

Effects of Objective Knowledge about Synced Advertising on Purchase Intention

On the example of a convenience and a shopping product

Henrieke Mengelkamp (2644746)

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Examination Committee:

1st Supervisor: Dr. H. Kizgin (Associate Professor)

2nd Supervisor: Dr. A. Leszkiewicz (Assistant Professor)

UNIVERSITY OF TWENTE.

Abstract

Synced advertising is a data-driven technique that comes with many advantages for marketers. Compared to online behavioural advertising, consumers have little knowledge of the persuasive techniques used in synced ads. This research studies the relation between objective and subjective knowledge of persuasive attempts used in synced advertising and purchase intention. It compares the effects on purchase intention for a convenience and a shopping product. The research's aim is to investigate to what extent the positive effects of synced advertising and purchase intention change with knowledge of the persuasive attempts used in synced ads.

From an academical standpoint, this research is relevant, because it closes a research gap. While research about the effect of knowledge about online behavioural advertising on purchase intention is extensive, literature about the effect of knowledge about synced advertising on purchase intention is limited. The topic of this research is addressed in a research priority of the Marketing Science Institute, too.

From a practical standpoint, this study provides relevant findings to educational institute, especially advertising literacy programs. Furthermore, this research acts as a base for ethical debates. To be an empowered consumer, one needs to understand persuasive attempts in advertising. This research uncovers whether there is a lack in objective or subjective knowledge about synced advertising. Marketers and businesses working with synced advertising practices need to be aware of influencing factors of their advertisements. With that knowledge, it can be decided whether to go forward with synced ads, to employ a different approach or regain trust by different marketing tools.

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1. Introduction

1.1. Background and Situation

Throughout the years, online marketing gained popularity and has evolved since (Liu-Thompkins, 2019). While digital advertising spending worldwide was at 335,6 billion U.S. dollars in 2019, it is predicted to increase to 524.31 billion U.S. dollars in 2022 (Statista, 2021). Thanks to the development of digital technologies, personalized advertising and microtargeting tactic are used. These tactics can target potential customers more precisely (Liu-Thompkins, 2019; Segijn & van Ooijen, 2020).

Personalization has multiple advantages. Nowadays, in most online advertisements, an individual's behaviour and interest are considered, as advertisers see data-driven tactics as more effective (Kumar & Gupta, 2016; Varnali, 2021). Next to efficiency, personalization has cost advantages in comparison to traditional advertising, because an advertisement is only shown to viable consumers (Tucker, 2014). Next to marketers, customers have an advantage, because only relevant, customised information on brands or products is shown (Beales, 2010). Hence, it is argued that personalization favours purchase intention, engagement, and brand loyalty (Hayes et al., 2021). The information is based on one's interests, activity, location, or time and facilitates information search (Beales, 2010). In general, personal relevance is increased which leads to "more attentive processing" of advertisements (Maslowska et al., 2016).

Nonetheless, there is a downside that goes along with personalisation in advertisements. To be able to show personalised ads, a lot of data is collected and analysed which causes privacy concerns. In a Pew study (2014), it is found that 68% of consumers have a negative view of the data-driven marketing technique, because of the afore-mentioned concern. These are argued to moderate the effects of customised advertising (Zarouali et al., 2017).

One of the personalization practices that is widely used, is called online behavioural advertising (OBA). Its popularity is due to the claim that it increases advertisement effectiveness (Aguirre et al., 2015). OBA analyses an individual's past online behaviour and shows targeted ads based on the collected data (Boerman et al., 2017). A new development in the industry, called synced advertising (SA), makes use of watermarking to "show people individually targeted ads based on people's current media behaviour across media" (Segijn, 2019, p.59). Because of the synchronisation of multiple media in real-time and the mere exposure effect, synced advertisement is argued to increase attention to ads, hence, advertising effectiveness (Hoeck & Spann, 2020).

As synced advertisements gain popularity, so are concerns in consumer privacy (Segijn & van Ooijen, 2020). For synced advertising to work, private data from people's media, e.g., phone, tablet or TV, is constantly collected and analysed (Segijn, 2019). The complexity of the technology complicates consumer's control of their personal data (van Ooijen & Vrabec, 2019). That is why the European Union drew up the General Data Protection Regulation as it is of utmost importance for an individual to know what personal information is available to other parties. If this information and knowledge is not given, an individual is limited in her/ his freedom to make decisions on her/ his own. With modern data processing, this freedom can be easily taken away (Bundesverfassungsgericht, 1983). In response to these concerns, the European Union drew up the GDPR (General Data Protection Regulation) which aims at regulating personal data processing (G.D.P. Regulation (GDPR), 2016). Nonetheless, the regulation is criticized (Custers et al., 2013). On a website, one needs to publish a policy which states what personal data is stored and analysed (Custers et al., 2013). However, consumers often do not understand these nor consider consequences of giving consent to capture private data (Custers et al., 2013). As consumer knowledge about the processing of personal data is limited, privacy concerns arise with the increase of personalized advertising, such as synced ads.

To be an empowered consumer, one needs to understand the underlying persuasion tactics of personalisation. With these insights, a foundation for ethical debates is given (Segijn & van Ooijen, 2020). In comparison to OBA, consumers have insufficient knowledge about SA techniques used to collect data for custom ads (Segijn & van Ooijen, 2020). Consumers often are not aware of personalized ads and its underlying persuasive effects (Boerman et al., 2021). It is of utmost importance that consumers are informed, have knowledge about persuasion tactics and advertising literacy to be able to "make own informed decisions in response to SA" (Segijn et al., 2021). Practical implications are presented in detail in chapter 1.5.

Generally, personalized advertising increases advertising effectiveness, hence, purchase intention. As personalized advertising is a data-driven technique, it is argued to be more effective and to have cost advantages. However, consumers have little knowledge of the persuasive techniques and data collection methods used in personalized advertising.

1.2. Problem definition and Research Gap

Literature shows a gap when it comes to the mismatch between the positive effects of personalized advertising and consumer's missing knowledge about persuasive attempts used in synchronised advertising. Moreover, technologies that block advertisements are increasingly gaining popularity. The development of ad-blockers poses a threat for online advertisers because ads will not be shown anymore, thus, leads cannot be generated (Todri, 2022). Especially for the successful implementation of synced advertising practices, research needs to investigate the effects of increasing consumer knowledge on purchase intention. To the researcher's knowledge, studies that investigate the relation between increasing consumer knowledge on synced advertising and purchase intention are limited.

Therefore, this research will build on the studies by Farman et al. (2020), and Segijn et al. (2021), by analysing the effects of increasing objective knowledge about synced advertising on purchase intention. Farman et al. (2020) build the foundation by researching the effect of OBA on purchase intention. The relation between increasing consumer knowledge on synced advertisement and resistance was analysed by Segijn et al. (2021). In the study, resistance is defined as change in attitude or behaviour. Resistance strategies are avoidance, contesting or empowerment while critical attitudes and perceived surveillance are two concepts that lead to resistance (Fransen et al., 2015).

This study will not focus on resistance but purchase intention, with the underlying concepts of perceived risk and trust. In addition, in previous research, the relation between increasing objective knowledge on synced advertising and purchase intention has not been studied and, hence, portrays a research gap. In addition, no specific product categories were chosen in past research. This study will go more into depth as it researches the effect on purchase intention instead of resistance. Hence, it combines and extends the two studies described above, by Farman et al. (2020), and Segijn et al. (2021). Moreover, two different product categories are considered. While the study by Farman et al. (2020) concentrates on two similar products (acne cream and a flash drive), this research will compare the effects on purchase intention of one convenience and one shopping product. As a convenience good, laundry detergent is chosen, while a couch is chosen as a shopping product. Similar to the approach by Segijn et al. (2021), unfamiliar brand names are used. Therefore, this study will fill an online marketing research gap regarding increasing

consumer knowledge about synced advertising on purchase intention. In addition, it adds to the literature by comparing a convenience and shopping good.

1.3. Research Question

To what extent does objective knowledge of synced advertising and the underlying persuasive techniques have an effect on purchase intention for a convenience and a shopping good?”.

1.4. Academic Relevance

Literature suggests that research needs to be done on the relationship between knowledge of synced advertising and purchase intention (Segijn, Kim, et al., 2021). The relation and impact were only studied concerning online behavioural advertising (OBA) so far (Farman et al., 2020).

Furthermore, this study addresses a research priority from the Marketing Science Institute (MSI) for 2020-2022. The second research priority deals with “The evolving landscape of martech and advertising” which deals with media consumption across devices (MSI, 2020). Hence, synced advertising techniques fall under the second priority of the MSI.

1.5. Practical Relevance

Conducting research in the field of persuasion knowledge on synced advertising is essential because it provides input for educational initiatives, ethical debates, and the future development of customisation strategies (Segijn & van Ooijen, 2020). For consumers, it is of utmost importance to understand persuasive attempts in marketing to be able to decide on the most suitable coping tactic. It is important to note, that coping does not necessarily mean resisting a marketing message (Friestad & Wright, 1994).. Knowledge gives consumers the opportunity to evaluate whether the aims of the advertiser are aligned with one’s own (Segijn et al., 2021). Hence, this research is practically relevant because of its insights into consumer empowerment (Segijn & van Ooijen, 2020).

Next to consumers, this study is relevant to educational institutes, too. These organizations need information about consumer knowledge on the newest marketing developments. Only with this information, deficits in advertising literacy programs will be uncovered (Segijn & van Ooijen, 2020). Students are part of the consumers of advertising.

Furthermore, advertisers need to be aware of the different factors influencing the effectiveness of their ads (Segijn, Voorveld, et al., 2021). In this research, it was chosen to measure effectiveness with purchase intention. Only with this knowledge, a can decide whether it is profitable to implement this personalization strategy. Moreover, if the study suggests that purchase intention will be low with increasing consumer knowledge, companies need to rebuild trust and decrease perceived risk related to the business and brand.

2. Theoretical Framework

To answer the research question “To what extent does objective knowledge of synced advertising and the underlying persuasive techniques have an effect on purchase intention for a convenience and a shopping good?”, the different concepts need to be conceptualized.

2.1.Synced Advertising

Synced advertising is described as “the practice of monitoring people’s current media behaviour and using the collected information to show people individually targeted ads based on people’s current media behaviour across media” (Segijn, 2019). Thus, an audience is targeted with customized content that corresponds to ‘current’ or real-time media usage across different devices (Segijn, 2019). Furthermore, the ads are synchronized with other media in proximity (Segijn, 2019). This practice is possible due to watermarking techniques or geofencing (Garzon & Deva, 2014). Watermarking collects data via mobile applications on people’s phones while geofencing uses one’s GPS location to sync advertisements in a specific area (Segijn, 2019). Both of these practices only work, as they constantly collect and analyse data from people’s phones (Segijn, 2019). The effectiveness of synced advertising is seen in increased attention as target audiences are exposed repeatedly to the same brand (Hoeck & Spann, 2020).

2.2.Persuasion

Persuasion describes a communication process in which the aim lies in changing a person’s attitude or behaviour towards a concept. Among others, firms use persuasive techniques to convince one to purchase a certain product or service for profit. To achieve this, a message is transmitted that will alter the receiver’s response out of free will (Perloff, 1993). Dontcheva-Navratilova (2020), bases her definition of persuasion on the assumption of two aims in conversations: “to be understood and to make their audience think or act according to what is to be understood” (Dontcheva-Navratilova et al., 2020). In synced advertisements, persuasion techniques are based on mere exposure, meaning that a message one is exposed to several times, evokes favoured attitudes (Zajonc, 1968).

Next to mere exposure, in synced ads, cognitive overload and social presence are persuasion techniques (Segijn, 2019). Besides, the elaboration likelihood model (ELM) describes two possibilities of processing media messages. In the first, the central route processing, there is a

great deal of thought about details, which is why cognitive resources are primarily used. On the other hand, the focus in the second possibility, the peripheral route, lies on heuristics and superficial aspects, for example, attractiveness. As synced advertising relies on the usage of multiple media simultaneously, it is argued that the peripheral route of processing media messages is used (Segijn, 2019).

2.3.Type of Consumer Knowledge

The central topic in this research is increasing objective persuasion knowledge on synced advertising. Nonaka and Takeuchi (1995), argue that knowledge means “justified true belief” (Nonaka et al., 1995). Later, Neta and Pritchard (2009), add to this by arguing that three basic conditions (truth, belief, and justification) are essential to the concept (Neta & Pritchard, 2009). Furthermore, it is distinguished between objective and subjective knowledge, whereas the latter has a stronger impact on consumer behaviour (Park et al., 1994). The latter deals with an individual’s perception and confidence in the knowledge about a specific concept (Park et al., 1994). On the other hand, objective, or factual knowledge, is about facts and accurate information about a specific concept (Park et al., 1994).

2.4.Persuasion Knowledge

According to the persuasion knowledge model (PKM), developing knowledge and beliefs about the underlying techniques in advertising aids consumers in coping with persuasive attempts (Friestad & Wright, 1994). This principle is called “change of meaning”, which predicts that someone who is aware of a persuasive attempt, changes his/ her response to it. Here, coping does not mean rejecting the message but analysing, interpreting, and evaluating whether the message is in line with one’s goals (Friestad & Wright, 1994). Hence, the model focuses on consumer empowerment (Friestad & Wright, 1994). Furthermore, the privacy calculus model states that positive feelings are evoked when consumers believe that benefits outweigh the costs of personalized advertising (Culnan et al., 1999).

With regards to synced advertising, it is argued that consumers have little objective knowledge of this form of personalized advertising (Segijn & van Ooijen, 2020) and might develop concerns about their data as they recognize underlying persuasion techniques (White et al., 2008).

2.5.Product Categories

In the course of this research, a convenience good (detergent) is compared to a shopping good (couch) regarding the effect of increasing objective knowledge on synced advertising on purchasing intention. The former are inexpensive products, bought on a regular basis with little effort and involvement. In contrast, the latter, are products that require more involvement in the purchasing process. Besides, information search and the evaluation of alternative goods are central to shopping goods. However, the product classifications differ per individual (Holton, 1958).

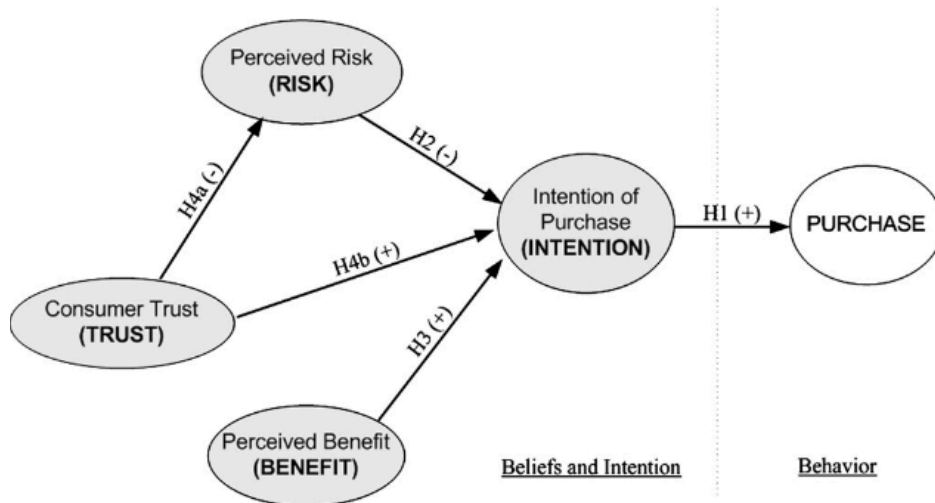
According to the described theories above, this study will measure objective and subjective consumer knowledge on synced advertising and its underlying persuasion techniques. The persuasion techniques in synced advertising are mere exposure, cognitive overload, and social presence (Segijn, 2019). Literature on purchase intention suggests that with increasing knowledge on persuasive tactics, consumers will develop negative feelings and resist the message of the ad (Segijn et al., 2021). Hence, there would be a negative effect on purchase intention. With the help of the e-commerce acceptance model, online purchase intention can be studied (Kim et al., 2008). Based on the literature, the following hypotheses are formulated.

2.6.Purchase Intention in e-commerce

The framework by Kim et al. (2008), shown in Figure 1, explains the different variables influencing purchase intention, hence, purchase, in an e-commerce environment. According to the model, purchase intention and purchase decision have a positive relation. Furthermore, trust has a positive effect on purchase intention. Perceived risk negatively mediates the positive effect, as perceived risk and purchase intention are negatively related. Perceived benefit and purchase intention have a positive relation (Kim et al., 2008).

Figure 1

Purchase intention in e-commerce (Kim et al., 2008)



2.6.1. Trust

When defining trust, one must understand the underlying concept of trustworthiness first. The latter concept describes the personality trait that one “will do what they say they will do” dependent on the context (O’Hara, 2012). Hence, trust can be described as an attitude and belief (O’Hara, 2012). It is important to note that this concept only occurs in interpersonal relations and acts as a basis for human development (Koehn, 1996). In business contexts, building successful long-term relationships is only possible with trust (Koehn, 1996). Furthermore, trust plays an important role in consumer behaviour, especially in uncertain environments such as e-commerce (Pavlou, 2003). That is why distrust is the main reason for online transactions and commerce to not take place (Pavlou, 2003).

2.6.2. Perceived Risk

It is argued that risk in the form of behavioural and environmental uncertainty is always present in e-commerce situations and online transactions (Bensaou & Venkatraman, 1996). Behavioural uncertainty can be broken down into economic-, personal-, seller performance-, and privacy risk. On the other hand, environmental uncertainty describes economic and privacy risks (Jarvenpaa et

al., 1999). The latter focuses on data privacy in e-commerce situations and is an important element in this study.

Risk is a concept difficult to measure which is why the subjective belief of perceived risk is used in literature. As described in the above, perceived risk and purchase intention are negatively related which has consequences for actual purchase behaviour. A reduction of risk in online commerce increases the likelihood of customers purchasing a certain product or service from a web retailer (Jarvenpaa et al., 1999). The underlying reason for this negative relation is the feeling of losing behavioural and environmental control (Pavlou, 2003).

2.6.3. Purchase intention

The intention to purchase a product or service online is defined as online purchase intention (Pavlou, 2003). Even though purchase intention does not equal actual purchase behaviour, it still acts as a useful predictor (Jamieson & Bass, 1989). Furthermore, purchase intention as a predictor for actual purchase is in line with the technology acceptance model (Davis, 1989), Theory of Planned Behavior (Ajzen, 1991), and Theory of Reasoned Action (Fishbein & Ajzen, 1977). Following the reactance theory, consumers resist or reject marketing tactics when they see their freedom of choice being limited by persuasion attempts (Brehm & Brehm, 1981). Furthermore, “consumer’s perceived risk” and trust impact online purchase intention (Kamalul Ariffin et al., 2018). The change of meaning principle goes in line with the former, as knowledge on persuasive attempts results in critical processing of a message that affects a consumer’s response to it (Friestad & Wright, 1994). Hence, resisting or rejecting marketing tactics could have a negative influence on purchase intention.

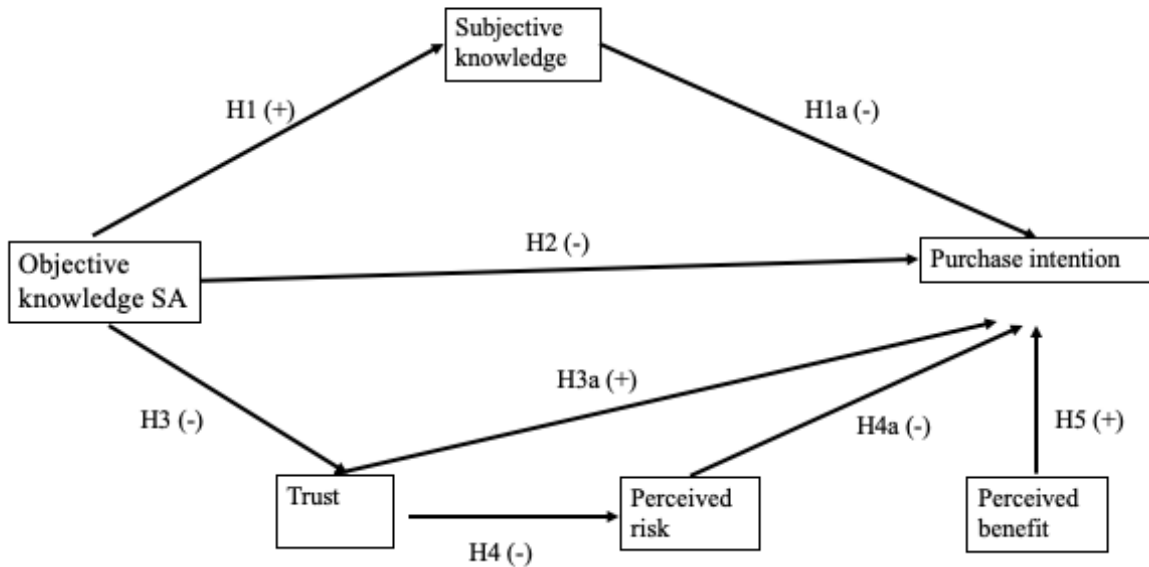
2.6.4. Perceived Benefit

The value customers relate to an experience is defined as perceived benefit (Haley, 1968). Perceived benefit is defined as a consumer’s perception of how much she or he can benefit from an online purchase. Benefits from e-commerce compared to traditional shopping, are found to be enhanced convenience, cost- and time savings and an increased product range to choose from (Margherio et al., 1998).

2.7. Conceptual Framework

Figure 2

Conceptual Framework



2.8. Hypothesis Development

The hypothesis development refers to the theoretical framework described in the above chapters 2.1 until 2.6. Chapter 3.3 will describe how the different variables mentioned in the hypotheses will be measured in the survey.

In literature, it is distinguished between objective and subjective knowledge. Subjective knowledge has a stronger impact on consumer behaviour and subsequently purchase intention (Park et al., 1994). According to the PKM and change of meaning principle, once people are aware of persuasive attempts, people change the way they respond to it. Moreover, reactance theory argues that people resist persuasive attempts once they feel that their freedom of choice is not given (Brehm & Brehm, 1981). Subjective knowledge is the confidence in knowledge, while objective knowledge describes factual knowledge (Park et al., 1994). Therefore, hypothesis 1 is proposed. As subjective knowledge is argued to have a stronger effect on purchase intention, subjective knowledge negatively mediates the relationship between objective knowledge and purchase intention (Hypothesis 1a).

Hypothesis 1: Objective knowledge has a positive effect on subjective knowledge.

Hypothesis 1a: Subjective knowledge negatively mediates the effect of objective knowledge about synced advertising on purchase intention for a convenience and a shopping product.

It is argued that consumers have little factual or objective knowledge of the persuasion techniques applied in synced advertising practices (Segijn & van Ooijen, 2020). Once aware of these techniques, consumers could develop privacy concerns about the collected personal data in synced advertising practices (White et al., 2008). Furthermore, the PKM and the change of meaning principle describe that people change responses to a persuasive attempt once they are aware of it. According to the privacy calculus model, positive feelings are evoked when benefits outweigh the costs of personalized advertising and vice versa. Therefore, it is argued that objective knowledge about synced advertising techniques has a negative effect on purchase intention for a convenience and a shopping product (Hypothesis 2).

Hypothesis 2: Objective knowledge of persuasive techniques in synced advertising has a negative effect on purchase intention for a convenience and a shopping product.

Chen & Cheng, (2019) found that knowledge on persuasive attempts has a negative effect on trust. That is why hypothesis 3 is proposed. According to the framework by Kim et al. (2008), purchase intention and trust have a positive relation. (Kim et al., 2008). Hence, trust positively mediates the relation between objective knowledge and purchase intention (Hypothesis 3a).

Hypothesis 3: Objective knowledge about synced advertising has a negative effect on trust.
Hypothesis 3a Trust positively mediates the effect of objective knowledge about synced advertising on purchase intention for a convenience and a shopping product.

Trust is claimed to have a negative effect on perceived risk (Ching et al., 2013). Therefore, hypothesis 4 is proposed. Moreover, according to the model by Kim et al., (2008), perceived risk is argued to negatively mediate the relation between trust and purchase intention. Hence, hypothesis 4a is proposed.

Hypothesis 4: Trust has a negative effect on perceived risk.

Hypothesis 4a: Perceived risk negatively mediates the effect of trust on purchase intention for a convenience and a shopping product.

Perceived benefit is seen to have a positive effect on purchase intention (Margherio et al., 1998). More recent studies found the positive relation, too. A study by Zhao et. al (2020), for example, analysed the positive relation in the context of e-commerce in China. That is why hypothesis 5 is proposed.

Hypothesis 5: Perceived benefit has a positive effect on purchase intention for a convenience and a shopping product.

3. Methodology

This chapter gives an overview of the methodology used in the course of this research. Research design, sample, stimuli, survey design, data collection and analyses are discussed. At the end, ethical considerations are presented.

3.1. Research Design

As mentioned in the introduction, the goal of this study is to analyse the relation between consumer knowledge and purchase intention for a convenience and a shopping good. Therefore, participants have to read an informative text about synced advertising and its underlying persuasion techniques. In addition, the mediating variables type of knowledge (subjective vs. objective knowledge), trust, perceived risk and perceived benefit are investigated. From the framework discussed in chapter 2.7, a survey was designed for empirical use with the tool Qualtrics. The survey measures the different variables to eventually investigate the effect between objective knowledge about persuasive techniques in synced advertising and purchase intention. After executing the survey, recommendations for advertisers will be given. Moreover, institutions will be advised on the potential implementation of literacy programs about persuasive techniques used in personalized advertising, especially synced advertising. A pre-test of the study was conducted with ten participants. After the pilot, the survey was adapted based on the recommendations and suggestions by the reviewers. Furthermore, the survey was translated to German. As the survey items were English, back translation was executed to ensure validity of the questionnaire items (J. Haschmann, back translation, May 1 2022).

A quantitative research approach was chosen to test the hypotheses described in chapter 2.8. An online experiment with a single factor (synced advertising information vs. no information) experimental between-subjects design will be drawn up with the tool Qualtrics. Prior to collecting data via a survey, a preliminary literature review was conducted. Existing literature was examined to identify a research gap. Furthermore, instruments to measure the different variables were identified. Thus, this research follows a deductive approach, by testing hypotheses and existing literature with a survey. Moreover, before the start of the study, the research was approved by the ethical committee of the University of Twente.

3.2. Sample and Selection

To collect data and select participants, the method of non-probability sampling, specifically convenience sampling, was chosen. The advantages of this non-probability sampling method lie in the efficiency related to time, money and effort (Marshall, 1996). However, for respondents, the survey is time-consuming to complete. That is why the researcher expects a smaller amount of survey participants, which affects the reliability.

Various social media channels and the university's test subject pool SONA were used for the distribution of the online survey. Respondents can participate on any mobile device, a phone, a tablet, or a laptop. Filling out the survey takes approximately ten minutes per respondent. Furthermore, all participants had to give consent in partaking the study. The data collection period was from the 13th of May until the 10th of June. Overall, there are 103 survey respondents. Nonetheless, only 100 answers were complete and considered in the study.

The total sample consisted of 42% (42) males and 55% (55) females. 3 participants prefer not to state their gender. Moreover, 53% of survey participants are aged 18 to 24, 25% are aged 25-50, 14% are aged 41-56 and 8% are older than 56.

3.3. Stimuli

In this study, the effect of objective knowledge of synced advertising on purchase intention is tested regarding two different product categories. Laundry detergent represents the product category of convenience goods and a couch the one of shopping goods. In advertising research, it is recommended to use brand names participants have a neutral attitude to and they are not familiar with (Geuens & De Pelsmacker, 2017). That is why the fictive brand names "Mino" and "Larr" were chosen.

Participants are shown a website text, which includes a description, information on the underlying persuasion techniques, the technology, a concrete example, and advantages for advertisers in the context of synced advertising. To measure objective knowledge, eight randomly ordered statements are presented to participants that are either true or false. The statements are taken from the research by Segijn & van Ooijen (2020). In line with previous research, three of the statements are false. To measure subjective knowledge, participants are asked to rate the confidence in their previous answers on a seven-point likert scale (1 = Not confident at all, 7 = extremely confident) (Segijn & van Ooijen, 2020).

In line with previous research, trust, perceived risk, perceived benefit, and purchase intention are measured on a seven-point likert scale (1 = completely disagree, 7 = completely agree). Regarding trust, items are adapted from Delgado-Ballester & Munuera-Alemán (2001), Hayes et al. (2021), and Dam (2020). Elements to measure perceived risk are adapted from Xu et. al (2011) and elements to measure perceived benefit are adapted from Swaminathan et al. (1999), Davis (1989), and Moore & Benbasat (1991). Elements to measure purchase intention are adapted from Gefen & Straub (2004) and the study by Hayes et al. (2021). Eventually, the questionnaire factors “objective knowledge”, “subjective knowledge”, “trust”, “perceived risk”, “perceived benefit” and “purchase intention” were coded, which is presented in Table 1. “Website x” and “Brand x” refer to the brand name “Mino” or “Larr” and their websites.

Table 1

Questionnaire Factors and Items

Factors	Factor names	Items	Source
OK1	Objective knowledge 1	It is possible for companies to collect information about the shows that people watch on television, and simultaneously advertise relevant products/brand on those people’s mobile devices.	(Segijn & van Ooijen, 2020)
OK2	Objective knowledge 2	Companies know what people are watching/listening to because media content (TV/ radio shows) sometimes contain a sound signal that can be picked up by a mobile device.	
OK3	Objective knowledge 3	Companies can advertise on one device based on information collected through another device at the same time.	

OK4	Objective knowledge 4	Technology already exists that makes it possible to receive ads on your smartphone based on your current (real-time) watching behaviour on online streaming services.
OK5	Objective knowledge 5	A company can show me an ad on my mobile device from a brand at the same time that I am watching a television commercial from that brand.
OK6	Objective knowledge 6	It is a coincidence when people receive an ad on their mobile device that is related to what they are concurrently listening to on the radio. (false)
OK7	Objective knowledge 7	It is impossible for a mobile app to listen to a television show that people are watching and use this information to provide those people with ads based on the show's content. (false)
OK8	Objective knowledge 8	It is impossible that words that I say out loud can trigger an ad on my mobile device related to that word. (false)

SK1	Subjective knowledge 1	How confident are you that your answer to statement 1 is correct? (Segijn & van Ooijen, 2020)
SK2	Subjective knowledge 2	How confident are you that your answer to statement 2 is correct?
SK3	Subjective knowledge 3	How confident are you that your answer to statement 3 is correct?

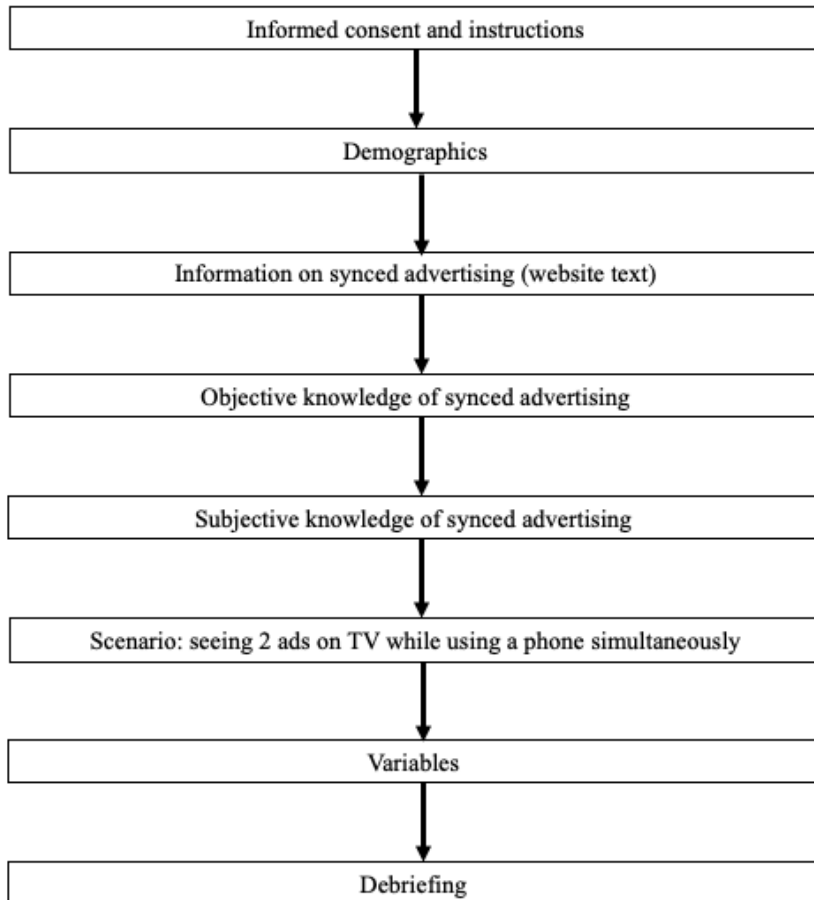
SK4	Subjective knowledge	How confident are you that your answer to statement 4 is correct?	
	4		
SK5	Subjective knowledge	How confident are you that your answer to statement 5 is correct?	
	5		
SK6	Subjective knowledge	How confident are you that your answer to statement 6 is correct?	
	6		
SK7	Subjective knowledge	How confident are you that your answer to statement 7 is correct?	
	7		
SK8	Subjective knowledge	How confident are you that your answer to statement 8 is correct?	
	8		

TR1	Trust 1	I trust brand x.	(Delgado-
TR2	Trust 2	I trust brand x to offer me new products that I may need.	Ballester & Munuera-
TR3	Trust 3	This brand is secure when I purchase detergent/ a couch.	Alemán, 2001)
TR4	Trust 4	I trust brand x is interested in my satisfaction as a consumer.	(Hayes et al., 2021)
TR5	Trust 5	Brand x values me as a consumer of its products.	(Dam, 2020)
TR6	Trust 6	I trust brand x to offer me recommendations and advice on how to make the most of its products.	
TR7	Trust 7	Brand x offers me detergent/ couches with a constant level of quality.	
TR8	Trust 8	I trust that brand x will help me solve any problem I could have with the product.	

PR1	Perceived risk 1	Providing the service provider with my personal information would involve many unexpected problems.	(Xu et al., 2011)
PR2	Perceived risk 2	It would be risk to disclose my personal information to the service provider.	
PR3	Perceived risk 3	There would be a high potential for loss in disclosing my personal information to the service provider.	
PB1	Perceived benefit 1	I think using Website x is convenient.	(Swaminathan et al., 1999)
PB2	Perceived benefit 2	I can save money by using Website x.	(Davis, 1989)
PB3	Perceived benefit 3	I can save time by using Website x.	(Moore & Benbasat, 1991)
PB4	Perceived benefit 4	Using Website x enables me to accomplish a shopping task more quickly than using traditional stores.	
PB5	Perceived benefit 5	Using Website x increases my productivity in shopping (e.g., make purchase decisions or find product information within the shortest time frame).	
PI1	Purchase intention 1	I am very likely to buy the detergent/ couch from this company.	(Gefen & Straub, 2004) (Hayes et al., 2021)
PI2	Purchase intention 2	I would consider buying the detergent/ couch from this company in the future.	
PI3	Purchase intention 3	I intent to buy the detergent/ couch from the company.	

3.4. Survey Design and Procedure

By clicking on the link of the survey, participants are directed to a page showing the instructions and a consent form. Before being able to continue with the study, one needs to give his/ her informed consent. Then, participants see a website text that provides information on the advertising technique. Afterwards, participants need to answer questions on their objective and subjective knowledge of synced advertising. Next, participants are asked to imagine a scenario in which they use their phone while simultaneously watching a TV show. Two banner ads pop up on their phone, the first one promoting a laundry detergent, and the second one promoting a couch. Both products are currently shown and mentioned in the TV show they were watching simultaneously. Afterwards, survey questions will focus on measuring the different variables, objective knowledge, perceived risk, trust, and purchase intention. After filling out demographic characteristics (age and gender), there will be a debriefing. Figure 3 presents an overview of the study's procedure. Overall, there are 26 questions participants need to answer.

Figure 3*Procedure of the Study***3.5.Data collection**

The first step in the data collection process was a preliminary literature review. Research papers dealt as the foundation of the research because a research gap was identified. Moreover, items to measure the different variables in the research were discovered. To collect empirical primary data, a quantitative survey in the form of a closed-structured questionnaire was conducted. Surveys have the advantage to reach a broad and diverse group of people. The behaviour of diverse participants is examined, which increases research reliability (Evans & Mathur, 2018). Demographic questions were asked at the end of the survey to examine the diversity in all responses.

A Likert-scale was used to measure the variables, trust, perceived risk, perceived benefit, and purchase intention. However, the scale entails the threat of neutral or extreme response bias. Moreover, the survey is complex and long, which might threaten validity, especially construct validity and reliability (Dooley & Lichtenstein, 2008).

3.6.Data Analyses

The data collected from the survey was analysed with the statistical software SPSS. Means from the extracted variable constructs (objective knowledge, subjective knowledge, trust, perceived risk, perceived benefit, and purchase intention) were computed. Then, linear regression was used to test the hypotheses.

3.6.1. Data Preparations

Firstly, the dataset was checked for outliers and missing data. The variable perceived risk was measured with three items on a different scale, ranging from 1 meaning no perceived risk and 7 indicating high perceived risk. All other survey items are measured the other way around. For example, if a survey participant indicated one for an item that measured trust, it means no trust while seven stands for high trust in the brand. Therefore, the levels of measurement of the items measuring perceived risk were changed. Furthermore, correct answers for objective knowledge were coded 1 and incorrect answers were coded 0. Then, to test the hypotheses, means of the measurement constructs needed to be computed. Hence, in total there are six variables (objective knowledge, subjective knowledge, trust, perceived risk, perceived benefit, and purchase intention). Nonetheless, as two different product categories (shopping goods and convenience goods) are compared, there are 12 variables used in the analysis. The outcomes regarding the convenience good (laundry detergent) are compared to those of the shopping good (couch). Moreover, variable names and labels were adapted. In total, there were 103 responses of which 100 were completed. Hence, linear regression analysis was conducted with 100 completed survey responses.

3.6.2. Analysis Methods

All variables, except demographic data, were measured on an ordinal scale. Simple linear regression can be used to test the hypotheses, because a 7-point Likert scale measures continuous data. Nonetheless, before conducting linear regression analysis, descriptive statistics and

correlations had to be analysed. Descriptive statistics and correlations were looked at first, to analyse strength between variables and to get an overview of the variable construct' response outcome. Therefore, the results chapter is structured into three parts; firstly, descriptive statistics, followed by correlations and lastly the linear regression analysis.

Spearman's Rho was used to test correlations and strength between the variables. The effect of objective knowledge on purchase intention, considering the mediator (objective & subjective knowledge) was assessed. Furthermore, the mediating roles of trust, perceived risk, and perceived benefit were tested, as well as the relation between objective knowledge and trust and trust and perceived risk were assessed. Thus, linear regression analysis was performed seven times. The relationship between the variables were tested for the convenience good (laundry detergent) and the shopping good (couch).

3.7. Ethical Considerations

Prior to the start of the study, the ethics committee of the University of Twente examined and approved this research. At the beginning of the survey, participants were asked to give their informed consent about their data use during this research. Furthermore, survey responses are strictly confidential and anonymous and were only used for the purpose of conducting research. All respondents participated voluntarily.

4. Results

This section deals with the results of the study. Eventually, the research question “To what extent does objective knowledge of synced advertising and the underlying persuasive techniques have an effect on purchase intention for a convenience and a shopping good?” will be answered based on the following data analysis and statistical test of hypotheses. Therefore, descriptive statistics are presented first, followed by correlations and lastly linear regression analysis.

4.1.Descriptive Statistics

Descriptive statistics provide an overview of the data collected in the survey. Table 2 presents the mean and standard deviation of study participant’s age, gender, objective, and subjective knowledge of synced advertising. Most participants are aged 18-24 and female. Furthermore, a mean of 1.52 regarding objective knowledge reveals that most study participants believed the statements about synced advertising to be false. However, only three of the eight statements were false. On the other hand, the mean of subjective knowledge shows indicates that survey participants mostly felt “neutral” to “somewhat confident” about their answers on their synced advertising knowledge. In total, there are 100 valid responses, whereas most respondents viewed the German survey compared to the English language setting (66 German, 34 English).

Table 2

Descriptive Statistics

	N	Mean	Std. Deviation
Age	100	1.77	.973
Gender	100	1.64	.644
Objective knowledge	100	1.5238	.22662
Subjective knowledge	100	4.5363	1.29152
Valid N (listwise)	100		

Table 3 gives a more detailed picture of respondent’s age, while

Table 4 shows the frequencies of the variable gender. The biggest age group is 18-24, followed by 25-40 (25%), 41-56 (14%) and, lastly, older than 56 (8%). Table 4 shows that 42% participants identify as male, 55% as female, and 3% prefer not to indicate their gender.

Table 3

Frequency Table Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-24	53	53.0	53.0	53.0
	25-40	25	25.0	25.0	78.0
	41-56	14	14.0	14.0	92.0
	Older than 56	8	8.0	8.0	100.0
	Total	100	100.0	100.0	

Table 4

Frequency Table Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	42	42.0	42.0	42.0
	Female	55	55.0	55.0	97.0
	Prefer not to say	3	3.0	3.0	100.0
	Total	100	100.0	100.0	

4.1.1. Descriptive Statistics Mino and Larr

Table 5 presents a more comprehensive picture of the different variables with regards to the fictional brand Mino selling a convenience good, namely laundry detergent, online. Trust has a minimum of 1, a maximum of 5, and a low mean compared to the other variables ($m=2.85$),

Perceived risk has a minimum of 1, a maximum of 7 and mean of 3.34. Perceived benefit has a minimum of 1, a maximum of 6.2 and a mean of 3.53. Purchase intention has the lowest maximum (4.67) and the lowest mean ($m=2.49$) compared to the other variables. These results indicate that respondents have little trust and low purchase intention when it comes to Mino's laundry detergent. Besides, respondents perceive high risk and do not see a benefit in purchasing Mino's laundry detergent. The standard deviations show that the variables are dispersed in relation to the mean apart from the variable trust ($SD=0.95$).

4.1.2. Descriptive Statistics Larr

Table 5 give insights into the different variables regarding the fictional brand Larr selling a shopping product, namely couches, online. In comparison to the variable's means for Mino, all variables measuring Larr's product are lower. The comparison shows that respondents have less trust, more perceived risk, less perceived benefit, and lower purchase intention for Larr's couches than for Mino's laundry detergent. All variables have a minimum of 1.

Trust has a maximum of 5.5 and a mean of 2.28. Perceived risk has a maximum of 7 and a mean of 2.79. Perceived benefit has a maximum of 6.2 and a mean of 2.78. Purchase intention has the lowest maximum (5.33) and mean ($m=1.98$) for Larr's products, too. The standard deviations are greater than one, which indicates that the variables are dispersed in relation to the mean.

Table 5

Descriptive Statistics Mino and Larr

<i>Descriptive Statistics Mino</i>					
	N	Minimum	Maximum	Mean	Std. Deviation
Trust Mino	100	1.00	5.00	2.8513	.94677
Perceived risk Mino	100	1.00	7.00	3.3433	1.35955
Perceived benefit Mino	100	1.00	6.20	3.5280	1.20085

Purchase intention Mino	100	1.00	4.67	2.4933	1.15808
<i>Descriptive Statistics Larr</i>					
Trust Larr	100	1.00	5.50	2.2775	1.21382
Perceived risk Larr	100	1.00	7.00	2.7867	1.59018
Perceived benefit Larr	100	1.00	6.20	2.7840	1.59663
Purchase intention Larr	100	1.00	5.33	1.9800	1.17189
Valid (listwise)	N 100				

4.2. Correlations: Spearman's Rho

After the descriptive statistics, the results of the survey are analysed based on the strength and direction of association between the variable's measurement constructs. The strength can be analysed through correlations. Nonetheless, to determine whether the strength between the variables is a causal relationship, statistical tests are needed. The correlations only give an idea of the strengths that can be expected if the statistical test is significant. Spearman's Rho is used to assess the relationships of the variables, as all variables are measured on an ordinal scale (7-point-Likert scale).

4.2.1. Correlations: Mino

The analysis of correlations regarding the convenience good, laundry detergent, is shown in Table 6. The correlation between objective knowledge and subjective knowledge is statistically significant as well as moderate and negative. The strength between purchase intention and trust, and purchase intention and perceived benefit has a positive and moderate correlation. Furthermore, subjective knowledge and perceived benefit have a positive, weak correlation. While the correlation between trust and perceived risk is weak and positive, the strength between trust and perceived benefit is moderately strong and positive. Overall, the correlation between trust and

purchase intention is strongest (0.606). On the one hand, the relation between perceived benefit and purchase intention has a positive moderate correlation (0.422). On the other hand, the relation between trust and perceived risk has a positive weak correlation (0.219). The exact outcomes of the correlation analysis are shown in Table 7.

Table 6

Correlations | Mino

Spearman's rho		OK	PI	SK	TR	PR	PB
OK	Correlation coefficient	1.000					
	Sig. (2-tailed)	.					
PI	Correlation coefficient	-.057	1.000				
	Sig. (2-tailed)	.571	.				
SK	Correlation coefficient	-.300**	.024	1.000			
	Sig. (2-tailed)	.002	.812	.			
TR	Correlation coefficient	-.056	.606**	.000	1.000		
	Sig. (2-tailed)	.581	.000	.996	.		
PR	Correlation coefficient	-.046	.158	.031	.219*	1.000	
	Sig. (2-tailed)	.646	.117	.760	.028	.	
PB	Correlation coefficient	-.165	.422**	.240*	.464**	.086	1.000
	Sig. (2-tailed)	.100	.000	.016	.000	.395	.
N		100	100	100	100	100	100

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

4.2.2. Correlations Larr

In contrast to the strengths between the variables for the convenience good (laundry detergent), the strengths between almost all variables measuring the shopping good (couch) are significant. While the correlation between objective knowledge and all other variables is negative and moderate, the correlations between purchase intention and trust, purchase intention and perceived risk and purchase intention and perceived benefit are positive and moderate. Moreover, the correlation between trust and perceived risk and trust and perceived benefit is positive and moderate. Lastly, perceived risk and perceived benefit have a positive and moderate correlation.

The only correlations that are not statistically significant are the ones between subjective knowledge and all variables except objective knowledge. In general, the strength between perceived benefit and purchase intention is strongest (0.707), followed by the strength between trust and purchase intention (0.703), and trust and perceived risk (0.666). The exact data regarding the Spearman's Rho test is presented in Table 7.

Table 7

Correlations | Larr

Spearman's rho		OK	PI	SK	TR	PR	PB
OK	Correlation coefficient	1.000					
	Sig. (2-tailed)	.					
PI	Correlation coefficient	-.257**	1.000				
	Sig. (2-tailed)	.010	.				
SK	Correlation coefficient	-.300**	-.028	1.000			
	Sig. (2-tailed)	.002	.784	.			
TR	Correlation coefficient	-.304**	.703**	.182	1.000		
	Sig. (2-tailed)	.002	.000	.070	.		

PR	Correlation coefficient	-.229*	.521**	.037	.666**	1.000	
	Sig. (2-tailed)	.022	.000	.711	.000	.	
PB	Correlation coefficient	-.355**	.707**	.061	.871**	.595**	1.000
	Sig. (2-tailed)	.000	.000	.550	.000	.000	.
	N	100	100	100	100	100	100

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

4.3.Linear Regression Analysis

Simple linear regression analysis will be conducted to test the hypotheses. Eventually, the research question “To what extent does objective knowledge of synced advertising and the underlying persuasive techniques have an effect on purchase intention for a convenience and a shopping product?” will be answered based on the following results. The effect of objective knowledge on purchase intention will be examined, while type of knowledge, trust and perceived risk are mediators. Additionally, the effect of perceived benefit on purchase intention will be studied. Therefore, the direct effects between the variables are investigated first. Afterwards, the mediators are analysed.

Linear regression analysis is conducted to test the following hypotheses:

H1: Objective knowledge has a positive effect on subjective knowledge.

H1a: Subjective knowledge negatively mediates the effect of objective knowledge about synced advertising on purchase intention for a convenience and a shopping product.

H2: Objective knowledge of persuasive techniques in synced advertising has a negative effect on purchase intention for a convenience and a shopping product.

H3: Objective knowledge about synced advertising has a negative effect on trust.

H3a: Trust positively mediates the effect of objective knowledge about synced advertising on purchase intention for a convenience and a shopping product.

H4: Trust has a negative effect on perceived risk.

H4a: Perceived risk negatively mediates the effect of trust on purchase intention for a convenience and a shopping product.

H5: Perceived benefit has a positive effect on purchase intention for a convenience and a shopping product.

4.3.1. *Linear Regression Analysis Mino*

To conduct linear regression analysis regarding Mino's laundry detergent, the total effect between objective knowledge and purchase intention needs to be checked first (H2). If the effect of objective knowledge on purchase intention is not significant when it comes to Mino's laundry detergent, a mediation analysis cannot be conducted. Table 8 shows the results of the simple linear regression.

Table 8

Linear regression Mino | objective knowledge on purchase intention

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	3.032	.793		3.822	.000
Objective knowledge	-.353	.515	-.069	-.686	.494

a. Dependent variable: Purchase intention Mino

As the p-value is > 0.05 , the total effect is statistically not significant. Therefore, it is not possible to go further with the linear regression analysis regarding the convenience good, laundry detergent. Hence, hypothesis one is not supported for the purchase of a convenience good. Objective knowledge of persuasive techniques in synced advertising does not have a significant effect on purchase intention for a convenience product.

4.3.2. *Linear Regression Analysis Larr*

The total effect between objective knowledge and purchase intention needs to be checked for the shopping good, too (H2). Only if the effect between those variables is statistically significant, one

can continue with the linear regression analysis of all other variables. Table 10 shows that the effect of objective knowledge on purchase intention for a shopping good is statistically significant. With a p-value of $0.003 < 0.05$, a significant, moderate to weak negative linear relationship was found ($\beta=-0.298$). When objective knowledge increases with one point, on a 7-point Likert scale, purchase intention decreases by -1.540. As the total effect is significant, hypothesis one is supported for the purchase of a shopping good.

Table 9

Linear regression Larr | objective knowledge on purchase intention

	Unstandardized Coefficients		Standardized	t	Sig.
	B	Std. Error	Coefficients		
(Constant)	4.326	.768		5.632	.000
Objective knowledge	-1.540	.499	-.298	-3.087	.003

a. Dependent variable: Purchase intention Larr

As the direct effect between objective knowledge and purchase intention is significant, linear regression analysis can be modelled for the other variables, too. The results of the direct effects are shown in Table 10. Afterwards, the mediators are analysed, which is presented in Table 11.

After analysing the direct effect between objective knowledge and purchase intention, the effect of objective knowledge on subjective knowledge is estimated, which is statistically significant ($p < \alpha$). Furthermore, with $\beta=-2.310$, the linear relationship is weak and negative. Thus, the more correct answers regarding objective knowledge, the less confident respondents are about their answers. Hence, even though the relation is statistically significant, hypothesis 2 is not supported, because the effect is negative.

Moreover, with a p-value $< \alpha$, the effect of objective knowledge on trust is statistically significant. The linear relationship is found to be weak and negative ($\beta=-1.491$). When objective knowledge increases with one point, on a 7-point Likert scale, trust decreases by -1.491. As the total effect is significant, hypothesis 3 is supported for the purchase of a shopping good.

Furthermore, it is found that the direct effect of trust on perceived risk is statistically significant ($p < \alpha$). A negative, moderately strong relationship is found ($\beta = 0.734$). When trust increases by one, on a 7-point Likert scale, perceived risk decreases by 0.734. As the chapter data preparations explains, the levels of measurement of the variable perceived risk had to be changed, which is why the relationship is negative with $\beta = 0.734$ instead of positive. Therefore, hypothesis 4 is supported for a shopping good.

Lastly, the direct effect of perceived benefit on purchase intention needs to be tested. The effect is statistically significant ($p < \alpha$). With $\beta = 0.478$, the linear relationship is positive and moderately strong. When perceived benefit increases with one point, on a 7-point Likert scale, purchase intention increases by 0.478. As the total effect is significant, hypothesis 5 is supported for a shopping good.

Table 10 presents the results of the linear regression analysis regarding direct effects.

Table 10

Linear regression Larr | direct effects

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	4.326	.768		5.632	.000
Objective knowledge	-1.540	.499	-.298	-3.087	.003
Dependent variable: purchase intention Larr					
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	8.055	.811		9.937	.000
Objective knowledge	-2.310	.526	-.405	-4.388	.000
Dependent variable: subjective knowledge Larr					

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	4.550	.800		5.684	.000
Objective knowledge	-1.491	.520	-.278	-2.869	.005
Dependent variable: trust Larr					
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	1.115	.283		3.945	.000
Trust Larr	.734	.110	.560	6.698	.000
Dependent variable: perceived risk Larr					
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	.649	.180		3.600	.001
Perceived benefit Larr	.478	.056	.651	8.496	.000
Dependent variable: purchase intention Larr					

After analysing the direct effects between the variables, linear regression is modelled to test the mediator subjective knowledge, trust, and perceived risk. The results are presented in Table 11.

To analyse the mediator subjective knowledge, the direct effect between objective knowledge and purchase intention and subjective knowledge and purchase intention is calculated. As the p-value 0.627 is greater 0.05, the alpha, the mediation effect is not statistically significant. Therefore, hypothesis 2a is not supported.

Next, the direct effect between objective knowledge and purchase intention and trust and purchase intention is estimated. Again, the mediation relationship is not significant ($p > \alpha$). Therefore, hypothesis 3a is not supported either.

Furthermore, the mediation effect between trust, perceived risk and purchase intention is not statistically significant, either, because $p > \alpha$. Therefore, hypothesis 4a is not supported.

Table 11

Linear regression Larr | mediator

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	4.703	1.093		4.305	.000
Objective knowledge	-1.648	.548	-.319	-3.009	.003
Subjective knowledge	-.047	.096	-.052	-.487	.627
Dependent variable: purchase intention Larr					
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	1.691	.710		2.382	.019
Objective knowledge	-.676	.416	-.131	-1.625	.107
Trust Larr	.579	.078	.600	7.454	.000
Dependent variable: purchase intention Larr					
	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	.517	.209		2.474	.015
Trust Larr	.572	.091	.593	6.290	.000
Perceived risk Larr	.057	.069	.077	.821	.414
Dependent variable: purchase intention Larr					

To conclude, Table 12 presents the hypothesis test results outcomes and a summary of the regression analysis. In the table, H1a, H3a and H4a present the results of the mediation.

Table 12

Hypotheses test result outcomes

	B	SE	Beta	t	Sig.	Results
<i>Regression coefficients Mino</i>						
H2	-.353	.515	-.069	-.686	.494	Not supported
<i>Regression coefficients Larr</i>						
H1	-2.310	.526	-.405	-4.388	.000	Not supported
H1a	-.047	.096	-.052	-.487	.627	Not supported
H2	-1.540	.499	-.298	-3.087	.003	Supported
H3	-1.491	.520	-.278	-2.869	.005	Supported
H3a	-.676	.416	-.131	-1.625	.107	Not supported
H4	.734	.110	.560	6.698	.000	Supported
H4a	.057	.069	.077	.821	.414	Not supported
H5	.478	.056	.651	8.496	.000	Supported

4.4. Multiple Regression Analysis

Multiple regression analysis is an extension of the simple linear regression analysis conducted in chapter 4.3. Table 13 shows that only the relationship between trust and purchase intention is statistically significant, because $p < 0.05$. Furthermore, Table 14 shows that 43.8% of variation in purchase intention can be explained by the model.

Table 13

Multiple Regression Analysis

	Unstandardized Coefficients		Standardized		
	B	Std. Error	Beta	t	Sig.
(Constant)	1.686	.981		1.720	.089
Objective knowledge	-.540	.469	-.104	-1.151	.253
Subjective knowledge	-.087	.077	-.095	-1.119	.266
Trust	.301	.150	.311	2.010	.047
Perceived risk	.053	.068	.072	.789	.432
Perceived benefit	.243	.109	.331	2.226	.028

a. Dependent variable: purchase intention Larr

Table 14

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.683	.467	.438	.87815

Predictors: (Constant), perceived benefit Larr, subjective knowledge, perceived risk Larr, objective knowledge, trust Larr

5. Discussion

In this section, the results of the study presented in chapter 4 are interpreted and discussed. The objective of this research is to analyse whether objective knowledge of persuasive techniques used in synced advertising has an effect on purchase intention. It was distinguished between a brand selling a convenience product, laundry detergent, and one selling a shopping product, namely couches.

A survey was conducted among 100 participants and analysed based on descriptive statistics, correlations, and linear regression. In general, the majority of valid respondents are aged 18 to 24 and identify as female. The second biggest age group is 25 to 40, followed by 41 to 56 and older than 56. Furthermore, German was the language setting that was used most to complete the questionnaire. When shown the different true or false statements regarding synced advertising practices, most believed these to be false. However, only three of the eight statements were false. The mismatch between true false statements and perceived false statements indicates that there is little objective knowledge on synced advertising and its underlying persuasion techniques. On the other hand, subjective knowledge was moderate to high, with an average answer between “neutral” and “somewhat confident”. Here again, a discrepancy is found. Even though, the majority of respondents made mistakes regarding the true/ false statements about their objective knowledge, participants were moderately confident. The found incongruity, underlines the need for literacy programs about persuasive techniques used in personalized advertising. People are not aware of persuasive techniques used in advertising and, thus, can be influenced heavily (Custers et al., 2013). To be an empowered consumer, one needs to understand the persuasion techniques they are faced with daily (Segijn & van Ooijen, 2020).

To test the different hypotheses, linear regression needed to be modelled multiple times for the convenience and the shopping product. The results are discussed in the following.

Hypothesis 2: Objective knowledge of persuasive techniques in synced advertising has a negative effect on purchase intention for a convenience and a shopping good.

When conducting linear regression to find out the total effect of objective knowledge on purchase intention for the convenience good, it became apparent that the relationship is statistically not significant. As the total effect is not significant, a mediation analysis cannot be run. Therefore, hypothesis two is not supported regarding the purchase of a convenience good (laundry detergent).

On the other hand, hypothesis two is supported for the purchase of the shopping product couches. Objective knowledge of persuasive techniques in synced advertising has a negative effect on purchase intention for a shopping product. More precisely, a negative moderate to weak linear relationship was found. When objective knowledge about synced advertising practices increases, purchase intention for a shopping product decreases.

Hypothesis 1: Objective knowledge has a positive effect on subjective knowledge.

Next to the total effect being statistically significant, there is a statistically significant direct and negative effect of objective knowledge on subjective knowledge. Hypothesis one is not supported. Hence, even though there is objective knowledge, the confidence in the true statements is weak. The mismatch is in line with the descriptive statistics, as the need for literacy programs becomes apparent.

Hypothesis 1a: Subjective knowledge negatively mediates the effect of objective knowledge about synced advertising on purchase intention for a convenience and a shopping product.

Even though the direct effects are statistically significant, the mediation analysis is not. Hypothesis 1a is not supported as subjective knowledge does not mediate the effect of objective knowledge about synced advertising on purchase intention for a shopping product. The result is not in line with literature, which argues that subjective knowledge has a stronger impact on consumer behaviour (Park et al., 1994). In this study, there is no significant effect of subjective knowledge on purchase intention.

Hypothesis 3: Objective knowledge about synced advertising has a negative effect on trust.

To test hypothesis three, a mediation analysis was conducted with the mediator trust. The relation between objective knowledge and trust is statistically significant, weak, and negative. When objective knowledge about persuasive techniques in synced advertising increases, trust in the brand decreases. Hence, hypothesis three is supported.

Hypothesis 3a: Trust positively mediates the effect of objective knowledge about synced advertising on purchase intention for a convenience and a shopping product.

Moreover, only the total effect and not the mediation relationship with trust is significant. Therefore, hypothesis 3a is not supported. Trust does not mediate the effect of objective knowledge about synced advertising on purchase intention for a shopping product.

Hypothesis 4: Trust has a negative effect on perceived risk.

The mediator perceived risk was analysed next. The total effect between trust and perceived risk is statistically significant and moderately strong and negative.

Hypothesis 4a: Perceived risk negatively mediates the effect of trust on purchase intention for a convenience and a shopping product.

The mediation analysis is not statistically significant, which is why hypothesis 4a is not supported. Perceived risk does not mediate the effect of trust on purchase intention for a shopping good.

Hypothesis 5: Perceived benefit has a positive effect on purchase intention for a convenience and a shopping product.

Lastly, the direct effect of perceived benefit on purchase intention was tested. In line with literature, there is a positive and moderately strong linear relationship in this study, too. As perceived benefit regarding the purchase of a shopping good increases, so does purchase intention. Hence, hypothesis 5 is supported.

All in all, the results of the study are surprising, as the mediator relationships were not statistically significant. Nonetheless, all mediator variables have a direct effect on purchase intention. Moreover, the study supports the assumption that consumer behaviour regarding a convenience and a shopping product are different (Holton, 1958). Objective knowledge about persuasive attempts in advertising does not affect purchase intention when it comes to convenience products such as laundry detergent. A reason for the difference in consumer behaviour can be found in the higher price and higher commitment when purchasing shopping goods (Holton, 1958). Nonetheless, trust and perceived risk are no mediators in this relationship. A main takeaway from this study is the need for literacy programs. Even though objective knowledge on persuasive techniques influences purchase intention, consumers are unsure about persuasive techniques.

Overall, there is little subjective knowledge, hence, confidence in comprehending synced advertising practices.

6. Conclusion

This study's objective was to answer the research question "To what extent does objective knowledge of synced advertising and the underlying persuasive techniques have an effect on purchase intention for a convenience and a shopping good?". This question is crucial as online marketing, especially the use of personalized advertising and microtargeting tactics are increasingly gaining importance (Liu-Thompkins, 2019). On the one hand, personalized advertising has advantages for both, advertiser, and consumer. For advertisers, it is seen to be more effective and cheaper than traditional advertisements (Varnali, 2021). For consumers, only relevant advertisements are shown with products and services that match their interests (Beales, 2010). On the other hand, there is a downside when it comes to personalization in advertisements. Personalized advertisements are data-driven, which means that a great deal of an individual's personal information needs to be collected (Zarouali et al., 2017).

In the past, the most used personalization practice was OBA, online behavioural advertising. Data on an individual's past online behaviour is stored and analysed to show viable ads (Aguirre et al., 2015). The newest development of personalized advertisements is called synced advertising. With this technique, watermarking is used to analyse and store an individual's current media behaviour across different media. Hence, real-time data is used to show personalized ads on different media at the same time. With the development of synced advertising, concerns about consumer privacy rise. Personal data from an individual's media, for example, TV, phone, or tablet, is constantly collected and analysed. As the technology behind the advertising technique is very complex, consumer's control of their personal data is complicated (Segijn, 2019). Therefore, legislation tries to regulate the collection of personal data. For example, the European Union drew up the GDPR (General Data Protection Regulation) as every individual needs to be aware of the personal information that is available to other parties. Otherwise, one is limited in the freedom to make decisions on one's own. Hence, with the GDPR, websites are obligated to publish a policy which states what personal data is stored and analysed (G.D.P. Regulation (GDPR), 2016). Even though, the regulation's objective is to regulate the processing of personal data, critics state that consumers often do not understand the website's policies, nor do they consider consequences when giving consent to capture their private data (Custers et al., 2013). However, being an empowered consumer, means understanding underlying persuasive techniques in advertisements. Furthermore, in comparison to OBA, consumer knowledge about synced advertising is argued to be low (Segijn

& van Ooijen, 2020). That is why it needs to be investigated to what extent increasing knowledge of synced advertising and underlying persuasive techniques affects purchase intention.

This research shows that objective knowledge about synced advertising negatively affects purchase intention, trust, and perceived benefit, while positively affecting perceived risk for the purchase of a shopping good. The relations between the variables regarding the convenience good were not statistically significant. Hence, respondents have less trust, perceive more risk and less benefit while having lower purchase intention for shopping products than for convenience products. The difference can be caused by the fact that shopping products require higher involvement in the purchasing process, as prices are higher. Convenience goods, on the other hand, are bought on a regular basis and are low cost (Holton, 1958). Nonetheless, only the direct effects are statistically significant, while the mediators are not.

6.1. Theoretical Implications

There is a gap in literature when it comes to the mismatch between the positive effects of synced advertising and consumer's missing knowledge about persuasion (Segijn, Kim, et al., 2021). To successfully implement the newest advertising strategy, synced advertising, this research contributes to literature by investigating the relationship between objective knowledge about synced advertising and purchase intention. So far, the relation between knowledge of persuasion in advertising and the impact on consumer behaviour has only been studied concerning online behavioural advertising (Farman et al., 2020). This study analysed the relation between objective knowledge about persuasion techniques used in synced advertising and purchase intention for a shopping and a convenience good. The distinction between the two product categories, has not been researched yet. That is why this study extends to literature.

In contrast to the mere exposure effect, this research suggests that the knowledge of synced advertising has negative effects on purchase intention for a shopping product. The mere exposure effect proposes that synced advertising favours attitudes and purchase intention because consumers are exposed to an ad multiple times (Hoeck & Spann, 2020). Once consumers are aware of the persuasive techniques, this study shows that the positive effects of synced advertisements are diminished.

Furthermore, literature suggest that subjective knowledge has a stronger impact on consumer behaviour, hence, purchase intention (Park et al., 1994). However, this study does not

find a statistically significant relation between subjective knowledge and purchase intention. The new insights about this relationship extend current literature.

Moreover, the findings of this research are in line with the persuasion knowledge model (PKM) and the change of meaning principle. The model suggests that someone who is aware of persuasive attempts, changes his/ her response to it (Friestad & Wright, 1994). As objective knowledge about persuasive techniques for a shopping product has a negative effect on purchase intention, this study extends the PKM. The difference between different product categories was not studied before.

Moreover, the findings by Segijn & van Ooijen, 2020, are supported because consumers have little knowledge of the newest form of personalized advertising. Nonetheless, this research does not support the purchase intention in e-commerce framework by Kim et al., 2008. In this study, the mediator relationships were not significant.

6.2. Practical Implications

This study underlines the need for literacy programs about the persuasive attempts in synced advertising. Objective and subjective knowledge about the possibilities companies have with collected personal data are low. Not only the knowledge itself is little but also an individual's confidence in his/ her knowledge about synced advertising practices. To be an empowered consumer, it is of utmost importance to understand persuasive attempts in marketing (Segijn & van Ooijen, 2020). The German constitutional court states that, if one is unaware of persuasion techniques, one is limited in his/ her freedom to make decisions on his/ her own (Bundesverfassungsgericht, 1983). Hence, this study should act as an incentive for education to illuminate consumers. With the increasing popularity of personalized advertising, literacy programs need to be developed that can keep up with the fast-changing digital marketing environment (Segijn & van Ooijen, 2020).

Once consumers are empowered and knowledgeable of the persuasive attempts, the ground for ethical debates is given. Those are essential to give input into data protection regulations. Besides data protection regulations, a basis for the development of future personalization strategies is given. It needs to be decided on the limits of persuasion techniques in advertising (Segijn & van Ooijen, 2020)..

Furthermore, this research is relevant to businesses and especially advertisers and marketers that make use of personalization strategies. This research shows that there are many different variables that play into account when intending to purchase a product. Here, it is important to differentiate between companies selling convenience goods, such as laundry detergent, or companies selling shopping goods, such as couches. The former organizations can make use of synced advertising practices without having to fear of a decreasing purchase intention. Even if consumers are aware of a companies' persuasive attempts when trying to sell convenience good, the effect on purchase intention is not significant. The latter businesses, on the other hand, need to weigh advantages and disadvantages of using synced advertising practices. If consumers have knowledge of the persuasive techniques, it has a negative effect on purchase intention. One needs to evaluate whether the upside of synced advertising, efficiency, and cost advantages, outweigh the downside of decreasing purchase intention. Marketeers need to emphasize benefits their product or service offers and establish high trust. At the same time, perceived risk needs to be minimalised. These variables can be influenced with the help of different marketing techniques and platforms. However, studying which marketing practices increase trust and perceived benefit while decreasing perceived risk, are out of the scope of this research.

6.3.Limitations and Future Research

This paper lays the foundation for future research in the field of synced advertising. As the personalization strategy is the newest development in the advertising industry, it has not been researched extensively. Naturally, this study has limitations that call for future research suggestions.

Firstly, empirical data was gathered through an online questionnaire. There is a threat of research participants not correctly understanding the questions, answering inattentively or being dishonest. Furthermore, a 7 point-Likert scale was used for almost all questions, which might lead to extreme or neutral response bias. Hence, future research in the form of a longitudinal experimental study could give more insights into purchase intention and purchase behaviour when being confronted with synced advertising. Next to longitudinal experimental studies, eye-tracking or facial expression recognition

Secondly, most survey participants were female aged 18-24 while people over the age of 56 were not presented a lot in the study. That is why future research needs to aim for a more equal distribution of demographics in survey participants. It could be that people over the age of 56 are, in general, more hesitant toward online shopping, which could alter the results.

Thirdly, this paper compared the purchase of a convenience good (laundry detergent) with a shopping good (couch). As these are only two examples of goods in their product categories, results might be biased. Thus, it is of utmost importance to conduct research with other products within the same product category but also with other product categories. Future research could give a more detailed picture and lead to more reliable results.

Fourthly, the purchase intention e-commerce model by Kim et al., 2008, was not supported with the results of this paper. While direct relationships were statistically significant, mediators were not. Therefore, future research needs to test the model with different products, product categories and a more diverse sample population. However, on the other hand, the same research can be conducted using a different e-commerce purchase intention model.

Lastly, due to the nature of this research and its time limitations, it was not possible to investigate actual purchase behaviour but only purchase intention. Even though literature indicates that purchase intention is a reliable measure for purchase, future studies should include the observation of actual purchase behaviour.

All in all, this study acts as a starting point and foundation for future research in the field of synced advertising. As it is a new tool for advertisers, companies need to outweigh benefits and costs regarding their customer's purchase intention. To overcome validity and reliability issues, data needs to be collected over a longer period. A larger response rate and more diverse sample further increase reliability and validity.

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Appendix

Appendix I: Online survey

Instructions

Thank you for participating in my survey!

You will be asked to fill out the survey about your knowledge on a specific advertising practice based on an example. Later, you will be asked about trust, perceived benefits, perceived risks, and purchase intention regarding two specific products. The research is conducted in the course of my master thesis in Business Administration at the University of Twente. The survey takes approximately 5-10 minutes to complete. Survey responses are strictly confidential and anonymous and will only be used for the purpose of conducting research. Participation in this study is completely voluntary. If you have questions about your rights as a research participant, or wish to obtain information, ask questions, or discuss any concerns about this study, please contact me via e-mail: h.mengelkamp@student.utwente.nl

Please understand that your participation is completely voluntary. You have the right to refuse to answer questions and can withdraw from the study at any time, without having to give a reason.

I have read and understood the instructions of this research, or it has been read to me.

Yes (1)

No (2)

Information SA

Please read the following text carefully:

Synched advertising is an advertising practice by which consumers are shown a personalized ad

Statement

2:

It is a coincidence when people receive an ad on their mobile device that is related to what they are concurrently listening to on the radio.

True (1)

False (2)

How confident are you that your answer to statement 2 is correct?

	Not confident at all (1)	Not confident (2)	Not very confident (3)	Neutral (4)	Somewhat confident (5)	Very confident (6)	Extremely confident (7)
Statement 2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Statement

3:

Companies know what people are watching/ listening to because media content (TV/ radio shows) sometimes contain a sound signal that can be picked up by a mobile device.

True (1)

False (2)

Statement

5:

Technology already exists that makes it possible to receive ads on your smartphone based on your current (real-time) watching behaviour on online streaming services.

True (1)

False (2)

How confident are you that your answer to statement 5 is correct?

	Not confident at all (1)	Not confident (2)	Not very confident (3)	Neutral (4)	Somewhat confident (5)	Very confident (6)	Extremely confident (7)
Statement 5	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Statement

6:

It is impossible for a mobile app to listen to a television show that people are watching and use this information to provide those people with ads based on the show's content.

True (1)

False (2)

Statement

8:

A company can show me an ad on my mobile device from a brand at the same time that I am watching a television commercial from that brand.

True (1)

False (2)

How confident are you that your answer to statement 8 is correct?

	Not confident at all (1)	Not confident (2)	Not very confident (3)	Neutral (4)	Somewhat confident (5)	Very confident (6)	Extremely confident (7)
Statement 8	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Scenario:

Imagine you are watching a show on television while using your phone to browse a mobile app at the same time. On your phone, a banner ad about a laundry detergent from the brand Mino pops up. Simultaneously, the laundry detergent from Mino is mentioned in the show you are watching on TV.

A few minutes later, the same happens. This time, a banner ad promoting a couch from Larr pops up. At the same time, the couch from Larr is mentioned in the TV show.

Mino is a brand selling laundry detergent. The brand only sells its products online and makes use of synced advertising practices to do so. Therefore, Mino analyses your media usage across different media, e.g., phone, radio, or TV to show personalized advertisements. The above-described scenario describes an example of how Mino makes use of synced advertising practices.

In the following, multiple statements about trust in the brand Mino are shown. Please indicate your answer for each statement from strongly disagree to strongly agree.

Mino offers me detergent with a constant level of quality.

I trust that Mino will help me solve any problem I could have with the product.

In the following, multiple statements about perceived risk regarding a purchase from the brand Mino are shown. Please indicate your answer for each statement from strongly disagree to strongly agree.

There
would be a
high
potential
for loss in
disclosing
my
personal
information
to the
service
provider.

In the following, multiple statements about perceived benefit regarding a purchase from the brand Mino are shown. Please indicate your answer for each statement from strongly disagree to strongly agree.

Larr is a brand selling couches. The brand only sells its products online and makes use of synced advertising practices to do so. Therefore, Larr analyses your media usage across different media, e.g., phone, radio or TV to show personalized advertisements. The above described scenario describes an example of how Larr makes use of synced advertising practices.

In the following, multiple statements about trust in the brand Mino are shown. Please indicate your answer for each statement from strongly disagree to strongly agree.

I trust that Larr
will help me
solve any
problem I could
have with the
product.

In the following, multiple statements about perceived risk regarding a purchase from the brand Larr are shown. Please indicate your answer for each statement from strongly disagree to strongly agree.

There would be a high potential for loss in disclosing my personal information to the service provider.

In the following, multiple statements about perceived benefit regarding a purchase from the brand Larr are shown. Please indicate your answer for each statement from strongly disagree to strongly agree.

Purchasing
Larr's
couches
online
increases
my
productivity
in shopping
(e.g., make
purchase
decisions or
find product
information
within the
shortest
time frame).



Age How old are you?

- 18-24 (1)
 - 25-40 (2)
 - 41-56 (3)
 - Older than 56 (4)
-

Gender Which gender do you belong to?

- Male (1)
- Female (2)
- Non-binary / third gender (3)
- Prefer not to say (4)

Closing statement

Thank you for participating in this survey!

Your response has been noted and is appreciated.

If you have any questions, please contact me via e-mail: h.mengelkamp@student.utwente.nl