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Online Marketers Overstepping Their Welcome - A study of online behavioral advertising and its influence on perceived invasiveness and brand attitude

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Abstract

Online behavioral advertising (OBA), an advertising technique based on consumers' online personal data, is highly praised by practitioners for its efficiency and solid ability to create value for both the consumer and the advertiser. However, current literature is limited on long-term implications of OBA for the advertised brand. This study attempts to identify the potential damage OBA might cause when consumers perceive it negatively. With privacy concern as a well-established concept in the literature on OBA, the authors examine what happens when companies overstep the privacy limit leading consumers to feel invaded. Product sensitivity and ad relevance are proposed as antecedent factors influencing invasiveness with OBA knowledge as a moderator, and perceived invasiveness in turn is hypothesized to influence consumers' attitudes toward the brand. Using a scenario-based experiment ($N = 165$), the proposed framework is tested with a two-way MANOVA and a PROCESS analysis. The findings show that consumers perceiving OBA as invasive will lead to a decrease in their attitudes toward the brand. Neither ad relevance nor product sensitivity are found as antecedent factors for perceived invasiveness, and consumers' OBA knowledge do not moderate this relationship. However, OBA promoting sensitive products has a direct negative effect on consumers' brand attitudes. These findings demonstrate that OBA should be used with caution, emphasizing the importance that advertisers avoid provoking the feeling of invasiveness.

1.0 Introduction

Consumers who search for winter shoes on Google or check prices for a hotel in Prague on Booking.com will probably be followed with ads targeting these specific search interests in the following days, weeks or even months. This is a result of marketers rising adoption of the technique online behavioral advertising (OBA), which involves the use of online data derived from consumers to optimize the communication toward each individual consumer. The ability to monitor and track consumers online behavior is getting more advanced and advertisers are through predictive data able to show consumers more accurate personalized content. Online advertisers are embracing OBA to increase the efficiency of their marketing spending and the technique is playing an increasingly important role in the online advertising market. It has been predicted that digital advertising spending will reach more than \$332 billion in 2021, which is an increase of 46 percent compared to 2017 (Statista, 2019a).

The industry claims that this type of advertising create value for both the consumers and the advertisers through more useful, relevant and efficient ads, resulting in a boost in ad effects (Beales, 2010; Aguirre, Mahr, Grewal, de Ruyter & Wetsels, 2015). Multiple studies have found support for the positive implications of OBA for the advertiser, with increased click-through rates and conversion rates, compared to generic online advertisements (Beales, 2010; Tucker, 2014; Bleier & Eisenbeiss, 2015a; Chen & Stallaert, 2014). The improved click-through rates through the use of OBA have been found to exceed as much as 670 percent (Yan, Liu, Wang, Zhang, Jiang & Chen, 2009). Prior literature on OBA has used these findings as indicators for the technique to be significantly more valuable to consumers, due to its ability to tailor the content based on their individual profiles and therefore be more likely to present products they want to buy (Beales, 2010; Tucker, 2014; Bleier & Eisenbeiss, 2015a). Overall, consumers perception of OBA appears to be mixed. Some consumers perceive personalized messages as more relevant, useful and informative than non-personalized communication (Bleier & Eisenbeiss, 2015a; Jensen, King, Carcioppolo & Davis, 2012; Ur, Leon, Cranor, Shay & Wang, 2012), while others see it as invasive and creepy (Ur et al., 2012; Van Doorn & Hoekstra, 2013; Smit, Van Noort & Voorveld, 2014; Moore, Moore, Shanahan & Mack, 2015). However, research has proved the existence of a privacy

calculus, where consumers are weighting benefits against privacy fears when valuing OBA (White, Zahay, Thorbjørnsen, & Shavitt, 2008; Ur et al., 2012; Gironda & Korgaonkar, 2018).

Today's literature mainly focuses on immediate responses while ignoring future consequences (Boerman, Kruikemeier & Borgesius, 2017), creating a gap where possible crucial after-effects for the advertiser is neglected. Appendix A displays a review of relevant literature for our conceptual framework. How will the consumers value a brand if it is triggering negative emotions with its use of OBA? Will they boycott the ads, or also the brand itself? Less is known about long-term consequences for the advertising brands and the potential negative implications the usage of OBA might have. However, short-term negative consequences are found when the consumers are unaware that their data has been collected, resulting in a lower click-through rate (Aguirre et al., 2015). Furthermore, several researchers include the threat to privacy and reactance as a part of their model when investigating OBA (Bleier & Eisenbeiss, 2015; Tucker 2014; Aguirre et al., 2015), and find it as a highly relevant and possible influencing factor on how consumers respond to the advertisements. Additionally, studies have found privacy concern and ad irritation to have a direct positive effect on ad avoidance, while increased perceived personalization decreases ad avoidance (Baek & Morimoto, 2012). Still, the few papers of our knowledge that studies the potential negative outcomes of OBA mainly focus on the impact it has on the acceptance and avoidance of the technique itself, and not the advertised brand (Boerman et al., 2017).

There is a continuous risk of all advertisements to be misinterpreted or perceived offensive, and we recognize a greater risk with OBA as it is personalized directly toward individual consumers that might already feel vulnerable giving up their personal information. Advertisements that are highly personalized may lead to consumers feeling reactance toward the ad and fear a loss of control over their personal information (Baek & Morimoto, 2012). Furthermore, the advertiser does not know the consumer's situation and history which may affect how the consumer react to the advertisement. If online behavioral advertisements are following you for weeks with hotel offers for a trip to Copenhagen that you already booked housing for through Airbnb, the content is not relevant anymore and may trigger feelings like annoyance, irritation or possibly invasiveness. Real-world examples

have been seen of OBA failing when stores both online and offline target pregnant women with maternity products either before their family knew about the pregnancy or after miscarrying, resulting in massive media coverage (Forbes, 2012; The New York Times, 2016). These severe unsuccessful examples are not representative for the use of OBA but demonstrate pitfalls with severe consequences that marketers need to consider when taking advantage of OBA.

1.1 Master Thesis Purpose and Contribution

The use of online data derived from consumers to improve marketing activities and optimize communication has over the last couple of years attracted much attention both in the managerial world and academic field. With an inflation in analytical tools using artificial intelligence (AI) and machine learning, marketers has seized the opportunity to personalize and target their marketing communication (Stephen, 2017). Moreover, respected establishments like the Marketing Science Institute (MSI) (2018) have in their research priorities for 2018-2022 identified multiple areas within marketing research that touches upon consumer data-driven marketing, and the need for knowledge on how the rights to privacy influence the functional interaction with brands.

The proposed study outlined in this report will attempt to contribute to these identified theoretical gaps, while also be valuable to marketers executing OBA-strategies. The study will build on literature that studies negative outcomes of OBA by extracting the significant construct invasiveness and connect it to possible antecedent factors and long-term consequences for the advertising brand. First, we consider it interesting to identify factors that can help explain the consumer's feeling of invasiveness triggered by an OBA, and their respective influence. This expands the current literature placing OBA in a context, while developing links between explaining variables and invasiveness. Second, the research will connect how the feeling of invasiveness affect the consumer's attitude toward the brand. Hence, the study makes theoretical contributions as it bridges the gap between research done on OBA with research on attitude toward the brand. Last, OBA knowledge is included as a moderator and hypothesized to affect the strength of consumers' perceived invasiveness. The study sheds light on long-term consequences of the usage of OBA, and thus creates value also for companies. If marketers are informed that their OBA are provoking negative feelings in the

consumer, they will possibly use the technique more cautiously. Consumers' OBA knowledge is interesting as it may propose how marketers should differentiate their OBA depending on the target's knowledge about the practice, as well as the importance of educating the consumers about the companies' data collection. By also researching what product categories lead to a higher feeling of invasiveness, and how it affects the consumer if the advertisement is no longer perceived as relevant, marketing managers will have more empirical knowledge for future OBA-strategies.

More specifically, the main purpose of the study is to add on current OBA literature by exploring antecedents of perceived invasiveness while connecting these concepts to the well-established marketing construct, attitude toward the brand. By including this construct, the study proposes a connection to an indicator of consumers future behavior, and hence investigates long-term consequences of consumers' reactions to OBA.

2.0 Theoretical Background

2.1 Online Behavioral Advertising

There are multiple definitions of the concept online behavioral advertising (OBA), also referred to as "online profiling", "personalized advertising" and "behavioral targeting" (Bennett, 2010; Gironde & Korgaonkar, 2018; Boerman et al., 2017). There seems to be a consensus in the literature that the definition should include at least two main components; tracking of consumers' online behavior and the use of the collected data to individually target ads (Bennett, 2010; Smit et al., 2014; Boerman et al., 2017). In this paper, we define OBA as "the practice of monitoring people's online behavior and using the collected information to show people individually targeted advertisements" (Boerman et al., 2017, p. 364). Online behavior includes consumer data generated through web browsing, click-through responses, purchases, media consumption (e.g. videos watched), app use, search histories, communication content in email correspondence and social media posts (Zuiderveen Borgesius, 2015; Boerman et al., 2017).

2.2 Personalization

Personalized marketing refers to adjusting the marketing to each consumer based on what the marketer knows about them, such as demographic facts or personal interests (Gillenson, 2000; Goldsmith & Freiden, 2004). This can be tailored emails where the respondents name is included and contacted due to living area or what groceries they get a discount on based on their shopping behavior. The ability to incorporate user's past behavior enables online firms to personalize their services. However, the data used to create OBA vary widely and since marketers do not use all their data on one specific advertisement there will be different levels of personalization. Boerman et al. (2017) propose that the level of personalization in an OBA will vary based on the types of personal data (e.g. click-through responses or browsing history) and the amount of information used (e.g. one single browsing search or a combination of browsing behavior and communication content in email correspondence). However, consumers' response to such communication may differ from what the marketer intended. Specifically, they may be perceived as too personal - extending beyond friendly recognition to suggest an inappropriate level of familiarity with consumers' preferences and behaviors. Edwards, Li and Lee (2002) and White et al. (2008) show that personalized advertisements can lead to a process of reactance in which consumers deliberately resist advertising they perceive as intrusive.

2.3 Privacy Calculus

MSI (2018) stress the relevance of investigating the trade-off between personal and relevant content versus potential privacy invasion. Much of the literature that exists on OBA consider privacy concern as an important factor to contemplate (Boerman et al., 2017). This may seem intuitive as the power of digital- and social networks and the extent of information consumers leave behind online are being heavily discussed in media. Advertising networks and social network sites have been criticized for their privacy settings, and we have seen a change toward a more regulated and controlled online world. Privacy calculus theory propose that consumers perform a cost-benefit analysis of competing beliefs about the benefits and risks of engaging in a behavior. By weighting these factors up against one another in a calculus, consumers are able to assess their privacy concern (Culnan & Armstrong, 1999; Girona & Korgaonkar, 2018). Consumers are willing to allow the firm to benefit from the collection and use of their personal data if they perceive

the information practice and exchange as fair (Culnan & Armstrong, 1999), and especially if they believe they will gain something from giving up their information (Kobsa, 2007; Xu et al., 2011). Further, consumers are willing to overgo their privacy concern and pay the price of giving up their personal information in exchange for certain benefits such as more useful and relevant advertisements (Bleier & Eisenbeiss, 2015b; Gironda & Korgaonkar, 2018). In each case, consumers have to decide whether the benefits derived from OBA equals or exceed the associated costs (Xu, Luo, Carroll & Rosson, 2011; Gironda & Korgaonkar, 2018). Research has proven that consumers perception of privacy control is an important implication in their evaluation of the exchange, suggesting that consumers are more likely to react positively to OBA when they feel greater control of their personal data (Awad & Krishnan, 2006; Tucker, 2014). Still, consumers feel they have little control over their personal information and research show that consumers are worried about how much companies know about them, how the information is being collected and how it is being used (Baek & Morimoto, 2012; Gironda & Korgaonkar, 2018). Furthermore, the collection of personal data can make consumers feel vulnerable (Milne, Bahl & Rohn, 2008; Anton & Earp, 2004; Aguirre et al., 2015). However, in accordance with the privacy calculus, research has proven that consumers accept the feeling of vulnerability in trusted environments (Bleier & Eisenbeiss, 2015b; Urban, Amyx & Lorenzon, 2009). Several studies on OBA have established the construct of the privacy calculus in a meaningful way. Therefore, instead of examining what is already well established, we will explore other concepts in our conceptual framework which have received less attention in the literature.

3.0 Conceptual Framework

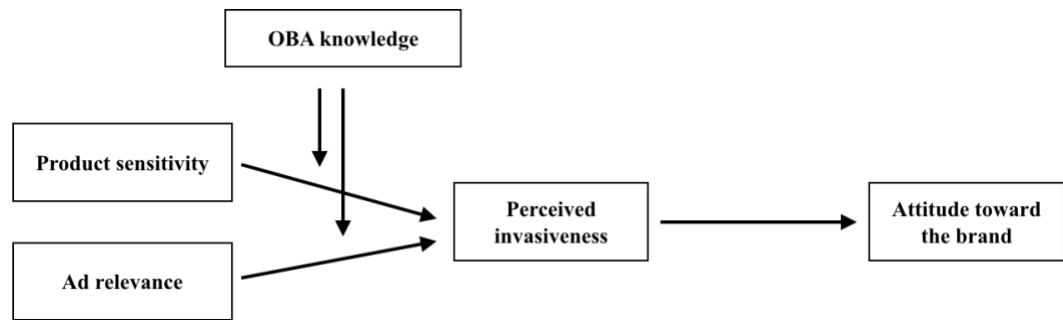


Figure 1: Conceptual framework of the present study.

In the following section we will present the study's proposed relationships, as depicted in Figure 1. Product sensitivity and the advertisement's relevance are hypothesized to affect a consumer's perceived invasiveness by OBA. OBA knowledge is hypothesized to moderate these relationships. Additionally, perceived invasiveness is hypothesized to affect a consumer's attitude toward the brand.

3.1 Perceived Invasiveness

As technology makes it possible for marketers to create a more tailored experience for each individual consumer, the limit between delivering a great personalized experience and going too far is blurring. In accordance with the information boundary theory, consumers form psychological boundaries in an attempt to control the outflows of private and valued information to other parties (Stanton & Stam, 2002). When marketers overstep these boundaries consumers may perceive it as invasive (Sutanto, Palme, Tan & Phang, 2013). Invasiveness refers to the perception of invasion of privacy, which is the intrusion into the personal life of another, without just cause, triggering feelings of discomfort and unease (Solove, 2006; Gironde & Korgaonkar 2018). In a marketing context, invasion of one's personal space is referred to as marketers use of tactics that may be too personal or constant (Moore et al., 2015). The organizational behavior literature has conducted a fair amount of research on invasiveness. However, to our knowledge there exists little research on this construct related to online consumer experiences (Matwyshyn, 2011; Moore et al., 2015; Gironde & Korgaonkar 2018). Importantly, previous literature on invasiveness indicate a strong need to distinguish and clarify the constructs of intrusiveness and invasiveness, since it seems to be some confusion. Invasiveness refers to the perceived invasion of privacy experienced by an

individual and is therefore a theoretically related construct to privacy concern. Whereas, intrusiveness is related to the interruption of a consumer's viewing-, listening- or browsing activity (e.g. pop-up ads and television commercials).

Prior research show that the use of personal information in advertising can elicit negative responses when the level of personalization is perceived as inappropriate or too personal (White et al., 2008). In response, consumers may experience psychological reactance, a motivational state arising in a person whose freedom is perceived to be threatened (Brehm, 1966; White et al., 2008). Burgoon (1978) argues that the perceived valence of a violation will drive subsequent reactions, which potentially has damaging implications for marketers using personal information (Moore et al., 2015). Girona and Korgaonkar (2018) find that invasiveness of personalized advertising is significantly and negatively related to both click-through and purchase intentions. Therefore, it stands to reason that when consumers are presented with highly tailored individual advertisements that creates a feeling of invasiveness, they will respond negatively.

Theory looking at the mechanism underlying negative reactions to data usage seems to assume that consumers cognitively evaluate each decision in accordance with the privacy-calculus theory (Aguirre et al., 2015; Bleier & Eisenbeiss, 2015b; Awad & Krishnan, 2006). On the contrary, acknowledged consumer research states that consumers often form attitudes based on immediate instinctive as a response to a stimulus, without any form of cognitive reasoning (Shiv & Fedorikhin, 1999). Hence, online customer experiences are heavily influenced by the affective responses triggered in the consumer (Arnold & Reynolds, 2009), and may affect the consumer's attitude toward the brand. Attitude is an important construct in marketing research due to its key antecedent for consumer behavior and is defined as an individual's internal evaluation of an object such as a branded product (Mitchell & Olson, 1981). As attitude toward the ad is shown to affect attitude toward the brand (Gardner, 1985), spillover-effects of OBA that triggers negative feelings is assumed to also affect the consumer's attitude toward the brand. We therefore argue this to be an important consideration for brands conducting OBA, to also be aware of the possible pitfalls and following consequences of OBA triggering negative emotions. Therefore, we hypothesize:

H1: Perceived invasiveness of OBA will decrease consumers' attitudes toward the brand.

3.2 Product Sensitivity

While personal information can be referred to as information that makes one readily identifiable, sensitive personal information is defined as information relating to topics such as confidential medical facts, racial or ethnic origins, political or religious beliefs, and sexuality (Google, 2019; European Commission, 2019). The EU's general data protection regulation (GDPR) state that these types of data can create significantly more risks to a person's fundamental rights and freedoms by putting them at risk of unlawful discrimination (Hern, 2018). Furthermore, some product categories are generally considered to be more personal or private than others. Health and financial products are categories strongly related to consumers' privacy concern and research find support for privacy being particularly important for these categories (Tsai, Egelman, Cranor & Acquisti, 2011; Goldfarb & Tucker, 2011). Socially embarrassing products is also referred to as sensitive, such as underwear, condoms, female hygiene products (Shao & Hill, 1994). Other categories like alcoholic beverages and products targeting children are perceived as such sensitive products that they have advertising restrictions. Prior research finds a more pronounced negative effect on purchase intention for online advertising featuring private product categories as well as for consumers who seem to guard their privacy more closely (Goldfarb & Tucker, 2011). Therefore, we argue that product categories perceived as more sensitive will positively affect consumers perception of invasiveness.

H2: Product sensitivity will increase consumers' perceived invasiveness.

3.3 Ad Relevance

Beales (2010) argue that OBA is more successful due to its ability to create greater utility for consumers through more relevant advertisements, and perceived usefulness is found to improve consumers' opinion of the practice (Gironda & Korgaonkar, 2018). In accordance with the privacy calculus, consumers are willing to trade off and forgo privacy in return for the advantages they enjoy from personalization (Kobsa, 2007; Xu et al., 2011). However, not all OBA lead to advantages and perceived utility, as not all OBA are more relevant. OBA can be

used to retarget customers with ads of products they have previously looked at or searched for. If the consumer is no longer interested in the product, has bought it somewhere else or the ad appears due to another user's interest, we propose it can create a sense of impatience and displeasure if the ad repeatedly follows the customer or is pushed on the consumer using aggressive tactics. Hence, we argue that when OBA fail to match consumers' need, the advertised brand will be perceived as irrelevant and annoying and thus strengthen consumers' perception of invasiveness. On the other hand, OBA perceived as relevant to consumers will in line with the privacy calculus lead to a lower perceived invasiveness. Therefore, we propose the hypothesis:

H3: Ad relevance will decrease consumers' perceived invasiveness.

3.4 OBA Knowledge

As more regulations on data collection and handling are introduced, consumers are continuously met with questions to accept cookies, accept sites to save information, sign up for an account or similar requests wherever they go online. Companies are by law not allowed to track consumer data without their consent. With the extensive demand for consumers to deal with these requests and make decisions whether to give up their information, we find it questionable that consumers cognitively evaluate each decision. We argue that these repetitive choice-tasks become habitual and follow a peripheral route in line with ELM-theory (Petty & Cacioppo, 1986), where the consumer rely on peripheral cues when deciding how to react. This has resulted in consumers often lacking information to be able to make educated privacy-related decisions. Kobsa (2007) find that consumers underestimate the chance that they can be identified if they disclose certain personal data or are unfamiliar with a site's privacy practices since they hardly ever read privacy statements. Research done on consumers' awareness of OBA show that while most consumers are aware that they are under surveillance and that companies collect data on them, they are surprisingly uninformed about the specific types of data they give up when they go online. Only 25 percent of consumers know that their data footprints include information on their location, and just 14 percent understand that they are sharing web-surfing history (Morey, Forbath & Schoop, 2015). We find this to be interesting, as it can be an indication of how little knowledge the consumer has on the extent companies are collecting personal information, as well as the

implications of their consent. Even if the consumer understands that the main party asking for consent can use their data, we believe they do not grasp the extent of their consent in third parties also being able to take use of the data. In the context of sensitive product categories and ad relevance, we propose that consumers' OBA knowledge will moderate their perception of invasiveness. Thus, consumers with low knowledge of OBA are more likely to become upset and find the personalized advertisement as even more invasive, compared to those with a greater knowledge of the practice. As ad relevance is hypothesized to decrease perceived invasiveness, we propose that a higher OBA knowledge will strengthen this effect even further. Whereas product sensitivity is hypothesized to increase perceived invasiveness, we propose that a higher OBA knowledge will weaken this effect as consumers have a higher understanding of the practice.

H4a: OBA knowledge will strengthen the effect ad relevance has on perceived invasiveness.

H4b: OBA knowledge will weaken the effect product sensitivity has on perceived invasiveness.

4.0 Method

To test the proposed model, we used a scenario-based online survey with a 2x2 study design. Participants were recruited through MTurk and randomly assigned to one of the four conditioned groups. They were presented with an OBA scenario based on high or low levels of the independent variables; ad relevance and product sensitivity. Next, they were asked question related to each construct of the model, as well as control variables and demographics. Before conducting the main study, we ran a pre-study to verify what product categories were perceived as more or less sensitive. Further, we used a pre-test to get feedback on the main study design and identify potential problems, reduce measurement error and respondent's misinterpretations. After collecting data for the main study, reliability and validity were inspected, and manipulations were checked.

4.1 Pre-study

We ran a pre-study to establish that some product- and service categories are perceived as more sensitive than others. The pre-study was carried out through an online questionnaire using Qualtrics, and we convenience sampled 30 participants. In accordance with Waller (1999), participants were asked to indicate how sensitive they regarded the product or service on a five-point scale anchored by 1 (“not at all sensitive”) to 5 (“extremely sensitive”). To secure a mutual understanding of the concept “sensitive products”, participants were provided with a description adopted from Wilson & West (1981); “...products, services, or concepts that for reasons of delicacy, decency, morality, or even fear tend to elicit reactions of distaste, disgust, offence, or outrage when mentioned or when openly presented (Shyan Fam, Waller & Zafer Erdogan, 2004). The questionnaire consisted of a total of sixteen items with a selection of products and service categories identified as sensitive in prior literature, along with an equal number of products and services not regarded as sensitive. The participants used on average two minutes to complete the questionnaire.

4.1.1 Results

For the non-sensitive products, dishwasher detergent ($M = 1.07$) and car rental ($M = 1.13$) were perceived as the least sensitive product categories. “Car rental” was chosen as the non-sensitive product category for the main-study, due to it being the easiest to manipulate in a scenario. For the sensitive products, the results showed hemorrhoids cream ($M = 3.57$) and personal loan ($M = 3.40$) to be perceived as the most sensitive categories of the selection. Hemorrhoids cream is only relatable for a small share of the population and can therefore influence the reaction to the OBA if the respondents feel a distance to the product. Money-related products and services are something most people relate to, which makes personal loans appropriate for the scenario. Therefore, “personal loan” was selected as the manipulation of high product sensitivity for the main study.

We ran an independent sample t-test to test if there was a statistically significant difference in the mean scores between car rental and personal loan. The difference was found to be statistically significant ($t(58) = -9.584, p < 0.001$), hence the two product categories were perceived as different regarding their level of sensitivity. Car rental were perceived as less sensitive than personal loan.

4.2 Main Study

4.2.1 Research Design and Procedure

To test our hypotheses, we conducted a scenario-based online survey. The research method used is a common approach in this field of study (Gironda & Korgaonkar, 2018; Bleier & Eisenbeiss, 2015b; Van Doorn & Hoekstra, 2013), and offer multiple advantages. It is easy administered, gives access to large samples, flexible and reduces biases that can occur using retrospective self-reports (Gironda & Korgaonkar, 2018; Malhotra, 2010). All these factors can contribute to higher quality data (Malhotra, 2010). As we are studying advertisements displayed online, administering the survey online should give us participants better posed to answer the questionnaire as they are online active users. Furthermore, a scenario-based online survey is preferred when researching OBA due to issues that we would meet in the field. It would be technically challenging to obtain online behavioral history of participants, as well as ethically challenging due to the personal, sensitive nature of the needed information (Gironda & Korgaonkar, 2018). Hence, a scenario-based online survey seemed most appropriate for our study, as the participants did not need to give up sensitive information and were held anonymous.

In line with our hypotheses, we differentiated between high and low product sensitivity as well as high and low ad relevance, which in sum gives four manipulation groups. The resulting experimental setup was a 2 (product sensitivity: high vs. low) x 2 (ad relevance: high vs. low) between-subject design. The participants were randomly assigned to one of four scenarios describing a possible encounter with an OBA in real-life (see Appendix B). Product sensitivity was manipulated using two different brands offering either a high- or low sensitive product, as identified in the pre-study. When choosing appropriate brands for rental cars we investigated the leading rental car companies in the U.S. YouGov's brandIndex 2018 results show that Enterprise ranked highest with a score of 20.9, followed by Hertz at 14.4 (Statista, 2019b). Due to Hertz being the biggest international car rental company we chose this as the low product sensitivity brand. For the high product sensitivity brand, we needed a provider of personal loans. LendingClub is a listed US financial lending company with more than 2.5 million borrowers, and America's largest online marketplace for unsecured personal loans (LendingClub, 2019). Further, their marketing activities target Americans with activities, vacations and products they can spend the loan on, which we saw as

convenient in creating realistic scenarios for the respondents. Thus, we found LendingClub to be a fitting provider of the high sensitivity products. The OBA was either presented as highly relevant or irrelevant according to the need presented in the scenario. Ad relevance was manipulated using time perspective, where the presented customer need was either a current one (e.g. “you are moving next week”) or a past one (e.g. “you moved last month”). First, the participants were asked about their attitudes toward the brand, as well as their OBA knowledge. Next, they were exposed to the scenario. Following, the participants were again asked to state their attitudes toward the brand, in addition to answer a series of questions relating to different aspects of our study, as well as demographic information.

4.2.2 Pre-test

To ensure that the scenario descriptions and questionnaire were perceived as clear and accomplished the intended significant difference in manipulations, we conducted a pre-test of the experiment. The pre-test was carried out through an online questionnaire using Qualtrics, and we used a convenience sample consisting of 100 participants. The participants used on average seven minutes to complete the questionnaire. The manipulation of the independent variable product sensitivity was not found significant. We argue that the initial chosen brand, American Express, was not perceived as more sensitive as it was more of a credit bank than personal loan bank, and not corresponded to the sensitive product category “personal loan” found in the pre-study. We therefore chose to change the brand to LendingClub. The manipulation of the independent variable ad relevance was significant, but to ensure a clearer distinction, we wrote the words indicating the time perspective in the scenario description in bold and extended the time horizon. We verified the changes through a final pre-test ($N = 30$), and both manipulations were perceived significantly different in the intended direction.

In addition, risk aversion and privacy concern were added as control variables. Further, due to comments from respondents, the measurement scale of attitude toward the brand was changed. The initial measurement scale was a seven-point semantic differential rating scale bounded at each end by one of two bipolar adjectives. However, the feedback from respondents was that when answering on a mobile device the questionnaire format made five out of seven scale points immediately visible, showing only one end of the bipolar adjective scale. Therefore,

we chose four items from the original scale (two positive and two negative adjectives) to be rated on a seven-point Likert scale.

4.2.3 Measurement Scales

To operationalize our constructs, we utilized existing measurement scales that in previous studies have shown acceptable levels of reliability and adapted those scales to fit the context of our study. The final questionnaire with each of the scales with their individual items can be found in Appendix C.

Attitude toward the brand was measured with four items adapted from Mitchell & Olson (1981): “good”, “dislike very much”, “pleasant”, and “poor quality”. Participants rated these items on a seven-point Likert-type scales anchored by 1 (“Strongly disagree”) to 7 (“Strongly agree”).

OBA knowledge was measured with eight statements in random order adapted from Smit et al. (2014) (see Appendix C). Participants indicated their beliefs about the statements to either be “true”, “false”, or “not sure”. Three of the statements were false. Correct answers were coded 1, and incorrect answers and “not sure” were coded 0. The total score ranged between 0 (none correct) and 8 (all correct) and served as the value for the OBA knowledge scale.

Perceived invasiveness was measured with five items adapted from Paschal, Stone and Stone-Romero (2009), Zweig and Webster (2002), and Gironda and Korgaonkar (2018), where several of the items were modified so that they would make sense to respondents in the context of OBA (see Appendix C). Participants responded to the items along a seven-point Likert-type scale anchored by 1 (“Strongly disagree”) to 7 (“Strongly agree”). Moreover, participants indicated to what extent they felt that the scenario lead to an invasion of their privacy. This was measured on a seven-point scale from 1 (“Definitely not an invasion”) to 7 (“Definitely an invasion”).

4.2.4 Manipulation Checks

Two items were used to assess whether participants perceived differences in the sensitivity of products and the perceived relevance of the advertising. The statement “The advertisement was relevant for my needs presented in the scenario” assessed whether the participant perceived the OBA as relevant (i.e. ad relevance). The

statement “I perceived the product being advertised as a sensitive product” assessed whether the participant perceived the product as sensitive (i.e. product sensitivity). Items were rated on a seven-point Likert-type scale anchored by 1 (“Strongly disagree”) to 7 (“Strongly agree”).

4.2.5 Control Variables

Brand trust was measured with four items adapted from Chaudhuri and Holbrook (2001). Participants indicated how they agreed on the following four statements: “I trust this brand”, “I rely on this brand”, “this is an honest brand”, and “this brand is safe”. Items were rated on a seven-point Likert-type scale anchored by 1 (“Strongly disagree”) to 7 (“Strongly agree”).

Previous interaction with brand was measured with two items adapted from Spreng and Mackoy (1996). First, participants indicated if they had ever used or interacted with the brand in real life, and if they had, they indicated how they agreed on the following statement: “How satisfied are you with the service provided by (Hertz/LendingClub)?”. Items were rated on a seven-point Likert-type scales anchored by 1 (“Extremely dissatisfied”) to 7 (“Extremely satisfied”).

Risk aversion was measured with four items combined of two items adapted from Bao, Zhou and Su (2003) and Raju (1980), and two items adapted from Fogel and Nehmad (2009) and Pan and Zinkhan (2006) (see Appendix C). Items were rated on a seven-point Likert-type scale anchored by 1 (“Strongly disagree”) to 7 (“Strongly agree”).

Privacy concern was measured with four items adapted from Bleier and Eisenbeiss (2015b), Sheng, Nah and Siau (2008), Smith, Milberg and Burke (1996), and Dinev and Hart (2004) (see Appendix C). Items were rated on a seven-point Likert-type scales anchored by 1 (“Strongly disagree”) to 7 (“Strongly agree”).

In addition, participants were asked to answer five demographic measures: gender, age, living area, education level, and income.

4.3 Data Collection

The sample of respondents was recruited through Amazon Mechanical Turk (MTurk) consumer panel. The respondents received an incentive of \$0.85 for their participation and the data was collected through a questionnaire design in Qualtrics. MTurk is widely used within the marketing field and data obtained has been found to be at least as reliable as data obtained via traditional methods (Buhrmester, Kwang & Gosling, 2011). Sampling bias is reduced as it provides a more diverse group of respondents than through convenience sample, enabling more efficient data collection (Cai, Lu & Gursoy, 2018; Buhrmester et al., 2011). There are also some limitations with using MTurk, as the study method is unsupervised and anonymous and the participants are motivated by financial incentives, which can undermine key assumptions of experimental research methods (Chandler, Mueller & Paolacci, 2014). However, to ensure higher quality data, only US registered users with approval rate above 95 percent and at least 5,000 previous hits approved were eligible to participate in the study (Li, Lu, Bogicevic, & Bujisic, 2019).

4.3.1 Data and Sample Descriptive

Of the 211 participants recruited through MTurk, 46 participants were excluded due to following reasons; 1) completed survey in lower than 2.5 minutes (not realistic to have fully understood all questions as average completion time was five minutes) or outliers using more than 16 minutes, 2) failure to register reverse coding of items, and 3) failure to perceive the manipulations as intended on both manipulation check (product sensitivity/ad relevance).

Table 1: Scenario groups and number of respondents

	Low ad relevance	High ad relevance
Low product sensitivity	45	41
High product sensitivity	41	38

After excluding respondents, we were left with 165 completed questionnaires with no missing values. We managed to get close to equal number of respondents in all four scenarios (38/41/41/45) (see Table 1).

Table 2: Sample characteristics

	Frequency	Percentage
<i>Gender</i>		
Female	73	44.20
Male	91	55.20
Other	1	0.60
<i>Age</i>		
Less than 21	1	0.60
21-34	59	35.80
35-49	65	39.40
50-64	34	20.60
65 or more	6	3.60
<i>Income</i>		
Less than \$30,000	32	19.40
\$30,000-\$49,999	35	21.20
\$50,000-\$99,999	70	42.40
\$100,000-\$249,999	25	15.20
I would rather not say	3	1.80
<i>Education</i>		
Less than high school	1	0.60
High school graduate	11	6.70
Some college	51	30.90
College degree	76	46.10
Postgraduate degree	26	15.80
<i>Living area</i>		
Urban	57	34.50
Suburban	80	48.50
Rural	28	17.00

The remaining participants ($N = 165$) consist of 73 females, 91 males and 1 other, with 75 percent being between the age of 21-50 (see Table 2). As many as 83 percent of the participants live urban or suburban, while 17 percent live in rural areas. More than half (62 percent) of the participants has a college or postgraduate degree. Looking at the participants income, we find that the largest group is paid between \$50,000-\$99,000 yearly, while 41 percent reported a yearly income lower than this.

Further, the mean, standard deviation, skewness and kurtosis of all items were examined (see Appendix D), which gives important information before conducting t-tests and analysis of variance (Pallant, 2016). Skewness values provides an indication of the symmetry of the distribution and can be used to compare normal distribution, while kurtosis gives information on the peakedness of the distribution

(Pallant, 2016; Hair, Anderson, Babin & Black, 2010). Variables with skewness values outside the range of -1 to +1 can be referred to as having a substantially skewed distribution (Hair et al., 2010). All four items measuring privacy concern is considered substantially skewed. They have a skewness from -1.070 to -1.269. This means they have few small values and tails off to the left, indicating that a substantial amount of the respondents is privacy concerned. In addition, the item measuring satisfaction with the brand for those who had interacted with the brand before is considered substantially skewed. It had a skewness of -1.355 and therefore also have relatively few small values and tails off to the left. Looking at the kurtosis values, we find that 11 of the items have a more peaked distribution with a positive value while 15 of the items have a flatter distribution with a negative value. However, as none of these are higher than three, there are minimal risk associated with further analysis.

4.4 Reliability and Validity

Prior to hypothesis testing, we considered the data reliability and validity. Validity measures lack of systematic bias and questions if the study measures what it intends to measure. A scenario-based experimental design has shown to maximize the internal validity, considering the causality within a study (Zhang, Wei & Hua, 2019; Smith, Bolton & Wagner, 1999). Regarding generalization of results, data collection through MTurk has shown to provide a highly representative sample of the US population, leading to a greater likelihood of external validity (Minton, Gurel-Atay, Kahle & Ring, 2013). Further, to assess the construct validity, we conducted a confirmatory factor analysis (see section 4.4.1) (Thompson & Daniel, 1996). Reliability refers to the extent the results are consistent and stable when repeated measurement are made (Malhotra, 2010). To secure a high reliability of our measurement scales, we used well established measurement scales and adapted these scales to fit the context of our study. Further, we analyzed the measure of Cronbach's alpha (see section 4.4.2) to assess the internal consistency of the set of items forming each scale (Malhotra, 2010).

4.4.1 Confirmatory Factor Analysis

We conducted a confirmatory factor analysis to check if the items reflected the constructs established in theory (see Appendix E). To confirm previous theory, the items should be highly intercorrelated and represent dimensions within the data

reflecting the theoretical constructs (Hair et al., 2010). We specified the number of factors equal to the number of constructs included in the questionnaire. Principal components analysis revealed the presence of only five components with eigenvalues exceeding 1, when the intention was six. The results showed that multiple items were not loading on the intended components, such as risk aversion-, brand trust- and attitude toward the brand items. Therefore, one item of the brand trust construct (Trust_2) as well as two items of the risk aversion construct (Risk_aversion_1 and Risk_aversion_2) were removed from further analysis due to low communality value (Pallant, 2016). This led to stronger loadings in accordance with theory. However, brand trust still loaded together with two of the attitude toward the brand (before scenario exposure) items (“Att_bef_1” and “Att_bef_3”) on the same factor, and we assume this is due to them being strongly related theoretical constructs (Chaudhuri & Holbrook, 2001). The items are all measuring a respondent’s positive feelings and attitudes toward a brand, with high brand trust associating to the perception of a brand as “good” and “pleasant”. Despite the attitude toward the brand (before scenario exposure) items being split on two constructs, we chose to continue with the intended constructs for further analysis.

4.4.2 Reliability Analysis of Subscales and Creation of Composite Variables

We reversed the coding on two of the attitude toward the brand items (dislike and poor quality) and two of the risk aversion items, so all items indicated the same direction. The attitude toward the brand before scenario exposure consisted of four items ($\alpha = .875$), perceived invasiveness consisted of five items ($\alpha = .980$) and attitude toward the brand after scenario exposure consisted of four items ($\alpha = .909$). The scale on privacy concern consisted of four items ($\alpha = .958$), the brand trust scale consisted of three reminding items ($\alpha = .933$) and the risk aversion scale consisted of the two reminding items ($\alpha = .649$). The Cronbach’s alpha is a measurement of the scale’s reliability, and we found all scales to show high internal reliability with values well above 0.80 except the risk aversion scale. Still, values above 0.60 is acceptable when conducting exploratory research (Hair et al., 2010, p. 125; Malhotra, 2010). Thus, we created composite variables by averaging the scores across items in the scales.

The respondents OBA knowledge was re-coded by making dummy variables for each item (1: correct answer, 0: incorrect answer) before we created a new variable

with the total score of correct answers made by each respondent (1: low OBA knowledge, 8: high OBA knowledge).

4.5 Manipulation Check

We ran independent sample t-tests to test our manipulations and examine if our scenarios were perceived as high and low relevant and the products had different levels of sensitivity.

First, we tested if there was a statistically significant difference in the participants mean score between the control variable for sensitive products and the scenarios. The test reports significant differences, with high product sensitivity scenarios ($M = 4.84$) having higher mean scores on perceived sensitivity than the low product sensitivity scenarios ($M = 2.87$) ($t(163) = -8.743, p > .001$).

Next, we tested if there was a statistically significant difference in the mean score between the control variable ad relevance and the scenarios. The difference was found to be statistically significant ($t(143.736) = -4.629, p < .001$), hence the high ad relevance scenarios ($M = 5.63$) were perceived as more relevant than the low ad relevance scenarios ($M = 4.70$).

4.6 Control Change in Attitude Toward the Brand

Before testing our hypotheses, we controlled if there was a significant change in attitude toward the brand before and after participants were exposed to the scenarios. A paired-sample t-test was conducted to evaluate the impact of the scenarios on respondents' attitudes toward the brand. There was a statistically significant decrease in attitude scores from before scenario exposure ($M = 5.191, SD = 1.002$) to after scenario exposure ($M = 4.635, SD = 1.259$), $t(164) = 6.817, p < .001$ (two-tailed). The mean decrease in attitude toward the brand were .556 with a 95 percent confidence interval ranging from .395 to .717. The eta squared statistic (0.395) indicate a large effect size (Cohen, 1988; Pallant, 2016). The results suggest that the difference in the two sets of attitude scores was unlikely to occur by chance, and that the scenarios had a significant impact on respondents change in attitudes toward the brand (Pallant, 2016). Therefore, we will use the composed variable for attitude after scenario exposure as our dependent variable in further analysis.

5.0 Results

Moving on to the structural model, two different analyses were used for the hypothesis testing. First, a two-way MANOVA determined the relationships between the independent variables and perceived invasiveness, answering to *H2* and *H3*. Next, to test the hypothesized mediation moderation relationships, a bootstrapping method provided coefficients for the indirect and direct effects while establishing their significance. This answers to *H1*, *H4a* and *H4b*.

5.1 Two-way MANOVA

Table 3: Results of two-way MANOVA

Independent variables	Dependent variable	Multivariate test			Between-subject effects				
		Wilks' Lambda	F-value	Sig.	η_p^2	F-value	df	Sig.	η_p^2
<i>Product sensitivity</i>	Perceived invasiveness	.881	10.856	.000***	.119	.398	1	.529	.002
	Attitude toward the brand					17.191	1	.000***	.096
<i>Ad relevance</i>	Perceived invasiveness	.978	1.833	.163	.022	.007	1	.936	.000
	Attitude toward the brand					2.311	1	.130	.014

Note: *** $p < .001$

A two-way between-groups multivariate analysis of variance (two-way MANOVA) were applied to test the direct paths between the independent variables and mediator, and independent- and dependent variables (see Table 3). Two-way MANOVA determines if there is an interaction between two independent variables on two or more dependent variables, and with this, we can state the significance of the relationships proposed in *H2* and *H3*. Two dependent variables were used; perceived invasiveness and attitude toward the brand. The independent variables were product sensitivity and ad relevance. Preliminary assumption testing was conducted to check for normality, linearity, univariate and multivariate outliers, homogeneity of variance-covariance matrices, and multicollinearity, with no serious violations noted (Pallant, 2016). There was not a statistically significant difference between high and low ad relevance on the combined dependent variables ($F(2, 160) = 1.833, p = .163$; Wilks' Lambda = .978; partial eta squared = .022), providing no significant support for *H3*. There was a statistically significant difference between high and low product sensitivity on the combined dependent variables ($F(2, 160) = 10.856, p = .000$; Wilks' Lambda = .881; partial eta squared = .119). When the results for the dependent variables were considered separately,

the only difference to reach statistical significance, using a Bonferroni adjusted alpha level of .025, was attitude toward the brand ($F(1, 161) = 17.191, p = .000$, partial eta squared = .096), thus we found no significant support for $H2$. An inspection of the mean scores indicated that high product sensitivity resulted in a slightly lower attitude toward the brand ($M = 4.231, SD = 1.317$) than low product sensitivity ($M = 5.006, SD = 1.085$). Hence, we found no significant support for a direct effect of our independent variables, product sensitivity and ad relevance, on the mediator, perceived invasiveness.

5.2 PROCESS Procedure

Table 4: Results of PROCESS Model 7

Path	Bootstrap results			
	Estimate	SE	95% bias-corrected CI	
			Lower	Upper
IV: Ad relevance				
AR → PI	1.298	.976	-.630	3.225
OBAK → PI	.034	.129	-.221	.289
AR → OBAK → PI	-.248	.181	-.605	.109
AR → ATTB	.292	.162	-.029	.612
PI → ATTB	-.391 ^{***}	.045	-.480	-.302
AR → OBAK → PI → ATTB	.097 ^{index}	.071	-.036	.241
IV: Product sensitivity				
PS → PI	-.792	.977	-2.720	1.137
OBAK → PI	-.183	.126	-.433	.067
PS → OBAK → PI	.187	.181	-.170	.544
PS → ATTB	-.706 ^{***}	.154	-1.011	-.401
PI → ATTB	-.381 ^{***}	.043	-.465	-.296
PS → OBAK → PI → ATTB	-.071 ^{index}	.068	-.213	.063

Note: CI = confidence interval; SE = standard error; IV = independent variable; AR = ad relevance; PS = product sensitivity; PI = perceived invasiveness; OBAK = online behavior advertising knowledge; ATTB = attitude toward the brand; If bootstrapped 95% confidence intervals (CI) do not include zero, indirect and direct effects are significant. There were 5,000 bootstrap samples. All estimates are standardized. *** $p < .001$

To determine the moderated mediation relationships suggested in the conceptual framework, a bootstrapping method by Hayes PROCESS tool was applied. The PROCESS procedure has been found superior to test both mediation and moderation path relationships and generates direct and indirect effects in mediation models and conditional effects in moderation models (Hayes, 2017; Girona & Korgaonkar, 2018; Cai et al., 2018; Naylor, Lamberton & West, 2012). The moderated mediation model (model 7) allowed us to test our independent variables

on the dependent variable, while simultaneously test for the effects of our moderator and mediator (see Table 4) (Hayes, 2017). Thus, making it possible to test the significance of the relationships proposed in *H1*, *H4a* and *H4b*.

5.2.1 Ad Relevance as Independent Variable

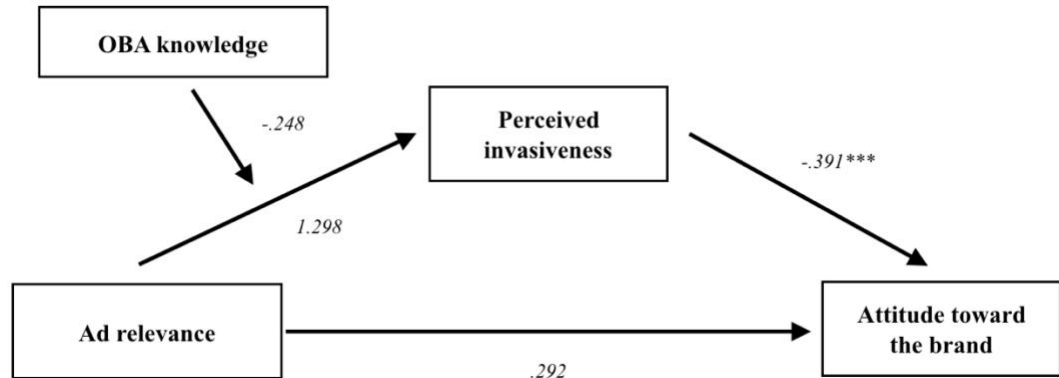


Figure 2: Results of hypothesis testing (Ad relevance)

Note: Process Model 7; Bootstrapping = 10000; Standardized coefficients; ***Significant at $p < 0.001$, **Significant at $p < 0.01$, *Significant at $p < 0.05$.)

Figure 2 shows the results of the hypothesis testing when using ad relevance as the independent variable. The analysis found support for *H1*, where perceived invasiveness had a significant negative direct effect on attitude toward the advertised brand ($\beta = -.391$; 95% CI: $[-.480, -.302]$; $p < .001$). Confirming the two-way MANOVA, the results gave no significant support for *H3*, which states that ad relevance will decrease perceived invasiveness ($\beta = 1.298$; 95% CI: $[-.630, 3.225]$; $p > .05$). There was neither found significant support for *H4a* ($\beta = -.248$; 95% CI: $[-.605, .109]$; $p > .05$), proving that OBA knowledge is not a significant moderator of the relationship between ad relevance and perceived invasiveness. Thus, we found no significant support for a moderation mediation relationship of ad relevance through perceived invasiveness with the moderation of OBA knowledge, affecting attitude toward the brand.

When running the model including the control variables, the results showed that privacy concern had a significant impact on perceived invasiveness ($\beta = .763$, 95% CI: $[.601, .924]$; $p < .001$) and brand trust had a significant impact on attitude toward the brand ($\beta = .592$, 95% CI: $[.476, .709]$; $p < .001$). Thus, a respondent's higher privacy concern leads to the respondent feeling more invaded by the advertisement, and a higher brand trust leads to a more positive attitude toward the brand. In

addition, the direct impact of ad relevance on attitude toward the brand had a significant impact when the control variables were included ($\beta = .289$, 95% CI: [.039, .539]; $p < .05$).

5.2.2 Product Sensitivity as Independent Variable

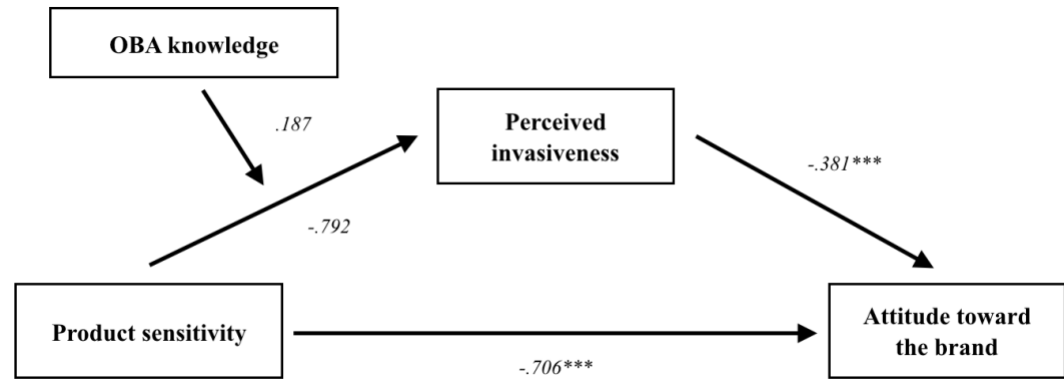


Figure 3: Results of hypothesis testing (Product sensitivity)

Note: Process Model 7; Bootstrapping = 10000; Standardized coefficients; ***Significant at $p < 0.001$, **Significant at $p < 0.01$, *Significant at $p < 0.05$.)

Figure 3 illustrates the results of the hypothesis testing with product sensitivity as the independent variable. The results suggested a significant negative effect of perceived invasiveness on attitude toward the brand ($\beta = -.381$; 95% CI [-.465, -.296]; $p < .001$), supporting *H1*. Hence, a respondent that reported a higher perceived invasiveness by the OBA resulted in a more negative attitude toward the brand. In line with the two-way MANOVA, the results also reported a significant direct negative effect of product sensitivity on attitude toward the brand ($\beta = -.706$; 95% CI [-1.011, -.401]; $p < .001$). Likewise, the results gave no significant support for *H2*, suggesting a non-significant relationship between product sensitivity and consumers' perceived invasiveness ($\beta = -.792$; 95% CI [-2.720, .1.137]; $p > .05$). Further, the results neither found support for *H4b*, showing that the moderation-effect of consumers' OBA knowledge on perceived invasiveness is not significant ($\beta = .187$; 95% CI [-.170, .544]; $p > .05$). Thus, we found no significant support for a moderation mediation relationship of product sensitivity through perceived invasiveness with the moderation of OBA knowledge, affecting attitude toward the brand.

When including control variables, the results suggested similar relationships as when using ad relevance as the independent variable. There was a significant positive relationship between privacy concern and perceived invasiveness ($\beta = .765$;

95% CI [.603, .928]; $p < .001$), and a significant positive relationship between brand trust and attitude toward the brand ($\beta = .543$; 95% CI [.415, .671]; $p < .001$).

5.3 Further Analysis: Brand Trust

In line with our overall study purpose, we wanted to further investigate mechanisms in the proven significant relationship between perceived invasiveness and attitude toward the brand. Since brand trust was found as a significant control variable on attitude toward the brand and is a well-established construct in OBA literature related to invasiveness, we performed additional analyses. To determine if brand trust had a mediation role in the relationship between perceived invasiveness and attitude toward the brand a bootstrapping method (PROCESS model 4) was applied. The result showed that brand trust mediates the negative relationship between perceived invasiveness and attitude toward the brand ($\beta = -.077$, 95% CI: [-.145, -.015]; $p < .001$). Consequently, brand trust can ease the negative effect perceived invasiveness has on consumers' brand attitudes.

Further, we wanted to test if there were any relationship between previous interaction with the brand and brand trust. We ran an independent sample t-test to check if there was a statistically significant difference in participants brand trust if they had previously interacted with the brand in real life. The test reports significant differences where participants with previous interaction had a higher mean score ($M = 5.254$) on trust compared to those that had not interacted with the brand ($M = 4.603$) ($t(161.262) = 4.057$, $p > .001$). Thus, interacting with customers can contribute to your brand being perceived as more trustworthy.

6.0 Discussion

The present study attempts to provide potential antecedents for what makes OBA perceived as invasive, as well as establish perceived invasiveness' relationship with attitude toward the brand. More specifically, which factors trigger consumers feeling invaded by an OBA and how this change consumers' attitudes toward the brand. With the increase in usage of personalized advertisements follows a rising need for understanding consumers' responses to the ads. This knowledge can assist brands in obtaining its wanted results when deploying online marketing tactics. From a theoretical point of view, our results shift focus from prior research' short-

term behavioral consequences of OBA (Gironda & Korgaonkar, 2018; Baek & Morimoto, 2012) and extend the theory connecting it to consumers' relationship with the brand through their attitudes toward the brand. Additionally, a focal point of interest in the study is to establish the relationships between possible predecessor factors and their influence on consumers' feeling of OBA invasiveness, for which companies can use as guidelines in online marketing decisions.

One of the most notable findings of the present study is that consumers experiencing an OBA as invasive will lead to a negative effect on their attitudes toward the brand. Consistent with Gironda and Korgaonkar (2018) who find short-term behavioral outcomes of OBA invasiveness, the finding illustrates the importance of consumers' perception of brands online advertising. Not only do consumers have immediate affective reactions to an OBA, our study goes a step further and proves an influence on their brand attitudes as well. If the consumer feels invaded by an advertisement, the brand is jeopardizing their future relationship with the consumer. Attitudes are known to affect both a person's intention to perform an action and a person's behavior (Ajzen & Fishbein, 1980), supporting the notion that affecting the consumers' attitudes can influence their future interactions with a brand. Furthermore, it is interesting to note that our finding suggests a different effect of OBA than previous research, as all four scenarios resulted in a decrease in brand attitude. Although OBA has been found to improve short-term metrics, our results show that by eliciting negative consumer reactions OBA may cause more harm than benefits to the brand.

Even though product sensitivity were not found as a significant antecedent of perceived invasiveness, the current study provides valuable insight on implications of OBA. In line with prior research on advertising of controversial products, our results find a significant negative effect of OBA for sensitive products on consumers' brand attitudes (Goldfarb & Tucker, 2011). Those companies offering sensitive products or services, such as gender and sex related products, social and political groups, addictive products, healthcare products and financial services should be aware of the negative consequences when offending or embarrassing potential customers through their OBA (Prevel Katsanis, 1994; Waller, 2004). Consumers might amplify stronger on marketer's utilization of their personal information when presented with OBA for sensitive products, resulting in a

decrease in brand attitudes. For instance, a consumer presented with OBA for a financial loan due to her financial problems, might only intensify her existing emotions of embarrassment and unsuccess and transmit these feelings toward the advertised brand.

The findings from the current study confirm the significant effect brand trust has on attitude toward the brand. Trust has been defined as a willingness to rely on an exchange partner in whom one has confidence and has been conceptualized as an important determinant of relationship quality (Moorman, Zaltman & Deshpandé, 1992). The results of the current study demonstrate brand trust as an underlying mechanism partially explaining the relationship between perceived invasiveness and attitude toward the brand. This is in line with previous research, where trust play an important role in consumers' acceptance and the effectiveness of OBA (Boerman et al., 2017). A possible explanation is that OBA consist of consumers giving up sensitive, personal information that potentially can be misused. As consumers are especially vulnerable in an online environment where the risks and uncertainties about retailers and third-parties' true intentions are hard to access, trust toward a brand can reduce the potential negative influence of an invasive OBA. Furthermore, our results confirmed the assumption that previous interaction increase trustworthiness. Morimoto and Chang (2006) suggest that consumers tend to have fewer negative feelings toward messages from advertisers they have had interactions with before. As a result, building trust can lead to a smaller negative change in their attitudes toward a brand when they perceive the advertisement as invasive.

Consistent with previous findings (e.g., Girona & Korgaonkar, 2018), this study confirms that privacy concern affects consumers perception of invasiveness. Consumers who know and worry that advertisers collect their personal information for marketing purposes are more likely to perceive OBA as invasive. This can be explained by the privacy-calculus, where consumers evaluate the exchange of information as not fair. Thus, consumers might feel a lack of privacy control when presented with a highly personalized advertisement, resulting in their perception of the OBA as invasive. Previous findings have found consumers' privacy concerns are likely to increase as they become aware that marketers have somehow obtained information about them without their awareness or permission (Cespedes & Smith,

1993). In light of the actuality and media coverage data protection has received in the past year, it is with no doubt that consumers have increased their awareness regarding how marketers track their online footprints. However, even with this increase in awareness, our results indicate that consumers still are privacy concerned. Consumers lack of privacy control and understanding of their privacy rights are both found as strong predictors of consumers' privacy concern (Sheehan & Hoy, 2000; Tucker, 2014). This show the importance to assess these aspects to reduce privacy concern. Prior studies have demonstrated that privacy concern is negatively related to consumer purchase behavior (Phelps, D'Souza & Nowak, 2001). Even with existence of the privacy-calculus, marketers should not overlook the impact privacy concerns has on purchase behavior.

Our results were not completely as expected, as they do not suggest any relationship between ad relevance or product sensitivity and perceived invasiveness. Considering the independent variable ad relevance, we employ time aspect as the manipulator to make the advertisement relevant or irrelevant. An advertisement can have multiple factors demonstrating its relevance for the consumer, and the time aspect of an OBA might not be one to influence the sense of invasiveness. Both OBA with high and low ad relevance are based on the consumers' online behavior, which may make them perceived as inherently invasive, and being presented more or less relevantly timewise does not affect this. Furthermore, even if perceived usefulness of personalized advertisements is found to make consumers forgo privacy (Kobsa, 2007; Xu et al., 2011), it does not necessarily mean that they find the advertisement less invasive. Hence, relevance considering the time aspect of advertisement exposure might not be a predictor for invasiveness. Moreover, regarding product sensitivity, the results could suggest that the product category is not the crucial component, but it is the use of personal sensitive information itself that is the central factor influencing consumers feeling invaded. Weible (1993) define information sensitivity as "the level of privacy concern an individual feels for a type of data in a specific situation" (Sheehan & Hoy, 2000 p. 64), suggesting that the specific scenario situations lays the ground for how invasive the participant see the OBA. Consensus exist that financial information is categorized as sensitive and collection of it generally generates higher concern (Cranor, Reagle & Ackerman, 2000; Nowak & Phelps, 1992; Sheehan & Hoy, 2000). However, the feeling of invasiveness seems to be dependent on other aspects than a sensitive

product and might be determined by the specific context and which consumer experience the OBA encounter.

We did not find OBA knowledge to moderate the relationship between our independent and dependent variables, meaning that consumers regardless of their OBA knowledge will have the same perception of invasiveness. As our result did not find any of the independent variables to affect perceived invasiveness, hence neither was OBA knowledge found to have an interaction effect. It is interesting to note that consumers on average have a general decent OBA knowledge ($M = 5.176$ of 8), where the majority are aware of the potential of collection and application of online behavioral data. Consumers are not naïve online users, but this does not imply their approval of marketers' utilization of the collected data (Alreck & Settle, 2007).

Even if not all hypotheses were found significant, we have with this contributed to the literature with multiple valuable findings. First, the study proves a negative relationship between perceived invasiveness created by OBA and the consumer's attitude toward the brand. Hence, we manage to link perceived invasiveness to a long-term consequence for the advertised brand with invasive OBA resulting in a decrease in consumers' brand attitudes. Second, product sensitivity is established with a direct negative impact on attitude toward the brand. Thus, OBA for sensitive product categories generate lower attitudes toward the brand. Next, the study substantiates the importance of brand trust in literature on OBA, as it is found as a mediator on perceived invasiveness' influence on attitude toward the brand. Last, privacy concern is confirmed to affect the consumer's feeling of invasiveness by OBA, supporting the importance of the construct in OBA literature. Moreover, we did not manage to determine which factors trigger consumers' feeling invaded, as none of the hypothesized antecedents of perceived invasiveness were found significant. This demonstrate the need for more research on OBA and invasiveness to fully grasp how the feeling is provoked.

7.0 Managerial Implications

The present study provides several insightful implications for managers and practitioners to consider before conducting online marketing activities. Managers need to recognize how their online advertising is perceived by their customers, and what kind of feelings it triggers. If the marketing managers push OBA that crosses a line and the customer perceive them as invasive, they will not only risk immediate negative consequences like lower click-through rates or conversion rates, but it can also be harmful in the long run. Given the importance assigned to attitude toward the brand as an indicator of consumers future behavior, the brand is in risk of both damaging their customer relationship as well as their own future business revenues if they overstep. A brand showing a customer an advertisement they believe she is interested in, like the hotel in Copenhagen which the customer booked housing for through Airbnb, can provoke negative feelings and decrease her brand attitude. Followingly, these negative feelings can result in her choosing other providers of accommodation when traveling or negative word-of-mouth. Thus, we recommend using efforts on understanding how your OBA is perceived by your customers before applying the technique. It seems reasonable to conclude that this investment will be less than what you risk losing by invading the customer with your marketing. Further, it is notable that differences exist in attitudes toward the brand between high and low level of product sensitivity. This shows the need for careful consideration by managers working with sensitive product categories on how they promote their products and services. If they apply OBA as a technique in good faith that they will achieve a positive response, they should be educated on how their investments on these activities can instead lead to negative responses.

Building brand trust seems to stand out as an important factor that can mitigate the negative effect perceived invasiveness has on attitude toward the brand as well as help build the customer's attitude toward the brand. With the rapid development of OBA, practitioners will undoubtedly experience failure and this knowledge can show useful to alleviate the damages. Furthermore, with a higher privacy concern influencing perceived invasiveness positively, managers should educate themselves on strategies to reduce consumers' level of privacy concern. Even if participants were found to have a relatively good knowledge of OBA, there are still aspects they appear unsure of. This might in turn affect how privacy concerned they are, increasing the likelihood of consumers perceiving OBA as invasive.

A few guidelines present themselves from the findings and discussion. First, perhaps most pronounced is that companies should use efforts on assuring that their OBA are not triggering the feeling of invasiveness. With the possible consequences outlined in this paper, it seems this is a critical component in being able to reap the benefits of using OBA as a marketing tool. Second, providers of sensitive products should be especially careful when conducting OBA. Crucial consequences are shown in our study, but also reflected in the real-world when use of OBA resulted in massive media coverage after women were wrongfully targeted with maternity products. Third, carrying out OBA activities in a transparent manner could be a strategy to reduce customers privacy concern. Gironda and Korgaonkar (2018) find perceived privacy control negatively related to privacy concern. With clearly stating exactly what of their data is used and for which reason, you leave little room for the customer's imagination. Next, explicitly inform customers that your firm is following all GDPR regulations and show them how they have the power to control the information collection in a comprehensible manner for all customers. Making it equally easy to withdraw agreement to track data as it is to accept it demonstrates that the consumer sits with the power. These actions might help building brand trust, and by this, brand trust can ease the attitude change if you one day unfortunately provoke invasiveness. Last, working to assure your customers that usage of OBA is meant to be helpful and accommodate for exposure to things they actually experience interesting, and that you do not want to be perceived as George Orwell's infamous Big Brother seems to be the key essence. OBA is developed with the means to better the customer experience and convincing the consumers about this with a thoughtful appliance of the technique seems to be a good strategy to reduce the overall degree of perceived invasiveness.

8.0 Limitations

While the study provides several implications and contributions for marketing theory and practice it is not without limitations. As we conducted a scenario-based study, participants considered a hypothetical scenario. Thus, consumer decision making in real world may differ. Moreover, we question the findings of our independent variables impact and believe they were not found statistically significant due to manipulation failures. For instance, the scenario descriptions did

not disclose information that would assist respondents in their evaluation of perceived risk and control of their own personal information. As these are major determinants of perceived invasiveness, and respondents were not capable to evaluate these aspects in the current study, their perception of invasion might differ (Schwaig, Segars, Grover & Fiedler, 2013). Furthermore, we cannot exclude that the product categories might have been different if the pre-study had been conducted in the US instead of Norway. A cross-cultural study done by Waller, Fam and Zafer Erdogan (2005) found evidence for a clear cultural difference in what kind of products consumers find offensive. Other cross-cultural studies have found a significant difference between US and Norway, although both being similar Western countries (Smith, Deitz, Royne, Hansen, Grünhagen & Witte, 2013). In addition, there might be a failure of our manipulations not being extreme enough. One could argue that both independent variables are evaluated subjectively, which makes the success of our manipulation highly dependent on each respondent's own definition of the term relevance and sensitive. We therefore believe there is a need for follow-up studies to provide additional tests where the scenarios are improved in order to assess if the results discovered in this study still holds.

Further, we identify limitations which stems from the chosen measurement scales. As addressed in section 4.2.2, adjustments were made to the attitude toward the brand scale due to feedback from the pre-test. However, this weakened the reliability and validity of our dependent variable. This also applies for our measurement scale for risk aversion, where we combined two different scales. Next, with the heavy focus OBA has gotten by the public and media after new regulations and privacy breaches scandals, consumers' knowledge and understanding have doubtlessly also evolved. Consequently, the measurement scale for OBA knowledge might not provide the realistically diversity in people's actual understanding today. In addition, our questionnaire did not assess participants perception of the scenarios' realism (Zolfagharian, Hasan & Iyer, 2018).

Our scenario-based study did not include a control group. The function of a control group is to minimize other factors that can influence the results of an experiment and serve as a benchmark to compare groups and assess the effect of the manipulations (Malhotra, 2010). Experiments can still be valid without a control group, and it was not seen essential in this case since the aim of the study was to

compare and contrast different OBA and not OBA performance in relation to other advertising techniques.

The data collection for this study was conducted through an online questionnaire, which has its limitations. Online materials are typically relatively uninvolved, and participants may rush through the study without paying much attention. A majority of the participants used an insufficient time for completion which indicate that participants may have rushed through the survey. This could potentially dilute the study reliability if they have not read or thoroughly understood the scope of the presented scenario and questions.

Finally, there is a possibility that the use of actual brands in our scenarios has compromised the basis for comparison in our analysis. When analyzing if Hertz scores statistically lower on brand attitude than LendingClub, there might already exist a statistically difference before the manipulations. We therefore recommend future research to replicate the current study with the use of fictional brands to assess if the results discovered in this study holds up and thereby also exclude brand as a potential explanatory factor.

9.0 Suggestions for Future Research

Although our research has provided an extended understanding of OBA, there is still a strong need for further research to identify important mechanisms that can improve OBA efficiency. Considering the negative impact perceived invasiveness has on consumers' attitudes toward the brand, it is critical to determine what factors triggers consumers' perception of invasiveness in an OBA context. Previous literature on consumer perceived invasion of privacy has suggested potential triggers of invasiveness; feeling helpless in context of different business practices, perceived control over one's own personal information, and information disclosure (Schwaig et al., 2013). Further, spam has been found to be closely related to perceived invasiveness, where factors such as frequency, relevance, and confidentiality has helped marketers to distance themselves from spam (Leppaniemi & Karjaluoto, 2005). Therefore, future research should examine how these constructs relate to consumers' perceived invasiveness in regards of OBA.

Future research could also examine how OBA based on different sources of information impacts consumers' perception of invasiveness. Gironda and Korgaonkar (2018) state that the source of information used to generate personalized advertising matters for consumers' perceived invasiveness. For instance, personalized advertising generated from a user's profile on a social networking site, as well as posts that an individual has made on a social networking site, or a combination of sources were found to trigger the most negative reactions in terms of perceived invasiveness (Gironda & Korgaonkar, 2018). However, the variety of potential sources of information used to generate OBA today is much wider and the technology is continuously improving. It would therefore be important for marketers to determine which combinations of sources that will minimize consumers' perception of invasiveness and determine where the line is drawn so they do not overstep their welcome. In addition, the results indicate that personal sensitive information might be a central factor influencing consumers feeling invaded. For instance, consumers might perceive OBA more invasive if it is based on one's online search concerning a personal health problem compared to one's video-viewing history on stain removal. We therefore propose that future research investigate how different sources of information, as well as the level of sensitive information obtained, function as an antecedent to consumers' perception of invasiveness.

Similar to perceived invasiveness, there might be other constructs that influence the efficiency and acceptance of OBA. The exposure of OBA is often repeated multiple times, and even if exposure in the after purchase-stage does not trigger invasiveness, we propose it could be closer connected to other kinds of affective reactions in the consumer, such as ad annoyance (Ying, Korneliussen & Grønhaug, 2009; Edwards et al., 2002). Likewise, the exposure of OBA might generate other affective reactions identified in literature like offense, outrage and anger, which again impact their attitudes toward the brand (Shao & Hill, 1994).

With the aim of closing the identified gaps in literature on OBA, we emphasize that future studies should explore other potential long-term constructs, such as brand boycott (Klein, Smith & John, 2004), purchase loyalty (Chaudhuri & Holbrook, 2001), brand attachment (Park, MacInnis, Priester, Eisingerich & Iacobucci, 2010)

and brand equity (Keller, 1993). This will be an important contribution to secure that short-term gain not oversteps long-term loss.

10.0 Conclusion

The current study has provided a conceptual framework for understanding antecedents and negative implications of OBA perceived as invasive by the consumer. The proposed model is an initial step in understanding long-term consequences of using OBA and the relationship between perceived invasiveness and consumers' brand attitudes. As previous literature focuses on immediate effects and consumers' response to the OBA technique itself, the current study has an important contribution with moving the attention to more profound consequences for the advertising brand. Our results show that OBA provoking the feeling of invasiveness leads to a negative change in the consumers' attitudes toward the brand. Further, sensitive product categories are proven to have a direct negative effect on brand attitude. Additionally, higher brand trust corresponds to a higher attitude toward the brand and can ease the negative effect of provoking invasiveness. Privacy concern is found to affect how invaded the consumer feels by the OBA, where a consumer with higher privacy concerns will feel a stronger sense of invasiveness. Our study offers several important implications for marketing professionals, where the key takeaway is that they should not overstep their welcome and need to use OBA with caution to ensure its efficiency.

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Appendix A - Overview of Framework Related Consumer Studies

Authors	Main Findings
Aguirre et al. (2015)	Personalization advertising is found more useful and improve behavioral intentions when firms openly informs consumers that data collection has taken place. When confronted with a personalized cue, consumers sense the feeling of vulnerability. Trust building strategies counteract the negative feeling of data collection.
Bleier & Eisenbeiss (2015a)	Personalization ads is most effective in early stages of the purchase decision process, or immediately after a consumer has visited an advertised website, and quickly losses its effectiveness over time.
Bleier & Eisenbeiss (2015b)	More trusted retailers can increase the perceived usefulness of their ads and improve their click-through rate through a combination of high depth and narrow breadth of personalization without eliciting increased reactance or privacy concern.
Beales (2010)	Advertising using OBA is more successful than standard run of network advertising, creating greater utility for consumers from more relevant advertisements and clear appeal for advertisers from increased ad conversion.
Beak & Morimoto (2012)	Perceived personalization has a direct negative effect on ad avoidance. Privacy concern and ad irritation has a direct positive effect on ad avoidance.
Doorn & Hoekstra (2013)	Higher degrees of personalization increase feelings of intrusiveness, and negatively affect purchase intentions.
Girona & Korgaonkar (2018)	Privacy concern is an antecedent to consumers' perceived invasiveness, were perceived invasiveness mediate the relationship between privacy concern and intentions. Perceived invasiveness has a negative effect on both click-through rate and purchase intentions.
Goldfarb & Tucker (2011)	Highly visible ads and contextually targeted ads decreases purchase intention and are highly related to privacy concern.
Moore et al. (2015)	Creepy Marketing consists of three dimensions; invasion of privacy, staking behavior and violation of social norms.
Tucker (2014)	Perceived control over personal information improved personalized ads click-through rate. The increase in effectiveness was larger for personalized ads that used more unique private information and for target groups that were more likely to use opt-out privacy settings.
White et al. (2006)	When the fit between an ad offer and consumers' personal characteristics are not explicitly justified by the advertiser, consumers are less willing to respond favorable. For consumers with high perceived utility of a service, justification of personalization is less important, because highly personalized content is less likely to elicit reactance.

Appendix B - Scenarios

Participants will be randomly assigned to one of the following four scenarios.

Scenario 1 - High product sensitivity and high ad relevance

Please read the following scenario and then answer the questions in the next section:

Please imagine you **have** debt on multiple credit cards and have trouble with the down payments. **Today**, when browsing online, you notice that one of the banner advertisements being displayed is based on your online behavior and is for a personal loan from LendingClub. It shows an ad saying “Hey - still looking for help to pay down your credit debt and take control over your financial future? We got you! Refinance today, up to \$50,000”.

Scenario 2 - High product sensitivity and low ad relevance

Please read the following scenario and then answer the questions in the next section:

Please imagine you **had** trouble with down payments on multiple credit cards a couple of months ago but managed to get in control of your financial situation and are now **debt-free**. **Today**, when browsing online, you notice that one of the banner advertisements being displayed is based on your online behavior and is for a personal loan from LendingClub. It shows an ad saying “Hey - still looking for help to pay down your credit debt and take control over your financial future? We got you! Refinance today, up to \$50,000”.

Scenario 3 - Low product sensitivity and high ad relevance

Please read the following scenario and then answer the questions in the next section:

Please imagine that you are **moving next week** and are in a need of a rental car. **Today**, when browsing online, you notice that one of the banner advertisements being displayed is based on your online behavior and is for a rental car from Hertz. It shows an ad saying “Hey - still looking for a rental car next week? We got you! Available cars in your neighborhood”.

Scenario 4 - Low product sensitivity and low ad relevance

Please read the following scenario and then answer the questions in the next section:

Please imagine that you **moved last month** and for this you rented a car from Enterprise. **Today**, when browsing online, you notice that one of the banner advertisements being displayed is based on your online behavior and is for a rental car from Hertz. It shows an ad saying “Hey - still looking for a rental car? We got you! Available cars in your neighborhood”.

Appendix C - Measurement items

Attitude toward the brand - (Mitchell & Olson, 1981)

(After being presented with the scenario, ...) How do you rate (Hertz/LendingClub) on the following scale from 1 (strongly disagree) to 7 (strongly agree)?

1. Good
2. Dislike very much
3. Pleasant
4. Poor quality

OBA knowledge - (Smit, Van Noort & Voorveld, 2014)

Please indicate whether the statements below are “true”, “false” or if you are “unsure”.

1. When I visit a website, I see the same ads as someone else visiting that website.
2. Companies should only gather and store information about my Internet use (such as search terms, visited sites, online purchases) when I give them permission to do so.
3. The ads that appear on a website differ per visitor.
4. It is punishable for companies to gather and store information about the Internet use of individuals.
5. Your browsing history determines which ads you are going to see during your next visit.
6. Companies are allowed to store information about Internet use, provided that it is not traceable to a person.
7. Companies create different user segments based on their Internet behavior, and they show these groups targeted ads.
8. Online content and services can be offered for free because of online advertising revenues.

Correct answer: 1(not true), 2(not true), 3(true), 4(not true), 5(true), 6(true), 7(true), and 8(true).

Perceived invasiveness - (Paschal et al., 2009; Tepper & Braun, 1995; Zweig & Webster, 2002; Girona & Korgaonkar, 2018)

Based on the presented scenario, how do you rate the following on a scale from 1 (strongly disagree) to 7 (strongly agree)?

1. I feel that the advertisement was an invasion of my privacy.
2. This type of advertisement is an invasion of consumer privacy.
3. Consumer privacy is invaded by the way companies conduct this type of advertisement.
4. This type of advertisement violates consumers' right to privacy.

Based on the presented scenario, how do you rate the following on a scale from 1 (definitely non-invasive) to 7 (definitely invasive)?

5. To what extent do you feel that this type of advertising results in an invasion of your privacy?

Control variables

Brand trust - (Chaudhuri & Holbrook, 2001)

How do you rate (Hertz/LendingClub) on the following scale from 1 (strongly disagree) to (strongly agree)?

1. I trust this brand
2. I rely on this brand
3. This is an honest brand
4. This brand is safe

Previous interaction with brand - (Spreng & Mackoy, 1996)

1. Have you ever used or interacted with (Hertz/LendingClub) in real life?
2. If yes, how satisfied are you with the service provided by (Hertz/LendingClub)?
 - a. Extremely dissatisfied
 - b. Moderately dissatisfied
 - c. Slightly dissatisfied
 - d. Neither satisfied nor dissatisfied
 - e. Slightly satisfied
 - f. Moderately satisfied
 - g. Extremely satisfied

Risk aversion - (Bao, Zhou & Su, 2003; Raju, 1980; Fogel & Nehmad, 2009; Pan & Zinkhan, 2006)

How do you rate the following on a scale from 1 (strongly disagree) to 7 (strongly agree)?

1. I would rather stick with a brand I usually buy than try something I am not very sure of.
2. I never buy something I don't know about at the risk of making a mistake.
3. If there is a great chance of a reward, I will take high risks.
4. To achieve something in life, one has to take risks.

Privacy concern - (Bleier & Eisenbeiss, 2015b; Sheng, Nah & Siau, 2008; Smith, Milberg & Burke, 1996; Dinev & Hart, 2004).

How do you rate the following on a scale from 1 (strongly disagree) to 7 (strongly agree)?

1. It bothers me that the firm is able to track information about me.
2. I am concerned that the firm has too much information about me.
3. It bothers me that the firm is able to access information about me.
4. I am concerned that my information could be used in ways I could not foresee.

Demographic measures

What is your gender?

1. Female
2. Male
3. Other

What is your age?

1. Less than 21
2. 21-34
3. 35-49
4. 50-64
5. 65 or more

Which of the following best describes the area you live in?

1. Urban
2. Suburban
3. Rural

What is the highest level of education you have completed?

1. Less than high school
2. High school graduate
3. Some college
4. College degree
5. Postgraduate degree

Please indicate your current annual household income in U.S. dollars.

1. Less than \$30,000
2. \$30,000-\$49,999
3. \$50,000-\$99,999
4. \$100,000-\$249,999
5. \$250,000 or above
6. I would rather not say

Manipulation check

Ad relevance

Based on the presented scenario, how do you rate the following on a scale from 1 (strongly disagree) to 7 (strongly agree)?

1. The advertisement was relevant for my needs presented in the scenario.

Product sensitivity

Based on the presented scenario, how do you rate the following on a scale from 1 (strongly disagree) to 7 (strongly agree)?

1. I perceived the product that was being advertised as a sensitive product.

Appendix D: Descriptive

	Mean	Std. Deviation	Skewness		Kurtosis	
			Statistic	Std. Error	Statistic	Std. Error
Att_bef_1	5.07	1.121	-.579	.189	.434	.376
Att_bef_2	2.53	1.267	.749	.189	-.379	.376
Att_bef_3	4.96	1.053	-.403	.189	.473	.376
Att_bef_4	2.74	1.244	.508	.189	-.420	.376
Trust_1	4.78	1.246	-.675	.189	.772	.376
Trust_2	3.78	1.671	.073	.189	-.965	.376
Trust_3	4.93	1.129	-.576	.189	1.037	.376
Trust_4	4.95	1.196	-.933	.189	1.344	.376
Interaction_2	5.51	1.132	-1.355	.285	2.285	.563
Invasiveness_1	4.37	1.881	-.248	.189	-1.218	.376
Invasiveness_2	4.42	1.845	-.306	.189	-1.174	.376
Invasiveness_3	4.51	1.830	-.371	.189	-1.054	.376
Invasiveness_4	4.27	1.888	-.213	.189	-1.163	.376
Invasiveness_5	4.64	1.923	-.482	.189	-.929	.376
Att_aft_1	4.47	1.332	-.403	.189	-.131	.376
Att_aft_2	3.20	1.609	.595	.189	-.487	.376
Att_aft_3	4.32	1.333	-.174	.189	-.197	.376
Att_aft_4	3.05	1.392	.586	.189	-.162	.376
Privacy_con_1	5.34	1.471	-1.070	.189	.621	.376
Privacy_con_2	5.28	1.580	-1.109	.189	.516	.376
Privacy_con_3	5.25	1.517	-1.162	.189	.784	.376
Privacy_con_4	5.47	1.504	-1.269	.189	1.111	.376
Risk_aversion_1	4.84	1.320	-.462	.189	-.295	.376
Risk_aversion_2	3.98	1.504	.271	.189	-.686	.376
Risk_aversion_3	4.17	1.442	-.326	.189	-.481	.376
Risk_aversion_4	4.81	1.208	-.768	.189	.529	.376

Appendix E: Pattern Matrix - Principal Component Analysis

	Invasiveness	Attitude before/trust	Privacy concern	Risk aversion	Attitude before	Attitude after
Invasiveness_2	.958					
Invasiveness_3	.957					
Invasiveness_1	.951					
Invasiveness_4	.947					
Invasiveness_5	.914					
Att_bef_1		.924				
Att_bef_3		.885				
Trust_1		.858				
Trust_3		.855				
Trust_4		.768				
Privacy_con_4			-.961			
Privacy_con_2			-.911			
Privacy_con_1			-.904			
Privacy_con_3			-.900			
Risk_aversion_4				.887		
Risk_aversion_3				.831		
Att_bef_2					.770	
Att_bef_4					.666	
Att_aft_2						-.823
Att_aft_4						-.767
Att_aft_3						.756
Att_aft_1						.738
