The influence of privacy perceptions on online shopping behavior – a comparison between millennials and baby boomers

Liana Brüseke
University of Twente
liana-brueseke@web.de

ABSTRACT
Privacy and security perceptions are growing topics in e-commerce. To develop a successful marketing strategy, it is crucial to know and address privacy concerns to prevent them from negatively influencing the online shopping behavior of customers. Perceived risk and trust are chosen to measure privacy perceptions. This study focuses on two generational cohorts, the millennials and baby boomers. The aim of the research is to investigate differences in privacy perceptions influencing their online shopping behavior. The research question is answered by analyzing data from German respondents.

Keywords

Privacy Perceptions, Online Shopping, Millennials, Baby Boomers.

INTRODUCTION

Online shopping is a growing topic in today's society, but implicates one main disadvantage, which is privacy. People what to protect their privacy online and thus, this study aims at revealing the role of privacy perceptions as one main predictor of online shopping, comparing two generational cohorts

THEORETICAL FRAMEWORK

Millennials versus Baby Boomers

The existing literature offers different age ranges for millennials. For the purpose of this study, the millennial age group is divided in early and late millennials and this paper only includes the early millennials born between 1992 and 1998, thus aged between 18 and 24 in 2016. The millennials have different names like Generation Y (Parment, 2013) or Digital Natives (Prensky, 2001). Most of the people between 18 and 24 are currently at the end of their vocational education or in the beginnings their working lives (Reisenwitz & Iyer, 2009). They are starting to achieve independence from their parents and move out of their parents' home (Bleemer, Brown, Lee & Van der Klaauw, 2014).

The millennials grow up with technology (Kim, 2008) and are defined as the first high-tech generation (Prensky, 2001). With 95% (Pew Research Center, 2010), they are the generation with the highest internet use. Millennials are also named "digital natives" because they are connected to the internet for their whole lives and cannot imagine a life without it (Prensy, 2001) They are better in handling information overload than older generations (Parment, 2013). Therefore, they become technological multi- taskers (Kim, 2008; Parment, 2013). Due to their intensive use of technology, millennials are the early adopters of new products (Ordun, 2015). The technology use is the most important factor that differentiate millennials from older generations (Pew Research Center, 2010).

The Baby boomers are the largest generation (Duchscher & Cowin, 2004) and their time span is differently defined in literature. For the purpose of this study, the younger baby boomers born between 1951 and 1966 (aged between 50 and 65 in 2016) are used. The baby boomers are also called "digital immigrants" due to their technological experience (Prensky, 2001). The baby boomers already have work experience and fill high management positions (Kim, 2008). The median household income of an baby boomer is 65.843$.
Baby boomers did not grown up with technology, but they start to adopt it. They use information technology mostly for communication and research purposes (Kim, 2008). They are characterized with a "digital immigrant accent" which means that they use technology and the internet, but, compared to the millennials, it is not their first choice for every purpose (Prensky, 2001). However, baby boomers adopt to the main technical advances. In a study conducted by Pew Research (2010, 2011), 81% regularly use the internet and 86% have a mobile phone.
As literature indicates, the millennials and the baby boomers are two generational cohorts interesting for the retail market because of their size and purchasing power. Both generational groups share common values like individualism and optimism. The greatest difference is about technological expertise, distinguishing them in "digital natives" and "digital immigrants". However, current literature reveals that baby boomers catch up with the technological developments which might mitigate the effects of the immigration status of baby boomers when venturing into the millennials' native digital playground.

Privacy Perceptions

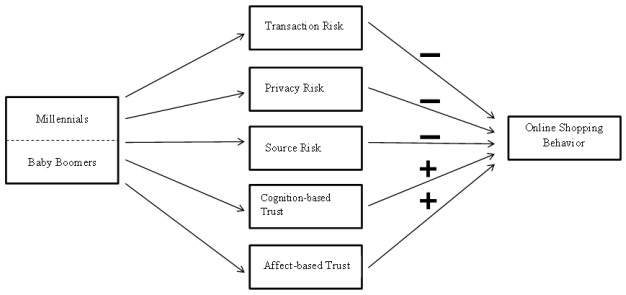
Privacy perceptions are defined as "the willingness of consumers to share information over the Internet that allows purchases to be concluded" (Belanger, Hiller & Smith, 2002, p.248). Online shopping is perceived as a big opportunity, however, the technology behind the internet is complex and cannot be controlled by the user (Rose, Khoo & Staub, 1999). Thus, many consumers feel insecure about their private data and these privacy concerns have to be handled by e-commerce companies to retain a successful online market (Belanger, Hiller & Smith, 2002). This study measures privacy perceptions in terms of risk and trust.

Perceived risk is an often discussed topic in literature and research focuses on the influences on business for many years. Perceived risk directs consumer behavior because they want to prevent mistakes in the shopping process (Mitchell, 1999). For online shopping, new types of risk emerges and thus, perceived risk in online shopping environment is defined as the consumer's cognition about possible uncertain negative outcomes resulting from an online purchase. The perceived risks can be a reason for customers not do purchase online and thus, it is crucial for e-commerce companies to consider these risks (Kim, Ferrin & Rao, 2008). Since this study focuses on privacy perception, it will consider only the risks related to privacy: privacy risks, source risk, and transaction security risk (Lee & Moon, 2015). Privacy risks is about the unknown collection of customer information, e.g. shopping habits (Lim, 2003) and the potential that online shops record and use personal data inappropriately (Nyshadham, 2000). Source risk is defined as the threat of purchasing from an unreliably and dubious online shop (Lim, 2003). Transaction security risk is defined

as the reluctance "to provide personal information such as credit card numbers to electronic commerce outlet" (Belanger, Hiller & Smith, 2002, p. 246).

The basis of the perceived trust of a customer is the assumption that the seller treats the buyer in an appropriate and responsible way and without an exploitation of the situation for personal interests (Gefen, Karahanna & Straub, 2003). Customers have to trust the online shops because they do not have the possibility to test the product by themselves (Li, Jiang & Wu, 2014). Kim, Ferring and Rao (2008) developed a framework for measuring trust concerning online shopping behavior. They distinguish between cognition-based and affect-based trust. Cognition-based trust evolves from the general observation of the website and the resulting perceptions of the customer about the seller. Affect-based trust is about the "indirect interaction" (Kim, Ferring, Rao, 2008, p. 6) with the seller by referring to opinions of others. In measuring affect-based trust, two sub-dimensions are important. The presence of third party seal is about certification the online shop attains and the positive reputation of selling party is about reviews and recommendations from others.

CONCEPTUAL MODEL



This study focuses on the most important privacy and security risks and trusts types emerging in the online environment. The independent variables are transaction, privacy and source risk and cognition-based and affect-based trust. These are meant to be predictors for the dependent variable, online shopping behavior. Current literature indicates a negative influence of the risk types and a positive influence of the trust types on online shopping.

METHODOLOGY

Operationalization

The questionnaire is divided into five sections with a total of 46 items: (1) demographics, (2) online shopping behavior, (3) privacy behavior, (4) risk perceptions (5) trust perceptions. The independent variables risk and trust are divided into different constructs (privacy, source, transaction risk; cognition-based, affect-based trust). These constructs are derived from Lee & Moon (2015) and Kim, Ferring & Rao (2008). Since the authors do not provide questions for their constructs, the items are developed by the authors of this study. Demographics is treated as a control variable. Questions about privacy behavior are asked for comparing privacy perceptions with actual privacy behavior. The survey is tested before publishing by independent people from all age groups. The survey is translated from English into German. The translations are proved with a re-translation by an independent person. After these pre-tests, the survey is adjusted and published.

Data Collection

The necessary data for this study is collected with an online survey constructed with Qualtrics. The survey is published via social media or email. All respondents do have access to the internet. The survey was open for 20 days in May 2016. In this time 856 responses are collected whereof 789 are completed and usable. In this study, the research question will be answered based on the data from German respondents in the age group 18-25 (millennials) and 50- 65 (baby boomers). For this analysis, a total sample size of 217 responses is valid.

Validity and Reliability

Validity indicates if a study's measurement is correct for measuring what is aimed to be measured (Merriam, 1995). A factor analysis helps to investigate internal validity by testing if items belong together in measuring the same construct (Harman, 1967). Bartlett's Test is significant (p=.000) and the KMO is .643 which is acceptable to regard sample adequacy and the factor analysis as accurate (Dziuban & Shirkey, 1974). The factor matrix indicates that the variable risk is split in three factors. This is consistent with the measurement of the constructs since risk is divided into three risk types: transaction risk privacy risk and source risk. The factor analysis proves validity of these risk types. Similarly, trust is divided in cognition-based and affect-based trust. However, the factor matrix indicates that cognition-based trust is not valid. This could be due to the fact that cognition-based trust can be better measured with a specific website and not in a general context about online shopping. Thus, the items for cognition-based trust are deleted and the variable trust only consists of affect-based trust items. Factor loadings are all above .3 and thus moderately high and some are even above .6 and high according to Kline (2014). Additionally, each item is only assessed to one factor group. Summing up, a strong validity for this study can be assumed.

An outcome is reliable when it is independent from the sample and a reproduction of the study would lead to the same outcome (Merriam, 1994). Reliability can be assessed with Cronbach's Alpha which measures the internal consistency between items (Cronbach, 1951). According to Hair, Black, Babin and Anderson (2010) Cronbach's Alpha indicates reliability when the value is above .6. The Cronbach Alphas for transaction risk (.632), privacy risk (.555) and source risk (.562) are not high, but good enough to be acceptable for this study. For trust the value .575 which is close to 0,6 and thus acceptable for this study. For online shopping behavior, the Cronbach's Alpha is .644 and thus acceptable. The Cronbach's Alphas are relatively low because new items had to be constructed and are not validated by prior research due to the newness of this study.

ANALYSIS

With the ANCOVA main effects of the independent variables and interaction effects between each independent variable and age will be analyzed. The generational groups have no direct influence on online shopping behavior ($F(1,205)=-1.588$, $p=.114$), which means that there is no difference between the generational cohorts concerning online shopping behavior. The outcomes of the ANCOVA analysis identify an influence of transaction risk and source risk on online shopping stable over age. Transaction risk influences both generational groups to the same extent in their online shopping behavior. For source risk, an interaction effect is identified ($F(1,205)=2.371$, $p=.019$). To detect the differences between the millennials and baby boomers, a scatter plot is built. The scatter plot shows that source risk has a greater influence on the baby boomers than on the millennials.

Besides the general research question, this study also measures the privacy behavior to control if there respondents behave according to their risk and trust perceptions. An independent t-test identify significant differences between the two age groups ($p<.001$). Baby boomers show a higher privacy behavior than millennials, which means they are taking more actions to protect their privacy during online shopping.

DICUSSION

Finding 1: Trust has no significant influence on online shopping stable over age

Affect-based trust has a significant influence on online shopping behavior, however, the influence of trust disappears when adding the generational groups to the analysis. This is contradictory to the findings of prior research (Kim, Ferrin & Rao, 2008; McCole, Ramsey & Williams, 2010) that trust has a positive influence on

intention to shop online. Hsiao, Chuan-Chuan Lind and Wand (2010) find out that trust in a specific website increases the intention to purchase on that specific website, but has no influence on the intention to purchase online at all. This results could also explain the finding of this study because this research is done based on online shopping in a general context. In the case of online shopping, customer build affect-based trust by reading reviews, recommendations or checking certifications. Although reviews are important for both millennials and baby boomers, they do not always know if they are trustworthy and only influence the intention to buy for specific websites, but not online shopping in general (Hsiao, Chuan-Chuan Lind & Wand, 2010).

Finding 2: Privacy risk is the strongest perceived risk among respondents but has no significant influence on the online shopping behavior

Data indicates that privacy risk is the strongest perceived risk for both millennials and baby boomers. Millennials perceive even higher privacy risk than baby boomers. Surprisingly, privacy risk has no significant influence on online shopping behavior in the ANCOVA analysis,. This is contradictory to the findings of prior research (Featherman, Miyazaki & Sprott, 2010) that privacy risk has a significant negative influence on intention to participate in online shopping. The result of this study supports the outcomes of Miyazaki and Fernandez (2001) that privacy risk is a main concern among internet users, but do not have an influence on their online shopping behavior. Privacy risk is the most present risk as it is often discussed in media and eople are in touch with privacy risk regularly. However, privacy risk is simultaneously a vague risk, which differentiates it from source and transaction risk, which often has a direct influence on peoples' lives. Internet users know about the risk of personal data theft, however, they do not understand what happens to the data. There are mostly no direct consequences to the person and thus, privacy risk does not have an influence on their online shopping behavior.

Finding 3: Transaction risk has a significant negative influence on online shopping behavior for both generational groups

Transaction risk negatively influences the online shopping behavior of the two generational groups. Both age groups are similarly influenced by this type of risk. This outcome is coherent with the findings of Koyuncu and Bhattacharya (2004) about transaction risk reducing the intention to purchase online. Transaction risk often has direct financial consequences, e.g. when the credit card is charged by third parties. This risk is present to the customer every time he or she pays online.

Finding 4: Source risk has a significant influence on online shopping, which is higher for baby boomers and lower for millennials

Source risk significantly influences the online shopping behavior of both generational groups. This is coherent with the opinion of McCorkle (1990) who ascribe high importance to source risk. The interaction effect shows that baby boomers are more influenced by source risk in their online shopping behavior than millennials. The reason for the difference between the two generational groups could be that millennials make fast and impulsive purchases (Lissitsa & Kol, 2016) and thus, do not check an online shop carefully before purchasing. Furthermore, they are not as brand loyal as baby boomers (Ordun, 2015) and thus, tend to use various online shops and do not perceive a strong risk with new and unknown shops. The baby boomer generation is not as save as the millennials in dealing with technology (Prensky, 2001) and thus, they are more careful with unknown online shops. They make planned decisions and take their time to complete their purchasing transaction (Hughes, 2008). This could be a reason from them checking online shops more carefully to reduce their higher source risk.

Finding 5: Baby boomers are more careful in their privacy behavior

Baby boomers take more actions to prevent their privacy in the context of online shopping. This outcome fits to the outcome that they are more influenced by source risk. Although millennials perceive higher privacy risk, they do not behave according to that. A reason for the inconsistency between perceptions and actual behavior for millennials could be that they are treated as the experienced "digital natives" , which gives them the feeling of safety and security in online activities. George (2004) offers an explanations for this behavior based on the theory of planned behavior. Confidence and self-efficacy in the context of online shopping increases the perceived control governance and thus, positively influences the online shopping behavior. Baby boomers are more careful in their privacy behavior because they did not grow up with the internet and are not used to it as the millennials.

PRACTICAL IMPLICATIONS

The outcomes of this study will be particularly important for companies in the B2C sector operating in e-commerce. Companies could develop a new competitive advantage with a marketing strategy addressing these new needs. Until now, baby boomers are designated as the "digital immigrants". They are often underestimated and neglected in the context of online shopping. This study reveals that baby boomers purchase online to a similar extent as millennials. Thus, baby boomers should be considered as serious and relevant online shoppers. For the marketing department of a company targeting the baby boomer generation, this means that marketing strategies should be expanded to the online environment. Online shops could decrease transaction risk by offering money back guarantees and a wide range of payment methods to give the customer the possibility of choosing the one he or she feels most safe with. Source risk has a negative influence on online shopping behavior, particularly higher for baby boomers. To decrease this risk, websites need to be designed in a professional way which gives an impression of safety and security. To exploit the full purchasing power of the baby boomers, they need to feel save in the online environment. For the website design, 3 main factors are important: (1) information design, (2) navigation design, (3) visual design (Ganguly, Dash, Cry & Head, 2010).

FURTHER RESEARCH

The outcomes of this study are only a small piece of the whole research on online shopping. There are many other factors which influence the online shopping behavior, but this study reveals that risk is a predictor and underlies the importance of segmenting into age groups. Since this research is based on the general context of online shopping, future research should test the framework on a specific website. Respondents are expected to give more precise answers to the questions with applying them to a website they know and use. Furthermore, the comparison between the age groups should be further investigated. This study compares the millennials with the baby boomers. However, there are also other generational groups, which should be included to obtain a clear picture. Lastly, the possible interacting effect between risk and trust should be further investigated. There are several research findings about the dynamics between risk and trust (Pavlou & Gefen, 2004; McCole, Ramsey & Williams, 2010), which should be tested and included in the influence on online shopping.

ROLE OF THE STUDENT

Liana Brüseke was an undergraduate student working under the supervision of MSc Raja Singaram. The topic was proposed by the supervisor. The design of the questionnaire, the processing of the results as well formulation of the conclusions and the writing were done by the student.

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