned behavior is used to divide the independent variables. The dependent variables usability, structure, frequency, service quality, interactivity, trust, privacy and relative advantage are part of attitude towards the behavior, whereas digitals skills and knowledge are part of perceived behavioral control.

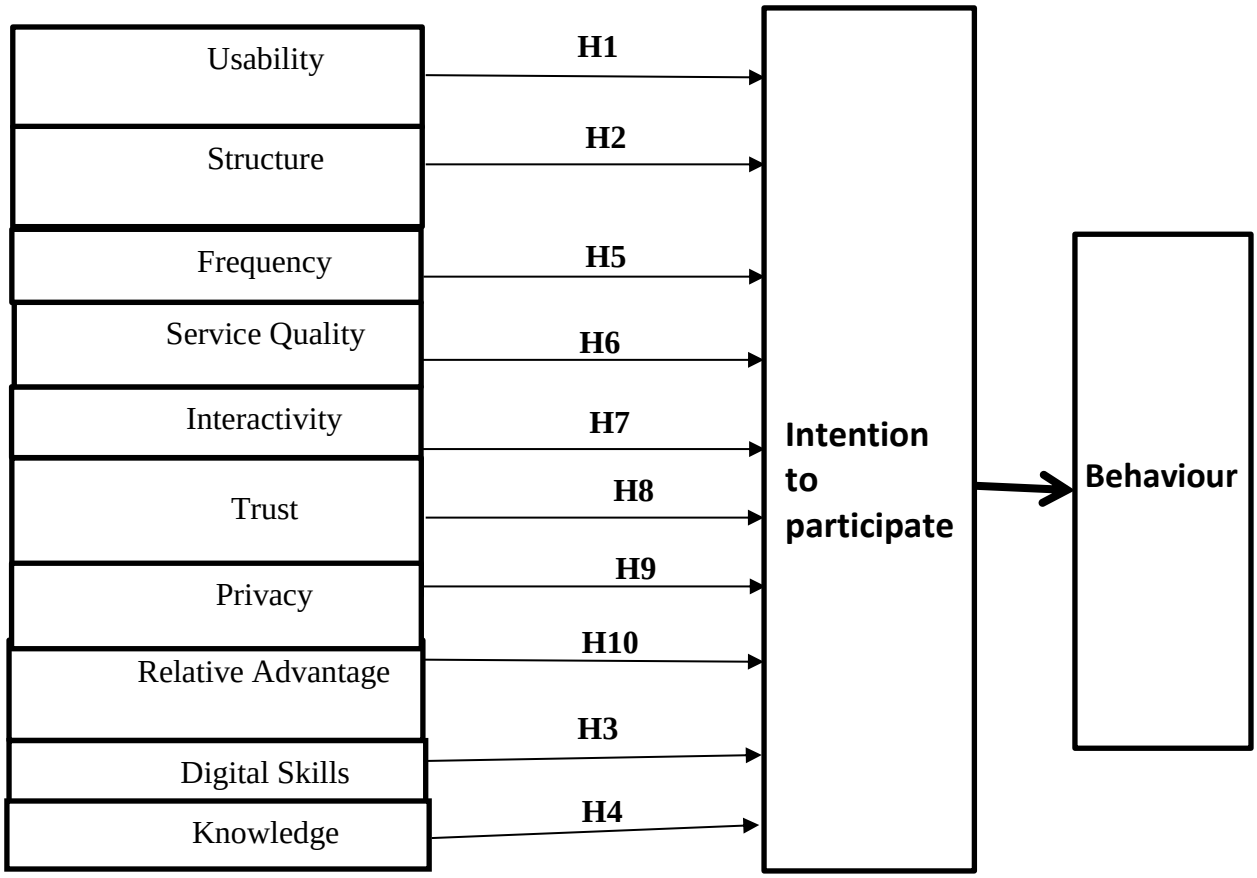

Figure 1. Conceptual Model and proposed hypotheses.

3. Methodology

3.1 Research Design

The aim of this study was to investigate factors that predict the online participation of Silver Surfer. Participant responses were measured by several judgements about usability, website structure, digital skills, digital knowledge, frequency, website service quality, interactivity and trust to determine their intention to participate. Thus, to answer the research question a descriptive research design was used. Descriptive research takes up the large part of online surveying and is considered as quantitative research. This study has been preplanned and was also structured in design in order to collect information that can be statistically inferred. This characteristica makes the research design descrpitive.

3.2 Pre Study

Since the independent variables were purely theoretical and had not been previously tested for plausibility and validity, several pretests were necessary to determine face validity as well as content validity.

Face validity depends on whether a measuring instrument seems plausible for everyone in general. Face validity says nothing about actual validity but determines law on the acceptance of a measurement method (Holden, 1979). Further, content validity refers to one aspect of construct validity and is valid when the measurements of a construct capture its contents (McIntire, 2013). In order to verify face validity, at first a focus group has been assembled. Later on, another group of respondents participated in a study using the plus min method to secure the content validity, too. Face and content validity had to be verified to secure the eligibility of concepts derived from theory.

3.2.1 Focus Group to test face validity of concepts involved

To make sure that the theoretical framework does fit a relevance in practice the dependent variables had to be validated before the instrument could be designed. Further, some topics may have been disregarded, although these could be important. To control the suitability of the

topics chosen, a focus group was assembled. Two retired Silver Surfers (64, male and 63, female); two working Silver Surfers (50, female and 53, male) and two younger users (41, male and 29, female) were part of the focus group. The actual task of the focus group was to test whether all relevant concepts were included in this research. In accordance, the focus group session was to let them judge about popular shopping webstores according to individual favor and disfavor.

The session started with a sequential presentation of the most popular shopping platforms from Germany on a big screen (www.amazon.de, www.ebay.de, www.otto.de). Then the participants were asked about the individual websites, what they like about it, what they do not like; and explanations for their sympathy or antipathy were sought. After the discussion on each of the website was completed, the results of the discussion were summarized by the moderator. It was also asked whether the participants missed something on the site. Naming the factors 'trust,' 'usability,' 'website service quality,' 'frequency' and 'digital skills' was deliberately avoided because this could manipulate the opinions of the participants. After the assessment of the websites was completed, the participants were asked about their general digital skills, their internet usage and their requirements in relation to online shopping platforms. Here, each participant was allowed to express, in his/her opinion, the three main requirements.

The evaluation has been done in accordance of the intelligibility of upcoming questions and statements of the participants. In addition, the relevance of the statements has been queried. Upon completion of the whole questionnaire, a conclusion regarding the perception of the respondents was drawn. To judge and elaborate the opinions of the participants a score model was used. In this model sentences were categorized and got scores from negative (-1) to positive (+1). In this conclusion, they were able to report the lack of topics and about the significance of the survey.

The findings of the focus group indicate that the factor 'usability,' in particular, was named several times in relation to its different features (clear structure, navigation, content, ease of

use). Further, website service quality seemed to be important, too (feedback, manifold payment methods). Even trust was named several times, in respect of privacy and worries about using the credit card. The need for multichannel support, contact, and FAQs & About Us features have not been a topic in this study earlier. Regarding the fact that it seems to be a crucial part of website service quality, it had to be added. Appendix B shows the evaluations of the focus group.

3.2.2 Plus Minus Method to assess the quality of the draft questionnaire

Based on the results of the focus group, a first test questionnaire was designed, including items gleaned from previous tested studies and own items (see Appendix A). In this research, a small group of respondents was asked to give accurate and honest feedback, so that adjustments could be done.

The plus minus method is suitable to obtain judgments of respondents. In general, the method is suitable for text, graphics, layout, logos and other graphical elements. In this pretest, the plus min method was used to discover textual misapprehensions as well incomprehensible content of the test items. For instance, the wording and comprehensibility of the test questionnaire was tested in order to cancel unreliable items afterwards (Sheskin, 1997).

On first reading / seeing, respondents should spontaneously put pluses or minuses in the margin. Respondents may put as many pluses and minuses as they like, with words, sentences, paragraphs, headings, illustrations and other elements. The participants have answered the questionnaire under the supervision of the researcher to answer emerged questions.

The results of the plus minus method have shown that a lot of items needed to be revised. Especially the comprehensibility and the wording needed to be changed because the wording has been too vague and the content seemed to be too broad. Especially the construct ‘usability’ was affected, for this construct all items had to be renewed. Furthermore, the deviance between the constructs usability and website structure obviously has been too low. The used items should have been renewed in a more specific way. Next to the previous mentioned constructs, the construct website service quality also had some misapprehensions. The main problem

tended to be the amount of information for each item. Items assembled different meanings and so it was difficult to answer them clear when using Likert scales. Appendix C shows the results of the plus minus method including deleted items. After the evaluation of the plus minus method it could be observed that the survey had to be revised again. In particular, the items relating to usability were still too general. Moreover, the items were partly irrelevant and the issue was not adequately addressed due to the factor of visualization. As a consequence, these items were reworded and summarized. In addition, items were excluded from the study. Those items have been replaced through items of the study of Schulz (2004, see literature review), who respected an age-appropriate visualization approach of websites more. Concerning the factor Website Service Quality, some misplaced items had to be deleted as well. Some specific issues such as FAQs, contact information and multi-channel service were missed. The items named are very specific and have not resorted to existing items from other studies, so for the current study of participation in e-shopping, more new and specific items had to be created. The list of items can be considered in Appendix D; there is no difference between pilot testing and the final list of items in the survey

3.2.3 Pilot Testing to indicate internal consistency of constructs

Next to content and face validity it was also important to verify reliability of the remaining items, a pilot testing has been submitted to participants.

In total, 15 participants were asked to do the pilot testing. Due to Sirakaya-Turk (2011) at least 50 respondents usually are recommended for pilot testing. Because focus groups and plus minus method already were tested, the researcher had enough data to forecast the statistics. Ten respondents were at least 50 and five respondents were younger than 50. The participants were reached through online and offline distribution by the researcher’s parents who had a lot of acquaintances who were aged older than 50. Table 1 shows the results of the subsequent reliability analysis. As mentioned above, the amount of participants usually is not sufficient to take a pilot test into consideration, but in combination with focus groups and plus minus method the instrument were tested in a sufficient way.

Table 1. Cronbach Alphas of new factors of the pilot test (n=15).

Construct	Total Items	Cronbach's Alpha
Intention to participate	3	.79
Digital skills	3	.81
Digital Knowledge	3	.72
Usability	3	.70
Structure	3	.66
Relative Advantage	3	.76
Interactivity	3	.67
Service Quality	3	.69
Trust	3	.68
Privacy	3	.70
Frequency	3	.77

4. Main Study

4.1 General design of the study

Questionnaires are an adequate instrument in terms of measuring the behavior, attitudes, preferences, opinions and intentions of relatively large numbers of subjects (Field, 2009).
In this study Likert scales with a five-ordered response level were used, ranging from ‘totally agree’ to ‘totally disagree.’

The questionnaire contained all constructs in accordance with the formulated hypotheses in chapter 2 in order to answer the research question. Although the items already were verified by the pilot test, it has been necessary to validate also the measures before the data could be analyzed because the number of participants increased from 15 to 376. Therefore, a reliability analysis was necessary again in order to determine the theoretical impact of the structure of the

measurement constructs. In the first paragraph the dependent variables will be discussed, afterwards a reliability analysis and subsequent a factor analysis will follow.

4.2 Sample

In total 318 respondents participated in this study. 176 (55%) were older and 142 (45%) were younger than 50. Concerning the demographic results, it can be assumed that the chosen population is representative when concerning the contemporary age pattern in Germany (Statistisches Bundesamt, 2014). When excluding citizens who are younger than 20, the age distribution between citizens older and younger than 50, the above 50 citizens get a share of 53% whereas the younger ones get only 47%. Accordingly, the participants had enough features corresponding to the total mass. They provided a true scaled, but otherwise realistic depicted picture of the German population – when taking the definition of Lenz (2007) about representativeness. The average age of all respondents was 46. 6 years; the average age of Silver Surfers was 58.6 years. Table 2 gives an overview of the Silver Surfer's distribution of demographical and educational characteristics.

Table 2. Respondent distribution by age, gender and education.

Age group	Amount of participants	Female in %	Male in %	High educated in %	Low educated in %
50 – 55	59	53	47	63	37
56 – 60	26	50	50	38	62
61 – 65	63	52	48	48	52
66 – 70	28	54	46	43	57
Total	**176**	**52**	**48**	**51**	**49**

Owing to the spending power, most respondents reported about their family income. Confirming the data of Statista, the present study has shown that participants older than 50 have a higher income than younger users.

Additionally, the respondents reported about their internet use. It has been especially asked in the survey about search engines and browsers. Once again, significant differences between the age groups can be considered.

In both age groups, Google is the dominant search engine. The percentage of use of younger users is only 62%. This is well below the average value of 95% of Google users in Germany (Statista, 2015). In both cases, Google Chrome is the most widely used browser (29%; 32%). Strikingly, younger participants use Mozilla Firefox more, compared to the Silver Surfers. Furthermore, older users tend more to use Internet Explorer, in comparison with younger users.

4.3 Data Collection

To reach as many participants as possible, the snowball sampling system has been used (Field,, 2009). Owing to the fact that two different age groups have been considered in this research, stratified sampling has also been used. This kind of sampling is characterized as the most representative sampling, if the population is large, and enough sources are available (Dougherty, 2004). To find differences between the Silver Surfer and younger users on an ad hoc basis, stratified sampling is obviously an accurate method of data sampling. By using stratified sampling, it is possible to consider sub-populations within an overall population. The population is identified and included in the sample that is selected in a balanced way (Särndal, 1992). Though the representativeness is often improved by reducing sampling error, stratified sampling can produce a weighted mean that has less variability than the arithmetic mean of a simple random sample.

4.3.1 Procedure

The survey was created both online and offline. To get a higher response from the participants, online surveys were considered the right manner to distribute the questionnaire (Mellenbergh,

2008). Given the specific age group of Silver Surfers, it seems wise to combine online surveys and personal in-home surveys because, from previous researches, the researcher knows how difficult it is to target Silver Surfers online for purposes of questionnaires.

The online survey has been set up and distributed by using the certificated website www.umfrageonline.com. It was possible to distribute the link of the survey among various channels. To target the Silver Surfers, special forums, such as rentnercafe.de, feierabend.de, rentner.de, derwesten.de or rentnerboerse.de, were used. In addition, the researcher distributed the survey at frequently used forums of popular digital publishers like bild.de or focus.de. Further, the online survey was disseminated to respondents through social media platforms like Facebook and Xing and via mail. The printed versions were disseminated to respondents by the researcher. Acquaintances of the family of the researcher and neighbors were especially asked to participate.

The survey started with a short written introduction to the report and how the personal data will be treated, the so-called 'cover note.' The cover note includes an introduction by the researcher; it explains the aim of the research, how the results are treated, and whom to contact if the subject has any queries. The possible bias of 'social desirability' could not appear because the respondents just got the information about the general topic online shopping; the Silver Surfer did not know that the research was focused on them and they did not know that other groups participated, so as to be compared with Silver Surfers. All variables were measured by a five-point Likert scale. In addition, respondents were asked to fill in demographics as well as some questions about their online behaviour. The time to finish the survey was unlimited. Thus, participants had as much time as they want to finish the survey. The translated version of the survey in English can be found in Appendix B.

Ethical considerations

Because the method of this research is a survey, its topic has been neither political, religious nor - in an ulterior manner - critical or discriminative. Hence, there are not many ethical

considerations to be kept in mind. The method does not implicate negative consequences for the participating human test subjects and the research would not involve discomfort. Further, all test persons were adults, so they all had a legal competency, which implies that the human test subjects are autonomously capable of making their own decisions. All test persons had been asked for their informed consent, so they knew before they started the survey about the duration of the survey and the extent to which the respondent's personal data would be treated anonymously. All in all, there should be no ethical conflict between researcher and test persons.

4.4 Measures

The used measures in the questionnaire for both, independent and dependent, variables in this study were in most instances gained from several other studies. In addition, the researcher had to create and add own items to make the constructs more specific and tailored to the present study. Especially the pre-study of focus groups offered needs and expectations of Silver Surfer concerning requirements of online shops. Their criticism about weaknesses of famous online shops has been taken into consideration when defining measures, too. In total, 33 items were collected. Appendix D shows the mean scores and standard deviations of all items.

Intention to participate in e-commerce

The construct of intention to participate was gained from Goodwin et al. (2010) who already have analyzed an assessment of customers e-service quality perception, satisfaction and Intention. In their study the researchers tried to investigate the benefits of online shopping in the perception of different user groups. An example of an item is "Using the Internet makes it easier for me to shop." The items were rated on a 5 point Likert scale from 1 (strongly disagree) to 5 (strongly agree). Cronbach's Alpha of the 3 items was high (a = .87).

Usability

The leading items for measuring the construct usability have been a research of Godhue et al. (2002), who evaluated the quality of a website based on approaches from three major angles: machine, expert judges, and customer's evaluation. An example of an item of Godhue et al. is: "The website allows me to interact with it to collect tailored information.". Next to this research, the researcher of this study has developed own items based on the study of Schulz (2002), which has already been mentioned. An example of an item of an item is: "I do not feel comfortable using pull-down menus on a website." The items also were measured on a 5 point Likert scale. Cronbach's Alpha of the 3 items was high (a = .81).

Digital knowledge & Digital Skills

To measure the constructs 'digital knowledge' and 'digital skills,' an article of Stevens et. al. has been used (2010). The main aim of this study was the development of a questionnaire to assess knowledge, attitudes, and behaviours in American Indian children. Here, the construct self-efficiency has been tested by a self-assessment of skills. To compare the answers to the other construct, another five-point scale has been used. Of course, the topic Stevens has used was completely different. But the possibilities to answer have been equal because it is a measurement about use. In this case, a self-assessment scale from 1 to 5 has been used.
An example of an item of Steven et. al. for the construct digital knowledge was "I know how to buy products online." An example of the same researchers for the construct digital skills was "I know how to buy products online.". In addition, the researcher of the present study has added own items. An example of an item for the construct digital knowledge was "I know about the function of product comparison sites." and an example of an item for the construct digital skills have been "Do you consider yourself to be skilled in terms of product comparison?". The items also were measured on a 5 point Likert scale. Whereas Cronbach's Alpha of the 3 items of digital skills was high (a = .79), Cronbach's Alpha of the 3 items of digital knowledge only was acceptable (a = .73).

Frequency

The construct ‘frequency’ has been measured on the basis of the items of Hemker & Kuhlemeier (2004), who set up a study to measure the impact of students’ use of the internet and the computer at home on digital skills they need for school. All these items had been evaluated by a 5 point Likert scale. An example of an item for the construct frequency was “I often use my computer at home to surf the internet.” Cronbach’s Alpha of the 3 items was high (a = .81).

Other variables

In addition, the studies of Godhue et al. and Godwin et al. have been the leading measurement for the constructs website structure, website service quality, trust, privacy, interactivity and relative advantage.

4.4.1 Factor analysis

A factor analysis was conducted in order to determine whether the theoretical constructs are statistically usable. In the factor analysis, variables are condensed into essential and non-observed variables. By using the command dimension reduction in SPSS, the factor analysis was performed by considering all 33 items. Considering the Kaiser-Meyer-Olkin index (KMO) it can be initially analysed whether there is a significant correlation between all variables. In this case, KMO = .70 corresponded a ‘fairly good’ degree of intercorrelation between all variables. Thus, factor analysis was—for the present study—an appropriate analysis.

By principal component analysis, it was determined that all factors with an eigenvalue over 1 are extracted. Table 3 provides the eigenvalues of the factors and thus the explained variance. An eigenvalue is the proportion of the total variance explained by a factor.

Table 3. Eigenvalues and variance of all factors with eigenvalues over 1 after rotation.

Component	Eigenvalue	% of Variance	Cumulative %
1	3.676	11.138	11.138
2	2.816	8.534	19.672
3	2.411	7.307	26.980
4	2.200	6.667	33.646
5	1.977	5.990	39.637
6	1.963	5.949	45.586
7	1.921	5.820	51.406
8	1.835	5.561	56.967
9	1.392	4.218	61.185
10	1.327	4.020	65.205

The table shows 10 components—thus, suspected factors—based on the 33 items. Interpretations of Guadagnoli & Velicer (1988) were considered when evaluating the factor analysis. If at least four variables load on a factor with at least .6 loading, the structure of the factor is validated. Further, if ten or more factors load at least with 0.4, the factor also can be seen as valid, regardless of the sample size. In addition, factors need to be clearly deviated from each other regarding eigenvalue and loading. All criteria were sufficient in this study. The variance of each factor has changed by rotation. Specifically, the first component has fallen from 19.5% to 11.1%. The table shows that there is no factor that explains all variance. But there are many small factors that influence the total variance.

Rotated Component Matrix

The component matrix shows the loadings of the variables with the factors (components). The higher the variable loads on a factor, the more it represents the factor. In the present study, the factor loadings were calculated after varimax rotation. Factor loadings under .5 were suppressed in order to get more significant results. Concerning the rotated component matrix, it is now obvious to recognize the extent to which items are loading on components. For items that load on several factors, the highest load value is considered. Table 4 shows the component matrix by concerning all items. The items are abbreviated, based on their respective constructs. Based on the table, it can be considered that the factor analysis has determined nine possible factors. The components nine and ten had to be deleted because there is only one item each that loads on the component; so, it would not be reliable.

The researcher forced some constructs he expected before due to the similar meaning of items. Factors that were thematic similarity could be merged. These factors originally were different constructs. The items 1 & 2 of usability could be merged with Item 3 of structure as the thematic focus of both was website navigation. Further, items of digital skills and digital knowledge seemed to belong together.

Table 4. Principle component analysis of the dependent variables with Varimax Rotation.

	*Rotated component matrix**						
	1	2	3	4	5	6	7
Intention to participate							
Using the Internet makes it easier for me to shop.	0.64						
Online shopping is convenient.	0.56						
Shopping online saves time compared to going to traditional stores.	0.83						
Digital literacy							
Do you consider yourself to be skilled in terms of Internet usage?		0.56					
Do you consider yourself to be skilled in terms of product comparison?		0.57					
Do you consider yourself to be skilled in terms of search engine usage?		0.70					
I know about the function of product comparison sites.		0.78					
I know the function of search engines and how to change them.		0.82					
Privacy							
I do not worry about the product quality on the Internet.			0.63				
I have to feel safe with the terms and conditions given on the website.			0.79				
Trust signs and certifications increase the website's credibility.			0.83				
Customer service benefits							
I often use my computer at home to surf the internet.				0.74			
I often use my computer at home for checking my email or for chatting.				0.59			
The website must have interactive features (like options for video chats, text chats, or contact forms) that help me accomplish my task.				0.75			
Relative Advantage							
It has to be easier to use the website to complete my business with the company than it is to telephone, fax, or email a representative.					0.74		

Table 5. Progress of table 4.

Using the website has to be easier than calling an organizational representative on the phone.	0.55		
The website has to be an alternative to calling customer service or sales.	0.68		
Usability			
The website should have bright colours, clear contrast, and huge fonts.		0.69	
I do not feel comfortable using pull-down menus on a website.		0.78	
The text on the website has to be easy to understand (without technical terms or slang language).		0.67	
Interactivity			
The communication is age-based, making it easily applicable and manageable.			0.71
The website accepts feedback through different channels; contact buttons, FAQs and the 'About Us' section should be central to the website.			0.74
I worry about my credit card information being stolen.			0.51

**Factor loadings >.50*

Interpretation of factors

The constructs relative advantage, privacy, and usability can also be confirmed as well as the independent variable intention to participate by the factor analysis. The factors were only supplemented by other items; concerning their substantive meaning, an interpretative conclusion could be conducted.

The respective supplements of the theoretical constructs are meaningful, considering the familiarities between those items. The theoretical construct *trust* had to be removed because, due to the factor analysis, it did not seem to be a factor anymore. In addition, the factor analysis has identified three possible new factors, but one of them is not meaningful but randomly concerning the really different content of the items. Factor 1 can be considered a combination of the constructs *digital skills & knowledge,* supplemented by the first item of the construct *service quality.* Considering this new factor, a familiar content of the items can be observed again. If the theoretical framework is considered again, it is not surprising that digital skills and knowledge are related. Owing to the particular content of both factors, there are various parallels diverging only in nuances. Skills refer to the ability to apply knowledge and use know-how to complete tasks and solve problems. As in the European Qualification Framework (EQR, 2012), skills are described as cognitive (logical, intuitive and creative thinking) and as a practical (involving manual dexterity and use of methods, materials, tools and instruments). Knowledge refers to the totality of facts, principles, theories and practices in a study or work as a result of learning and understanding. Expertise entails professionally appropriate methods directed to process and evaluate the result. The combination of both factors leads to the new factor ‘digital literacy,’ including knowledge and skills. It is the ability and willingness to tasks and problems independently.

The second new factor combines frequency, service quality and interactivity. It can be assumed that participants are looking for quality services with which they can deal based on their abilities. In addition, interactive support is obviously desirable. Tailor-made services and appropriate channels, based on the experience of the user, seem indispensable.

The impact of service quality depends on the experience of the user. Winkler (2007) has mentioned a customer-benefit package. Accordingly, it is not just about the presentation of a product, but especially how this product is presented by services. The more the services that are offered, the more satisfied the customer is. Thus, the combination of the factors can be seen as Customer Service Benefits.

The third new factor was not taken into consideration because it seemed to be a random construct.

Reliability Tests

The reliability of the constructs that were identified by factor analysis have been measured in the next step. Again, according to de Vellis, the criterion to be reliable was a value of at least .65. Table 6 shows the results of the reliability test.

Table 6. Mean, Standard Devation and Cronbach's Alpha of new factors of the main study concerning Silver Surfer (n=174).

Construct	Total Items	Mean	Standard Deviation	Cronbach's Alpha
Intention to participate	3	4.54	.77	.75
Digital literacy	5	4.16	1.34	.84
Relative Advantage	3	3.77	1.47	.72
Customer service benefits	3	3.91	1.34	.67
Privacy	3	3.84	1.35	.59
Usability	3	4.23	0.98	.65
Interactivity	3	3.84	1.32	.16
New Factor 3	4	4.02	0.99	.48

Table 6 shows that the dependent variable *intention to participate* had an Alpha value of .75, which is excellent (Krauth, 1995). Even the factor *relative advantage* had a good Alpha value

of .72. The factor *usability* seemed to be unreliable but if the item *"The text on the website has to be easy to understand (without technical terms or slang language)"* was deleted, the reliability value of .65 tends to be acceptable. The values of the factors *privacy* and *interactivity* were – according Krauth - not reliable (.59 & .16). Considering Peterson (1995) values higher than .50 can be regarded as doubtful reliable. Considering the theoretical framework again, in no case privacy must be left out of consideration.

5. Results

5.1 Multiple Regression

Based on the remaining five factors, linear regression was performed. The criterion variable was 'intention to participate' and the predictor variables were ‘digital literacy,’ 'customer service benefits', 'usability' and 'relative advantage'. See Table 7. The coefficient of determination R^2 describes to what extent the regression line represents the relationship between independent and dependent variables (Stevens, 2009). In this model, R^2 was .43; hence, 43% of the variance of the criterion variable was clarified by the four predictors, while the remaining 57% is unknown. A significant regression equation was found ($F(1, 173) = 64.98$, $p < .000$). The present model is secured against accidental calculations. The model, therefore, does not originate from a population with $R = 0$.

Table 7. Sample Regression Table.

Variable	B	ß
digital literacy	0.54	0.57*
customer service benefits	0.30	0.27*
usability	0.03	0.04
relative advantage	0.11	0.10*
privacy	0.12	0.10

*p<.05, p<.01, ***p<.001

5.1.1 Correlation

After factors were minimized only a few correlations could be considered. Due to Cohen (1988) correlation values are sufficient if the value reaches at least .30. Even then the correlation is not high at all. The correlation values of the factor were weak, only between digital literacy and relative advantage and between customer service benefits and usability a sufficient correlation value could be found.

Table 8..Correlation between influential factors.

Factor	Digital literacy	Customer Service Benefits	Relative Advantage	Usability	Privacy
Digital literacy	/	.27	.32	.04	-.11
Customer Service Benefits	.27	/	.17	.54	.27
Relative Advantage	.32	.17	/	.12	-.32
Usability	.04	.54	.12	/	-.43
Privacy	-.11	.27	-.32	-.43	/

5.1.1 Comparison between populations

Based on the remaining five factors, linear regression was performed. The criterion variable was 'intention to participate' and the predictor variables were 'digital literacy,' 'frequency,' 'usability,' ‘privacy’ and 'relative advantage.' In this model, R^2 was .51; thus, 51 % of the variance of the criterion variable was clarified by the four predictors, while the remaining 49% was unknown. A significant regression equation was found ($F (5, 136) = 30.753$, $p < .000$). The present model is secured against accidental calculations. The model, therefore, does not originate from a population with $R = 0$.

Table 9. Sample Regression Table for younger user.

Variable	B	ß
digital literacy	0.44	0.57*
customer service benefits	0.32	0.27
usability	0.19	0.24*
frequency	0.30	0.10*
privacy	0.12	0.10
relative advantage	0.06	0.10

*p<.05, p<.01, ***p<.001

Based on this study, influencer factors seem to be different between Silver Surfer and younger users. Silver Surfers need to be considered with a different approach than younger user. The attention of Silver Surfer will be directed at digital literacy and customer service benefits. While younger users also attach importance to digital literacy, but next to it they especially focus on usability and frequency.

5.2 Final Research Model

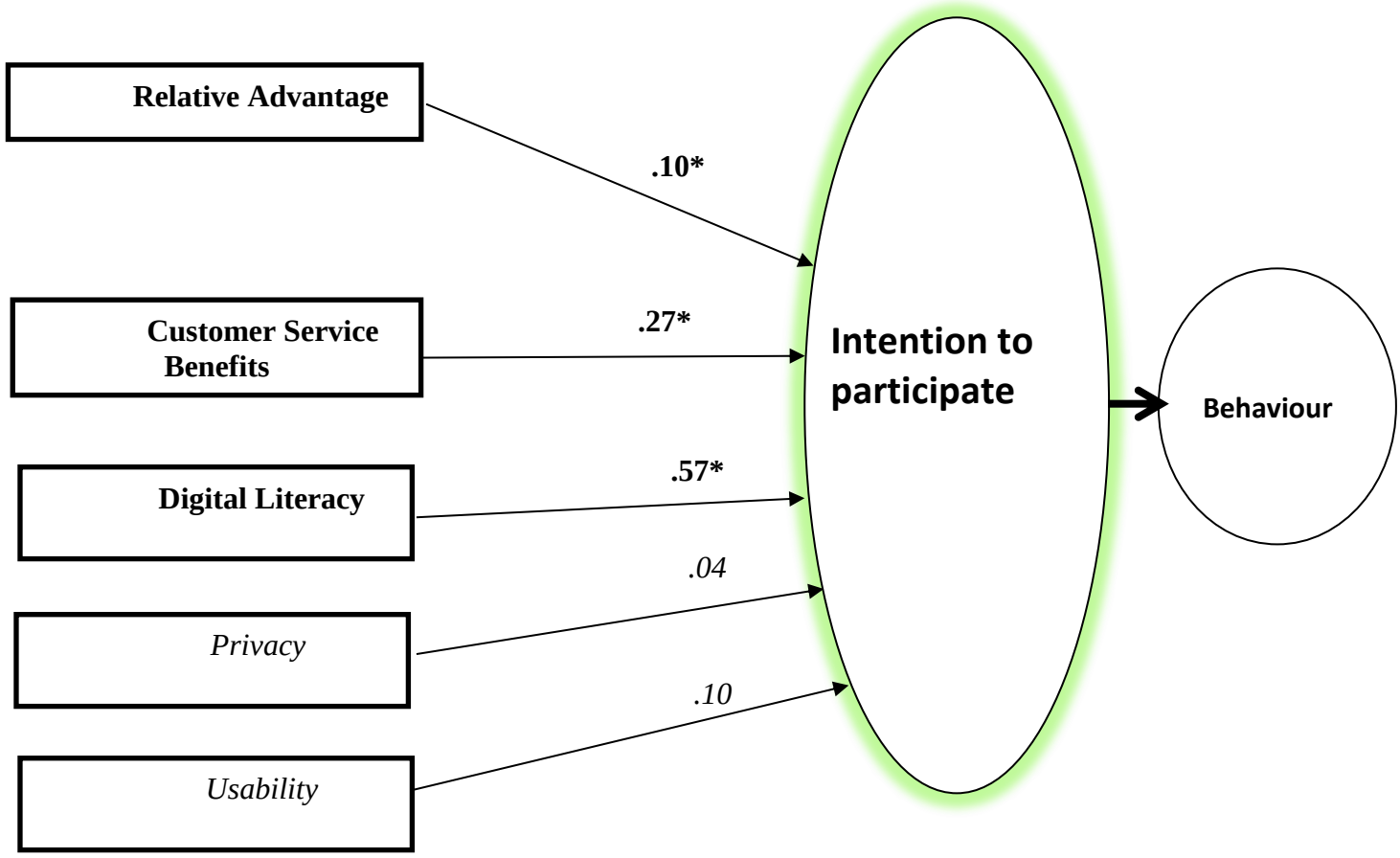

Figure 2.Results for the research model with path coefficients.

*Note: *p< .05 ; **p< .01; ***p< .001 level.*

5.2.1 Overview of Hypotheses

Table 10 gives an overview of the evaluation of the several hypotheses.

Table 10. Hypothesis testing.

Hypothesis	Construct	Hypothesis supported?
H1	Usability	No
H2	Structure	No
H3	Digital Skills	No
H4	Knowledge	No
H5	Frequency,	No
H6	Service quality	No
H7	Interaction	No
H8	Trust	No
H9	Privacy	No
H10	Relative Advantage	Yes
H11	Discrepancy	Yes

6. Discussion

6.1 Main findings

The results found in this study determine the previous assumption that the Theory of Planned Behaviour is appropriate to explain the online participation and the intention of Silver Surfers. It turns out that a relative advantage of a medium and customer service benefits lead to a positive attitude towards the behaviour. Even if these two factors are not related, the online behaviour is obviously favoured positively by the appearance of these factors.

Digital literacy is the decisive factor for the – by Ajzen and Fishbein highlighted - perceived behavioural control in this case. The higher the digital literacy, the higher is the perceived behavioural control. The essence of Ajzen and Fishbein related to behaviour and intention can definitively be demonstrated in the online behaviour of the special group of Silver Surfers. The thematically related variables 'digital skills' and 'knowledge' constituted a new factor that definitely affects the dependent variable as well as another new factor ‘customer service benefits’.

The results showed that the intention to participate in online shopping is influenced by the digital literacy of Silver Surfers, the customer service benefits that are offered by the online shop and the relative advantage of the internet shopping in comparison to the offline alternatives. A possible explanation for the influence of digital literacy is that competence actively reduces distrust and uncertainty. Silver Surfers who have extensive online knowledge, and are also able to actively apply it, have no reason to be sceptical about online shopping. There are some approaches that redefine the concept of digital literacy, taking into account the participatory possibilities of Web 2.0. Stöcklin (2012) referred to digital literacy as a capability that efficiently enables identifying information in suitable media types, select and procure information as well as process, transform and create information; and finally communicate through appropriate channels. In addition, Mnet (2010) has defined digital literacy as ‘numerous interrelated skills that range from basic awareness and training to

fostering informed citizens and building on consumer and user confidence, to highly sophisticated and more complex creative and critical literacy and outcomes.' The consumer confidence can be adapted to the Silver Surfers. The higher their digital literacy, the higher is their intention to participate in online shopping..

In the case of Silver Surfers, customer service benefits especially, are influenced by frequency, service quality and interactivity. As already mentioned, the Silver Surfer is always seeking quality. This need for quality has to be transported to the online shops to deliver Silver Surfer answers for their specific needs in a tailored way. Silver Surfers are not the only target group that expects customized responses to online needs. Customer service benefits have become a special marketing strategy to deliver accurate information about accurate channels to the various target groups to provide and ensure maximum satisfaction of the users. McKinsey (2012) has examined and found that the effects of eCare achieved enhanced customer satisfaction, richer differentiation and higher brand advocacy. In addition, McKinsey found that the customer satisfaction increases by the selection of specific and many different communication channels. To connect these findings to the present study means: If the Silver Surfer is offered different channels by the online store, the customer satisfaction increases because the information can be transmitted and tailored. This increase happens because the user is simply able to select the most suitable channel. This case is also a relationship between digital literacy and customer service benefits. It is indicated by the correlation of the two factors. The correlation is low due to the fewer statistics, but it can be assumed from the tendency that tailor-made channels and high interactivity, customization and Digital Literacy are related.

The relative advantage of an online shop is that it can positively influence the intention to participate online. The results of the present study can be compared with findings of Ho & Vogel (Berreti, 2014) who investigated the use of social networking sites—which are comparable to online shopping stores due to their affiliation as a new web 2.0 media—to

improve their marketing activities. The researchers assumed that the use of social networking sites would lead to the importance of having closer collaboration, improved customer relationship and increased sales transactions. The findings have shown that the web's relative advantages can improve an interactive and user-centred environment for e-commerce. Further, the relative advantages of the web are associated with engagement of users with sellers. According to the findings of the present study, relative advantage can be seen as crucial when deciding on participating in online shops. Considering Rogers, the results of this study show, in particular, that the second phase of persuasion seems to be the decisive phase in the perception of the Silver Surfer. If the online store has sufficient features in terms of complexity and compatibility with the capabilities of the Silver Surfer, a relative advantage is generated over other media. This is happening with the general advantages offered by online shopping over traditional purchasing methods. Again, the context of digital literacy is influential because it could be considered a correlation between digital literacy and relative advantage. The statistical relationship is in accordance with the positive correlation. It can be summarized that there is a relative advantage of online shops in comparison with traditional purchasing.

An age-based layout of the online store in terms of usability would increase the intention to participate online because the physical abilities of Silver Surfer seemed to be a crucial factor (Schulz, 2004). Surprisingly, these results could not be determined by the present study. A possible explanation could be the wording of the items. Silver Surfers were aware they were being categorized as a handicapped audience when reading the items that deal with inferior physical abilities. Etrillard (2007) concludes in his journal article that one should avoid value judgments against Silver Surfer because elderly customers feel disadvantaged when sellers or companies dismiss them as retirees or seniors without taking their individuality into account. However, based on the results of the present study, no positive influence of usability can be concluded when considering intention to participate online.

The construct ‘website structure’—which also has been hypothesized as influential with regard to the intention to participate—was statistically influential in this study. It can be assumed that the findings of Etrillard can be adapted for website structure, too. The wording of the items also has been obvious in the perception of Silver Surfers. By considering the factor analysis of this study, it can be considered that the constructs’ usability and website structure can became one common factor. Therefore, the conclusion of wrongly worded items seems close.

Although the factors trust and privacy scored really high on the Likert score, there was no statistical evidence to suggest that they both positively influence the intention to participate. These constructs were very much focused on payment options. Possibly, Silver Surfers consider manifold selectable payment options as granted and their perception of payment methods could be part of the factor for customer service benefits. In addition, the frequently cited suspicion of Silver Surfer, with reference to credit cards and safety data, may not reflect the reality. Assuming that through digital literacy, acceptance of web shops grows and the competence of Silver Surfer reduce the mistrust against fraud on the Web, it can be concluded that trust and privacy do not have a leading role in the intention to participate online anymore.

There are differences in age groups with regard to the intention to participate and this has been validated in the present study. The results for both age groups show that Silver Surfers and younger users have the importance of digital literacy in common. Surprisingly, the younger users seem to have a need for usability, although this need has been assumed for Silver Surfer too. The fact that just younger users appreciate usability and website structure as important, supports the theory that older users have felt discriminated by the wording of the items, although they might consider usability as important. There is, however, no statistical evidence to support this theory.

In addition, the frequency of use influences younger users to participate online instead of influencing Silver Surfer. Unlike Silver Surfer, the frequency of using the internet in general

is higher when considering younger users. Therefore, the theory of Farke (2006) can be proven that frequent chat and email definitely affect internet consumption.

6.2 Limitations of the present study

Based on the results of the present study, several conclusions can be drawn on how the study could have been improved.

First, the statistical analysis has shown that the detected factors, digital literacy, relative advantage and customer service benefits are just 43% of the factors that influence the intention to participate online. Thus, 57% are still hidden which is more than half of the possible factors.

Another limitation was in the number of respondents. In all, 318 respondents participated in this study. Only 176 (55%) participants were Silver Surfers and the rest did not belong to the actual target group. Of course, a bugger dataset potentially would lead to more reliable results for the specific target group of Silver Surfer.

Even within the target group, the age structure would have to be analysed in a more granular form considering how big the impact of the factor ‘digital literacy’ could be. It is highly probable that digital literacy would be measured differently within the target groups. Thus, it is hard to imagine that people aged 65 have similar skills to those under 50. Also, the educational qualification of the participants was considered, but meaningful evaluations were not made to the extent in which education influences digital literacy.

The instrument, Likert Scale, was probably inappropriate for this study. A disadvantage of Likert scale is particularly verbal anchorage. It cannot be assumed that the distances between the categories are the same. This means that, strictly speaking, the scale should not be treated as interval scales and should not be taken to measure the evaluation. Moreover, the items were on average, rated very high according to its mean scores. Through the thematic

similarity of the constructs, it would perhaps, make more sense to use a 7-point Likert scale for more granular evaluation.

Further, in the present study, the scale construction was also suboptimal. It is customary to test a large number of items in a quantitative pilot study; various items had to be expanded. In addition, items are considered unsuitable if they show too few differences between the respondents. A deficiency, for example, when more than 80% of respondents agree with a maximum of items (ceiling effect) or a maximum of refuse (floor effect). Such items are often discarded (Rost, 1996). This was not heeded consistently in the underlying study.

Too many constructs were also used with too few items. This has adversely affected the separation efficiency in this study. The constructs were divided really granular, and had to be designed more generally. Considering the mean scores are again the same, some items seem to be quite meaningful and affect the intention to participate. Owing to the unreliability of some items of the same construct, the whole construct was excluded. By the use of a plurality of items, the probability of reliable constructs would increase (Bortz & Döring, 2006). The subsequent factor analysis has proven that some constructs have been content related anyway. The best example here has been digital literacy, which consists of the constructs' digital skills and knowledge. Afterwards, it seems logical to combine the factors trust and privacy and interactivity and customer satisfaction, too, regarding similar content.

The dependent variable, 'intention to participate', also seems to have been chosen as general. It is independent from the age group and difficult to compare if someone booked a trip online, bought expensive jewellery or acquired low budget products. The price factor and price-sensitive behaviour were not even considered in this study, while just the Silver Surfer was presumed to be sensitive to prices.

Additionally, the assessment of the participants regarding their skills and competence was also a self-assessment and this is prone to errors. It can be assumed that in the present context,

the tendency of survey respondents was to answer questions in a manner that would be viewed favourably by others.

Finally, the statistical procedure has to be criticized. Although important factors have been found by factor analysis, a lot of items have been excluded which probably would affect the online participation of Silver Surfers. Considering the mean scores of different items and the high ratings as proof of the agreement, there are ultimately too many items that were excluded by use of factor analysis.

6.3 Recommendations for future research

The importance of digital literacy is clear in the underlying study. In this study, however, digital literacy was tested by suboptimal methods. To avoid social desirability bias, future studies should not rely on digital literacy self-assessments. Instead, capabilities in terms of digital literacy should be tested in a field experiment. In addition, a more granular separation between the different age groups of Silver Surfers is needed. A conceptual framework for the testing of digital literacy could be taken from Eshet-Alkalai (2004), who has analysed the quality of learners in a digital environment by testing photo-visual literacy, reproduction literacy, branching literacy, information literacy, and socioemotional literacy by giving respondents various tasks about the different topics. Although Eshet-Alkalai has chosen children and young adults for his experiment, it also could be adapted for Silver Surfers. If the next study involves a survey, some optimization measures should be used. The survey should definitely be a balanced mix of positive and negative formulations. Subsequently, reverse code items should be used more often. The survey should definitely contain more items so that the result of the item determination can be of improved quality. A huge amount of items would increase the evaluation quality and might also lead to more reliable and generalized results. Accordingly, more participants are necessary to enhance the representativeness of the study (Schnell, 1999. In the present study, the target group of Silver Surfers has been

considered, but not the factor price, even though it is important for online shops to specifically target rich Silver Surfers. Thus, the financial aspect should also be taken into consideration in a future study. Future studies should also investigate the different levels of education within this age group, because a correlation between digital literacy and level of education can obviously be expected. Iske (2007) found that the educational level of young people is in accordance with their digital inequality. It is likely that this disparity also applies to Silver Surfers, because the intelligence distribution is not necessarily disproportionate between generations. Specifically, the constructs trust and privacy were obviously set with the wrong items in the present study. The special focus on the use of credit cards and the concerns about the use of credit cards online no longer seem to be relevant for Silver Surfers. According to a recent study by the Edelmann Group (2015), 69% of European internet users feel comfortable with online transactions. Future studies should investigate the transactions that are considered highly trustworthy by Silver Surfers. In the present study, there has been no direct influence of usability as an indicator for increasing participation; however, usability is an issue that needs to be explored in future studies, perhaps by addressing the audience in the survey with more neutral wording. In addition, the construct of usability should be complemented with user experience, since both factors are important. Like digital literacy, usability and user experience could also be measured by task-based methods instead of surveys. The measurement of user experience and usability could also be done in a field experiment. Bargas-Avila (2011) has evaluated some very effective methods for measuring user experience and shows in particular how dimensions such as emotions, enjoyment, and aesthetics can be measured. These dimensions are crucial for measuring the intention to participate in online shopping.

The key factor of this study is digital literacy. If Silver Surfers have a high degree of digital literacy, the resistance to other (negatively) influencing factors is automatically reduced. The more expertise is available, the more secure Silver Surfers feel online. Therefore, online

stores should offer as many helpful features as possible in the future, including interactive support in particular. For example, it may be possible to show multiple contact options on the website. Thus, a Silver Surfer himself selects the online channel with which he feels most familiar, based on his individual skills. In general, to understand the digital literacy of this special target group, online stores should invest more money in market research for a better understanding of the individual online needs of Silver Surfers. Digital literacy is also of enormous importance for the subgroup of younger users. Therefore, it is important to build online stores by integrating helpful aids and customized features intended for this subgroup as well.

Additionally, customer service benefits are also important for Best Age; therefore, a comprehensive user-oriented performance of online shops is essential. Thus, digital customer e-commerce care is needed. E-care involves the delivery of customer service via web-based tools. Web services are increasingly being demanded by digital customers (McKinsey, 2012). The approach suggested by McKinsey seems to be the most apt for Silver Surfers: 'digital care can be fully self-service or involve a mix of live customer service agents.' This means that a great deal of support has to be integrated on the website, such as live chats, explanatory videos about privacy explanation of trust signs, payment options, as well as how-to instructions in visual and written form. Tailor-made solutions are essential here.

The time-tested theories of Rogers must also be considered in the redesigning of online shops. It is important to provide the Silver Surfers a relative advantage over old-fashioned offline shopping. In addition to the numerous technical applications on the website emphasizing the simplicity of online shopping, unique selling points (USPs) are also extremely important. First, USPs must ensure that the customer faces no disadvantage when making a purchase online. This can be communicated by free shipping, free returns, or fast delivery for instance. USPs showing the benefits of exclusive online shopping are also important. Such USPs may include a more extensive assortment of goods online, lower prices, free samples, free gift-

wrapping, or a best-price guarantee. Different payment options that are not available offline or a purchasing account can also be offered. The more USPs offered, the greater is the number of relative advantage that can be expressed to the customer

A large number of participants who are Silver Surfers use the Google Chrome browser, which allows the addition of numerous app extensions and makes internet browsing much easier. Many of these apps would make online shopping easier for Silver Surfers in particular. The add-ons, including 'Clearly' for text content, 'Hover Zoom' for pictures, and 'Turn Off the Lights' for videos, are worth mentioning here. 'Clearly' is most suitable for reading news and other functions that require enlargement of text. The tool distinguishes the text from all other contents of the page and allows the user to change the font size, among other things, thus making it easy to concentrate on reading. With Hover Zoom, the resolution of photos can be automatically increased by moving the cursor across the photos. Reading magnifiers, which are another type of extension available, work in a similar manner. Turn Off the Lights are used on video sites and dim the entire screen, highlighting the window playing the video clip. This extension is especially useful in interactive chats. It is important for online stores to provide instructions to Silver Surfers with the help of videos with regard to how these extensions can be installed and applied. Therefore, a free additional service support can be given by the online shop to its customers.

One final point revealed in the present study is the use of the Internet Explorer. Most Silver Surfers do not know that Bing is the default search engine in Internet Explorer, and many others do not know how to change the search engine. As a result, many users continue to use Bing instead of Google. A practical implication for online shops therefore is to involve Bing in search engine marketing strategies for Silver Surfers, when the objective is to lure them to the shop.

6.4 Incorporate findings

In this section the practical implications also are discussed. Some organizations or groups could benefit from the results of this study. First, understanding the need of digital literacy for Silver Surfers has to be adapted by the government. Online education has to be an important topic, especially when considering the demographic exchange. There a several adult education centers in Germany but they do not focus enough on online education right now. Institutions could provide training programs to develop digital literacy.

Second, retailer can benefit from this study, too. When retailer design or implement web shops they need to focus on aged based tailored designs to target Silver Surfers. They should have a really good service including prompt services and individual tailored interaction possibilities. Further, they need to send a clear message which highlights the advantage of the online platform in comparison with traditional media.

Again, the simplicity of the internet is at the forefront. Users want it to be comfortable: not only in the navigation, but also finally in the act of purchase. Again, this could again underlie the experience of older users. Also, in this case, the experience of older users could be crucial. Online shops should create a light, age-appropriate access and teach users how to deal well with them. Older users are not afraid of new features on the internet, they are afraid merely due to their lack of experience. That is the reason why they want simplicity; they especially want to decide how to pay online due to a lack of trust and confidence (Bitkom, 2014). Further, when designing websites retailer have to make right approaches for the right audience. This study has shown that approaches for Silver Surfer and younger users have to be different. Especially usability is surprisingly a point that have to keep in mind when targeting younger users. It would be possible to combine the needs of younger users and Silver Surfers, most important is to collect all needs of the different age groups.

Even if in this study the importance of privacy did not come out as an important factor, online shops should focus on it. Literature has clearly shown that privacy is a huge topic for Silver Surfer. Future research that will focus on proper items will find confirming results for sure. The section limitations of the present study already showed some obvious ways to improve the recent study. Concerning the statistics again, also some interesting content was not used because the study focused on pre-formulated hypotheses. But, if the mean scores of several items is considered again, it can be seen that 19 items scored higher than 4.0. It can be assumed that the wording of the items was too optimistic but it also can be assumed that Silver Surfer are optimistic about E-Commerce in general. If the item "using the internet makes it easier for me to shop" is reconsidered, the score of 4.7 shows the high amount of consent. Further, the importance of usability did not come out in this study, although the average mean score of this construct has been 4.4. All items scored high and it seems that meaningful labels, bright colors clear contrast and huge fonts are also important easy understandable text, although this study did not contribute on the importance of usability. Further, especially the item "accurate information about the product delivery determine whether I buy the product or not" was not considered in this study, although it got the second highest mean score. Especially because it was already drawn from the theoretical framework accurate information should have been considered from online shops.

Even if the target group of Silver Surfer is a special one, a lot of factors influence their online behavior. Therefore, it is difficult to reduce those factors that much as in this study has happened. For further research it will be necessary to expand factors and to analyze items more in detail.

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Appendix A—English version of the questionnaire

UNIVERSITEIT TWENTE.

A Survey by Rafael Rohrmann

Dear respondent

This research aims to understand how potential customers think about online shopping.

It would be very helpful if you could participate in my research by filling in a questionnaire, which will take about 15 minutes.

Your data will be treated with confidentiality. The results will not be attributed to any single individual. The questionnaire is completely anonymous—you are not even required to mention your name on it.

If you are interested in the results of this research, you can send an email to r.rohrmann@student.utwente.nl.

Any questions you may have about this study now or in the future are absolutely welcome.

Thanks a lot for your participation!

With kind regards

Rafael Rohrmann

INSTRUCTIONS FOR FILLING IN THE QUESTIONNAIRE

Please mark the appropriate box with a cross [×]. In the online version, you will need to click on the field you prefer.

Below, you will find some statements about your expectations with regard to Internet websites, your use of the internet, and your level of skills and participation. You have to state how much you agree or disagree with each statement (ranging from 'strongly disagree' to 'strongly agree')

If you have to correct a wrong answer, please scratch out your answer and fill your choice in the correct box.

Some questions, clearly separated from the other questions, are open—they require you to write out an answer.

Please answer the following question by filling in the blank space.

How old are you?

_____

What is your gender?

_____

What is your highest qualification?

_____

What is your average income per year (please make a cross)

>10,000 €	**>20,000 €**	**30,000–40,000 €**	**40,000–60,000 €**	**>60,000 €**

Which search engine do you use?

_____

Which browser do you use?

_____

For the next 30 questions, please mark one of the boxes for each question as explained on the first page.

		Strongly Disagree	**Strongly Agree**

	Question	1	2	3	4	5
1	The website has to provide high-quality information and products					
2	In general, I have to be satisfied with the service I have received from the website					
3	The information about the products pertaining to my needs/interest has to be sufficient for me to make a purchase decision					
4	The vendor has to give prompt service to the customers					
5	The website has to offer multiple options of payment method					

		Strongly Disagree			Strongly Agree	
	Question	1	2	3	4	5
6	Shopping online is convenient					
7	Shopping online saves time					
8	I prefer to see things before I buy them					

9	Shopping online is complicated					
10	I prefer age-based websites for online shopping					

		Strongly Disagree				**Strongly Agree**
	Question	**1**	**2**	**3**	**4**	**5**
11	I intend to use e-service frequently					
12	In the future, I intend to use e-service whenever I need something					

		Never	**About once a month**	**Several times a month**	**Several times a week**	**Daily**
	Question	**1**	**2**	**3**	**4**	**5**
13	How often do you use your computer at home to surf on the Internet					
14	How often do you use your computer at home for checking your email or chatting					

15	How often do you buy products online					

		Strongly Disagree			Strongly Agree	
	Question	**1**	**2**	**3**	**4**	**5**
16	Do you consider yourself to be well skilled in terms of Internet usage?					
17	Do you know how to buy products online?					
18	Do you know how to compare products online?					
19	Do you know how to use search engines?					
20	Do you know how to change your search engine?					

		Strongly Disagree			Strongly Agree	
	Question	**1**	**2**	**3**	**4**	**5**
21	The website has to be simple to use, even if I am using it for the first time					

22	The structure and contents of the website should be easy to understand					
23	When I am navigating the website, I have to feel that I am in control of what I can do					
24	It should be easy to find the information I need from the website					
25	The website should have bright colours, clear contrast, and bright fonts					

		Strongly Disagree			**Strongly Agree**	
	Question	**1**	**2**	**3**	**4**	**5**
26	I worry about the product quality on the internet					
27	I do not like providing my credit card number or personal information online					

28	I worry about how my personal information might be used when I buy something online					
29	I worry about the safety of online transactions					
30	Trust signs and certifications increase the website's credibility					

Figure 4. Survey (Translated Version).

Appendix B—Results of Focus Groups

Table 11. Focus group - assessment of online shopping platforms.

Participant	Favor	Disfavor	Skills and frequency	Requirements
Silver Surfer (64, male) Retired	Breakdown (navigation, products, colours) Detailed information Multiple options for payment methods	Missing chat / help, trust signs Confusing landing pages; information overload No contact information	Daily use of Internet, monthly habit of online shopping Skill of 4/5 (self-assessment)	Payment methods (no credit card) Privacy Clear structure, content, and navigation
Silver Surfer (63, female) Retired	Clear content and structure Clear separation of colours and categories High-quality products	Confusing landing page No contact button Missing feedback section	Weekly use of Internet; monthly habit of online shopping Skill of 2/5 (self-assessment)	Easy navigation High-quality products Age-based website

Silver Surfer (50, female) Working	Easy navigation and clear content High-quality products Chat function Payment methods	Information overload Missing feedback section	Daily use of Internet, weekly habit of online shopping Skill of 3/5 (self-assessment)	Easy navigation Feedback function (chat or mail) Multiple options for payment methods
Silver Surfer (53, male) Working	Payment methods Wide range of products Quality products Easy to understand, good navigation	Too much information Hard to find FAQ and About Us sections	Daily use of Internet, online shopping several times per week Skill of 5/5 (self-assessment)	Support (FAQ, About Us, chat) Payment methods Product portfolio
Young user (41, male)	Simple navigation and categories Chat function Trust signs Payment methods	Bad structure Information overload	Daily use of Internet, almost daily habit of online shopping Skill of 5/5 (self-assessment)	Clear structure Trust signs Chat and feedback

Young user (29, female)	Payment methods Chat function Trust signs Payments	No multichannel support	Daily use of Internet, monthly habit of online shopping Skill of 3/5 (self-assessment)	Feedback Payment methods Contact information

Appendix C— Results of the plus min method

Table 12. Results of the plus min method.

Topic	Comprehensibility	Relevance	Unnecessary items
Relative advantage	70%	70%	
Knowledge	100%	100%	
Digital skills	100%	90%	
Frequency	100%	80%	
Service quality	90%	50%	*'In general, I have to be satisfied with the service I have received from the website.'* *'The information about the products pertaining to my needs/interest has to be sufficient to make a purchase decision.'*

Usability	90%	30%	*'The website has to be simple to use, even if I am using it for the first time.'* *'The structure and contents of the website should be easy to understand.'*
Website structure	80%	20%	*'When I am navigating the website, I have to feel that I am in control of what I can do.'* *'It should be easy to find the information I need from the website.'*
Trust	100%	90%	

Appendix D – List of itms, means and standard deviations

Table 13 . List of itms, means and standard deviations.

Nr	Item	Mean	Standard Deviation
1	Using the Internet makes it easier for me to shop	4,71	0,58
2	Online shopping is convenient	4,39	0,91
3	Shopping online saves time compared to going to traditional stores	4,53	0,84
4	The website should have bright colours, clear contrast, and huge fonts	4,39	0,86
5	I do not feel comfortable using pull-down menus on a website	3,98	1,02
6	The website allows me to interact with it to collect tailored information	4,32	1,05
7	The text on the website has to be easy to understand (without technical terms or slang language)	4,43	1,21
8	The website labels have to be easy to understand	4,43	1,41
9	Accurate information about the product delivery (duration, package tracking) determine whether I buy the product or not	4,70	1,27
10	Do you consider yourself to be skilled in terms of Internet usage?	4,31	1,35
11	Do you consider yourself to be skilled in terms of product comparison?	4,03	1,42
12	Do you consider yourself to be skilled in terms of search engine usage?	4,27	1,50
13	I know how to buy products online	4,23	1,36
14	I know about the function of product comparison sites	4,09	1,66
15	I know the function of search engines and how to change them	4,02	0,78
16	I often use my computer at home to surf the internet	4,24	0,82
17	I often use my computer at home for checking my email or for chatting	3,58	0,62
18	I often buy products online	3,81	1,56
19	The vendor gives prompt service to customers	4,00	1,38
20	I can interact with the website to get information tailored to my specific needs	4,05	1,41

21	The website has multiple options of payment methods	3,89	1,28

Table 14.Progress of table 13.

22	The website must have interactive features (like options for video chats, text chats, or contact forms) that help me accomplish my task	4,15	1,1
23	The communication is age-based, making it easily applicable and manageable	3,52	1,47
24	The website accepts feedback through different channels; contact buttons, FAQs and the 'About Us' section should be central to the website	3,85	1,40
25	I do not worry about the product quality on the Internet	4,15	1,51
26	I have to feel safe with the terms and conditions given on the website	3,93	1,47
27	Trust signs and certifications increase the website’s credibility	4,00	1,53
28	I worry about the safety of online transactions	3,52	1,5
29	I worry about how my personal information might be used when I buy something online	3,86	1,32
30	I worry about my credit card information being stolen	3,99	1,04
31	It has to be easier to use the website to complete my business with the company than it is to telephone, fax, or email a representative	3,92	1,36
32	Using the website has to be easier than calling an organizational representative on the phone	3,64	1,22
33	The website has to be an alternative to calling customer service or sales	3,75	1,84

Appendix E—Overview of images, figures, and tables

Table 15. Overview of figures.

Figure	Title
1	Research model
2	Final Research Final
3	Survey (translated version)

Table 16. Overview of tables.