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EFFECTS OF REPETITIVE ONLINE ADS ON CONSUMER BEHAVIOR

Master's Thesis

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literary sources and data from elsewhere used for writing this paper have been referenced.

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24.05.2020

Abstract

The advertising landscape is increasingly progressing as a consequence of the transition to technological and social changes, and today the core aspect of online advertising is known as programmatic advertising. It is a strategy of algorithmic online advertising that facilitates targeting end users in real time. Furthermore, earlier studies indicate that most advertisers do not optimize their frequency capping especially on the Youtube platform and this is one of the most crucial matters in the online behavioral advertising industry. Besides that, scholars argue that frequency or repetition impacts consumers' behaviors toward campaigns shown, which drives us to our research question: *“how repetitive online ads affect user behavior?”*. The goal of this study is to broaden the knowledge of how continuous exposure to targeted advertisements on Youtube directly impacts consumers' behaviors toward it. It is discovered that irritation, invasiveness, favorability of relevance, awareness, and avoidance are concepts investigated in prior researches connected to online behavioral advertising. In this research these concepts are examined with a quantitative survey by including their relationship with repetition factor. After that, statistical analyses were performed including correlation and regression analysis to determine if our hypotheses were validated. Based on our findings, repeating Youtube ads affects consumer perceptions by causing irritation, ad avoidance and invasiveness feeling. Conversely, according to the results, there is no significant relationship between brand awareness and advertising repetition.

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1. Introduction

The Internet has caused changes in communication methods as well as affecting all elements of marketing. Digital transformation, which permeates every aspect of our lives, has begun to shape the habits, expectations and experiences of consumers. At this point, internet advertising has become an indispensable element of marketing efforts along with digital communication methods and strategies. Developments in our lives in the 80's; the advent of the first personal computers, the establishment of domain systems, the opening of public commercial networks contributed greatly to this development. Every new development brings new topics to our lives. Instead of one-sided advertising applications made with traditional mediums in the past, interactive and user-based advertising types are frequently used today. Behavioral advertising is one of the most used of these new types of advertising and one of the most discussed topics by both academics and lawmakers worldwide.

Online behavioral advertising is a type of advertising that relies on user data. Accordingly, this type of advertising, which allows advertisers to follow the online footprints of users and make them encounter ad content suitable for their interests, likes and hobbies, is highly controversial, especially in terms of data security and sharing personal information. The motivation behind the increasing trend in behavioral marketing lies under the idea of reaching the right customers at the right time and at the right place (Cai et al., 2017). However, there are a vast variety of different channels to advertise on for advertisers, which leads advertisers to focus more on user behaviors.

Online behavioral advertising activities aim to convince the target audience to use and try the product from the brand. However, avoidance or blindness of consumers against ads causes inefficiencies in today's advertising world. Even though users favor more related ads to themselves highly frequent ads result in advertising blindness and irritation (Malheiros et al., 2012). As a result of that advertisers fall into the mistake of showing relevant ads to the same user repeatedly, yet the relationship between irritation and repetition caused by relevancy is oftentimes forgotten (Kim & Huh, 2017). To avoid the weakening effect of repetition on buyer behavior, it is crucial to find the right frequency capping (Buchbinder et al., 2014).

According to Google, in 2020 Youtube advertising exceeded their other advertising revenue sources (Statista, 2021). Especially true view video marketing which allow advertisers to promote more engaged campaigns helped (Duffett, 2020). According to

marketing guru Neil Patel, Youtube is the first place according to target for behavioral advertising (Patel, 2020). That's why in this study, the focus is on Youtube users.

The Coalition for Better Ads came together and conducted research about invasiveness and irritation of different ad formats in programmatic behavioral advertising (display banners, pop-ups, interstitial, native, etc.) on consumer behavior via Mechanical Turk. Another research conducted in China proved that there is a positive correlation between attention invasiveness and advertising irritation which causes advertising avoidance in the end (Niu et al., 2021). However, there is a research gap in the effects of repetitive ad content in programmatic advertising. This study will contribute to the literature since the topic is related to nowadays issues of the advertising technology industry and there is not adequate research about the topic due to its recency. All in all, the main research question is formed as *"how repetitive online ads affect user behavior?"*

To sum up, behavioral advertising reached another level with the development of programmatic advertising, nonetheless, it is discussed that it would have a worsening effect on the repetition of ads. To understand reasons and consequences better, first things first the relationship between online advertising and consumer behavior should be understood. That's why the literature review part starts with consumer behavior and online advertising. The literature review continues with online behavioral advertising and programmatic advertising targeting which explains definitions and working principles. The Fourth part denotes a well-known feature of programmatic advertising which is frequency capping. Lastly, Youtube advertising is studied as a programmatic advertising platform since it is where repetition exists the most among mainstream advertising channels (Palos-Sanchez et al., 2019). Companies can create impressive advertising campaigns in the form of a series of video ads through Google Ads in order to communicate and interact with consumers through various programmatic advertising methods on YouTube (Dehghani et al., 2016).

Following the literature part, the methodology of the research was prepared by the author of this thesis is explained. By doing this research, it was aimed to get an understanding of the impacts of highly repeating Youtube ads on consumer perception and behavior. In other words, this research's goal is to determine whether high frequency in remarketing is a beneficial or harmful strategy for the advertisers. I also aspire to give insights to marketers about the reasons for ineffective online advertising activities including over-exposure as well as ad avoidance. According to the results of the survey, it is found out that there is a correlation between repetition and irritation. Also, avoidance takes place

among Estonian Youtube viewers when ads are too frequent, however, there is not a significant finding of awareness over repetition.

2. Literature Review

2.1. Consumer Behavior and Online Advertising

The concept of consumer behavior is described as the evaluation that a person makes before purchasing a good or service, the way they use the goods after buying and their subsequent attitudes and behaviors(Howard, 1977). In other words, it can be defined as all the behaviors that consumers carry out in the consumption process to satisfy their needs and desires. However, consumer behavior has changed significantly with advanced technologies in today's world(Stephen, 2016). All brands are increasing their presence in online channels to reach consumers since its precision and measurability compare to offline channels(Pauwels et al., 2016). Especially after the covid-19 situation, there is an increasing trend that consumer behavior is shaped by online channels with leaving more cookies and data to the advertisers(Taylor, 2020). For that purpose, historical data is the key while understanding the habits of customers. The better modeling and using customer data while creating personas means the more companies increase their share in the advertising industry(Bonchi et al., 2011).

The needs and expectations of the consumers are increasing and changing day by day and ads have a huge impact on consumers in meeting these demands and needs(Ducoffe, 1996). In this respect, the effect of digital advertisements on our lives is also increasing (Niu et al., 2021). The reason for this can be listed in the definition of the advertisement. These functions are to inform, persuade, remind and clarify also add value and support other company efforts (Shimp, 1981).

The purchasing decision process for the consumer consists of five stages. The emergence of need, information research, evaluation of alternatives, purchasing decision, post-purchase behavior (Kotler et al., 2004). And today's online advertising strategies are involved in all of these stages.

Depending on the user's general attitude towards advertising, avoidance behavior is an increasing trend (Niu et al., 2021). If the consumer finds the advertisement boring or if the ad does not provide the information s/he needs or if it appears in undesired moments, her general attitude towards advertising tends to develop negatively (Edwards et al., 2002).

Although advertisers increase their budgets for internet advertising every year, it is seen that a significant portion of internet users are uncomfortable with the advertisements they encounter in this environment and have a negative attitude (McStay, 2010). For example, in the study of Cho and Cheon (2004), users who have a negative attitude towards internet ads think that these ads prevent them from accessing information by interrupting their user experience.

Studies show that consumers, in particular, rate auto-play video ads as one of the most annoying ad types on desktop and mobile devices (Gee, 2017). This is an important point to touch on because in the following sections Youtube advertising is studied as a programmatic advertising example.

Reactance Theory is the social psychology theory that explains the behavior of an individual in response to the perceived loss of freedom in any environment (Brehm & Brehm, 2013). It is assumed that if a person perceives a threat to her freedom, that person will try to get rid of the limits imposed on her, regain control, and regain her freedom by resisting the pressure imposed on her. Similarly, it has been observed that consumers react against commercial messages because they interpret the advertisements as excessive efforts of persuasion to achieve their goals (Edwards et al., 2002). As a result of these, Adblocker programs are getting more and more popular (Iqbal et al., 2017).

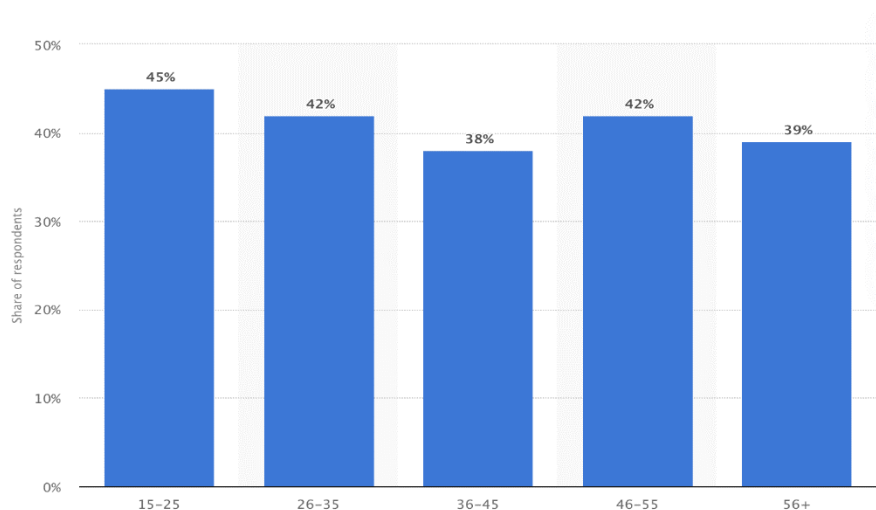


Figure 1. (*Adblocking Usage in the U.S. by Age 2020, 2021*)

Source: Statista , 2021

The Adblock plugin was designed by Henrik Aasted Sorenson in 2002 as a program that anyone can download and run easily on a Web browser (Gritckevich et al., 2021). Ad Blockers are software that prevents the downloading and viewing of unwanted items by the user during the use of a website or application on that platform. Today, there are many ad-blocking programs: Adblock, Adblock Plus, Adblocker, Prufiy, Crystal, 1Blocker, Adfender, uBlock, etc. are a few of these programs. According to a study, most of those who use the blocking software (1559 out of 1584 people) think that the ad-blocking behavior is not wrong ethically (*Adblock Plus and (a Little) More*, 2021)

According to Statista reports about AdBlocking software usages, the number of Adblocker usage has increased more than three times since 2016 by reaching over 763 million active users worldwide(Statista, 2021) According to 2017 data of PageFair and Adobe, it is stated that 15% of the participants use an Adblocker regarding the situation in the USA where nearly 45 percent of the profit loss of advertisers all around the world comes from since the biggest market of programmatic advertising is still United States (Gritckevich et al., 2021). As can be seen on the graph belonging to another Statista report, in the second quarter of 2020, this number reached around 40 per cent in all age groups. Even though Adblock usage is more popular among youngsters, its popularity among elder groups is increasing too (Palos-Sanchez et al., 2019).

According to Adrecover's report in 2017, Estonia has the fifth highest adblock penetration per online capita with 26 percent of the users (2017). After the covid-19 period Audience project found out that Estonia reached 41 percent of the Adblocking usage rate in 2020. Additionally, the same report refers to the reasons why users avoid ads and 23 percent of respondents answer as to avoid Youtube ads while 21 percent of the users claim ads are too frequent (AudienceProject, 2021).

2.2. Online Behavioral Advertising

The development and widespread use of the Internet has provided advertisers with new data opportunities and individual analysis opportunities. Thus, it has become possible to send the advertising messages at the appropriate time in accordance with the interests of the people. This type of advertising based on the online behavior data of internet users and the analysis of this data is called "online behavioral advertising"(Gökdemir & Akinci, 2019).

Data of internet users such as online browsing, demographic information, geographic location and online purchasing are used (Schumann et al., 2014). As a result of the analysis and grouping of this data, after the user segments are created and sorted, relevant advertising messages are sent to the relevant segment (Yan et al., 2009). At this point, there are four main actors that play a role in the online behavioral advertising process: advertisers, publishers, intermediaries and customers (Backes et al., 2012). Advertisers, brands that want their ads to be delivered to potential consumers (eg eToro); publishers, websites that volunteer for a fee to display advertisements on their web pages (eg www.buzzfeednews.com); Companies that act as an intermediary between advertisers and publishers such as Google and Yahoo, and customers who are exposed to advertisements, are the actors of the process.

As online behavioral advertising is a type of advertising based on user data, it also brings various privacy concerns. Although transparency has increased a little more in recent years, it is seen that active internet users do not know what data is collected and used for what purposes (Ur et al., 2012). Due to these concerns, users' attitudes towards online behavioral advertising (OBA) show complexity. Users are constantly calculating the cost/risk against the OBA, and weighing the privacy concerns with the usefulness of the OBA (Ur et al., 2012).

The use of artificial intelligence in marketing practices has critical complications for our understanding of marketing ethics and poses unusual challenges to legislators (André et al., 2018). The expected standard utility theory assumes that consumers will choose the best option from a cluster (Deaton & Muellbauer, 1980). The realization that consumers are driven not only by hedonism but also by the desire for freedom of choice has important implications for marketing as it suggests that consumers are willing to renounce hedonic utility to promote values that are appropriate to them (André et al., 2018). According to the study of André et al., in response to the most appropriate content presented with artificial intelligence algorithms, users made choices that would make the algorithm wrong in response, rather than choosing what was expected of them. To be more specific, showing the most related content and ads to the users can cause a reverse effect since users can make choices that will make the algorithm predictions wrong in response to the imposition of their autonomy.

2.3. Programmatic Advertising Targeting

Programmatic advertising refers to the advertising business whose purchasing and selling processes are developed based on automation systems (Martínez-Martínez et al., 2017). It is a new method of graphic advertising developed in recent years, using large amounts of data on the Internet (Cui et al., 2011; Kireyev et al., 2016; Lee et al., 2013; Qin & Yuan, 2017; Shan et al., 2016). Programmatic advertising can be defined as a technology that enables parties to trade online advertisements in an automated, faster and much more efficient manner by bringing together the data offered by publishers and advertisers on digital commerce platforms.

Google, Twitter, Facebook, Tiktok, Snap inc, etc. are billion-dollar valued companies and their biggest strength is user data that they collect and store through cookies (Palos-Sanchez et al., 2019). These cookies allow advertising companies to target better and more cost efficiently (Bayer et al., 2020). It is also possible to trade and bid in real time for places created to show ads to targeted personas. This technology is called programmatic advertising in current literature. Programmatic advertising can also be explained as users' personal data is traded between advertising networks (Busch, 2016).

Compared to traditional methods for instance selling or buying spots on a webpage, programmatic advertising is based on user impressions, ad click costs and creative advertising (Aslam & Karjaluoto, 2017). The most important contribution of programmatic advertising, which has caused a radical change in the advertising industry, is that it enables advertisers to make a better market targeting and determine a better customer profile by closely monitoring and analyzing their target audience (Stevens et al., 2016). Thus, it is possible for them to reach the right target audience. Thanks to the analysis and correct targeting, it becomes possible for advertisers to deliver the right content to the right people at the right time.

According to Bashir et al. (2016), the programmatic targeting process begins with a user connecting to a specific website. Thus, the exchange of information between the service providers regarding both the user's profile and the ad space availability begins. If the ad space is eligible, the ad slot server communicates with a supply-side platform that controls the publisher's advertising inventory. This platform transmits the ad space suitability information to the ad exchange platform, which functions as an advertising market with different product groups and potential buyers. The ad exchange platform acts as a demand-side platform, a meeting point for digital advertising networks or other ad

exchange platforms (Bashir et al., 2016). These platforms increase the efficiency of the auction process with detailed information about users, a large number of sellers and content (Wang et al., 2017). The demand-side platform that wins the auction sends the information to the ad publisher, who will transmit the information to supply-side platforms. Thus, the advertisement meets the right user at the right place and at the right time.(Martínez-Martínez et al., 2017; Schäfer & Weiss, 2016) The reason why programmatic targeting is vital for advertisers is that the relevancy and fitness of the ads overlap expectations of the user and increase the chance of purchases(van Doorn & Hoekstra, 2013). Furthermore, another point here is that in a previous study it was stated that programmatic targeting or repetition recall brand recognition and familiarity(Jung, 2017).

2.4. Frequency Capping

In today's online advertising world frequency capping is a very important and at the same time very complicated metric in the hands of advertisers(Li et al., 2016). It basically means how many ads will be shown to a user at a particular time. According to Mc Connell and Hocker, 40 % of ad impressions are not formed in a good frequency (McConnell & Hoecker, 2016).

Since collected personal data is not reformed really fast(Li et al., 2016), users see similar or exactly the same products' ads in different platforms even after conversion happens. This situation causes a budget waste in advertisement expenditure and may cause negative brand image by annoying customers. To prevent this situation, advertiser managers apply frequency capping to limit the number of ads shown in a limited time (Zhang et al., 2014). However, it is not a common practice to limit the frequency of similarity of the ad content to a particular user in programmatic advertising. It is even promoted by remarketing activities.

Positive and negative feelings about an object described as attitudes. The more frequently shown ads the more affected the attitude (Ajzen & Fishbein, 2000). It is the reason why it is beneficial to understand the application of frequency capping in online advertising. Consumers develop resistance and disinterest against advertisements with unnecessary exposure(Birmingham, 2015).

Buchbinder et al. (2014) states that showing the same ad to the same user multiple times decreases the value for promoters since the chance of clicking the ad will be less after each impression. However, McConnel and Hoecker point out that retargeting activities are

useful when advertising frequency is not too aggressive and help advertisers to increase their return of ad spend (ROAS) (McConnell & Hoecker, 2016). Also, these scholars add that McConnell and Hoecker (2016) claim that the best way of applying the right frequency capping to get conversions is linked to different criteria such as different consumer behavior, learning, and memory.

Fortunately, in programmatic advertising platforms, it is possible to arrange frequency capping. Nevertheless, it does not stop advertisers to set the wrong frequency, as it is mentioned before almost 40 percent of running campaigns are not set properly (McConnell and Hoecker, 2016). Schmidt and Eisend depict the effects of frequency on consumer behavior as an inverted U shape. Until finding the optimal repetition point where actually learning and familiarity happen, it has a positive effect. Conversely, when learning and familiarity reach saturation, the repetition starts to cause boredom and blindness effect on ads (Schmidt & Eisend, 2015).

2.5. Youtube Advertising and Repetition

YouTube is the most common social media channel in the field of advertising recently (Statista, 2021). According to similar web stats, with 1.9 billion active users per month, an average of 5 billion videos are watched every day on YouTube. After google.com, it is the second most visited website all around the world (Similarweb, 2021). According to Alexa ranking Youtube is the second most visited website in Estonia too (Alexa, 2021). In this sense, YouTube is a very important platform for advertising. If an advertisement is prepared correctly for the target, it can be watched by millions of viewers and enables companies to reach crowds.

With the increase in time spent at home due to quarantine and remote working practices in 2020, the consumption of digital content has increased in Estonia as well as in the whole world (Taylor, 2020). According to Zenith's global online video projections, the daily video viewing time, which was 84 minutes in 2019, increased to 100 minutes in 2021 (Zenith, 2021). This caused an increase in the place of video in advertising investments. According to the research conducted in 2020, 2 out of every 3 people (66%) who want to get information about a product or service prefer to watch short videos (Oberlo, 2020).

According to Verizon's research, 96 percent of advertisers aim to advertise in at least one video format in the new period (Verizonmedia, 2021). While 2 out of every 3 advertisers stated that video ads yield better returns than all other formats, in-stream

provides the most successful campaign results with 40 percent. The same report adds that the common point of failing campaigns on Youtube is advertising blindness resulting from over exposure of repeating ads.

In a study conducted to determine the impact of YouTube advertising on young consumers (Dehghani et al., 2016), 315 university students were surveyed and it was concluded that there was a positive relationship between the attitudes of the participants and the ads with fun, informative and personalization content. In addition, it has been observed that the disturbing factor has a negative effect on the attitude towards YouTube ads. In the research, it was concluded that YouTube ads have significant effects on the purchasing intention of consumers.

In the study by Yang et al.(2017) examining consumer attitudes towards YouTube advertisements, they concluded that the dimensions of entertainment, brand awareness, reliability, and distraction that affect consumer attitudes affect the purchasing behavior of consumers. It was observed that the explanatory effect level of the entertainment factor was higher than other factors. This study revealed that the disturbing factor also has a negative impact.

The results of another study (Aziza & Astuti, 2019) on the effects of YouTube ads on young consumers' purchase intention show that the fun and informative nature of YouTube ads has a positive effect on advertising value. Reducing the factors that will lead to negative attitudes towards advertisements (for example, irritation) may lead to an increase in positive attitudes towards advertisements. In consequence, roots of negative attitudes towards advertisements may increase the awareness of the brand and lead to the purchasing intention of the consumer.

3. Methodology

The first aim of this study is to understand better how consumer behavior is shaped against the repetition effect of behavioral targeting. The insufficient number of studies conducted for this purpose reveals the importance of this research and the reason for it. Inferences about the awareness of consumers about such advertising practices are also among the aims of the research. The survey was used as a quantitative research method. The hypotheses determined within the scope of the research aim were tested and evaluated accordingly.

For the perception scale within the scope of the research, the scale in the study conducted by Wiese et al. (2020) was used. There are five expressions of the factors in the scale prepared regarding consumer perceptions of advertisements on YouTube. These factors are awareness raising, irritation, avoidance, relevance, and invasiveness. The factor of providing information consists of three statements and reflects the consumers' perceptions that advertisements on YouTube are a good and up-to-date source of information for goods and services. The favoring relevance factor consists of three statements that measure the perceptions of consumers that advertisements on YouTube are fun, interesting, enjoyable or pleasing when ads align with interests. The irritation factor consists of three statements and statements about whether the ads on YouTube are reliable or not. The invasiveness factor consists of three expressions, and the response of the ads on YouTube to the collection of consumers' information consists of expressions about their reactions to personalized ads. Secondly, Wolin et al. (2002) used the scale used in the study. There are 3 expressions of the factor in the scale prepared regarding the behavior of consumers to watch the advertisement. In this scale, there are expressions for consumers to pay close attention to the ads when they are exposed to advertisements on YouTube, to click on the ad to get information, to ignore the ad and to leave YouTube when they see the ad.

3.1. Scope and Limitations of Quantitative Research

Internet users living in Estonia constitute the scope of the survey research. Based on the Hootsuite report, there are approximately 900,000 Youtube users in Estonia and over 700,000 of them are over 18 years old. So, our sample is limited to 246 respondents to reach a 95 percent confidence level with a 5 percent margin error. The survey is being shared in two different Tallinn and Tartu Facebook groups and reached 402 respondents. The survey is limited to only residents of Estonia who are over 18 years old, otherwise, it was needed to survey people from all around the world. Also, cultural differences can differentiate user attitudes thus to avoid it, the scope is limited to Estonian Youtube viewers. In the end, 257 out of 402 respondents' answers are analyzed within the scope of our research.

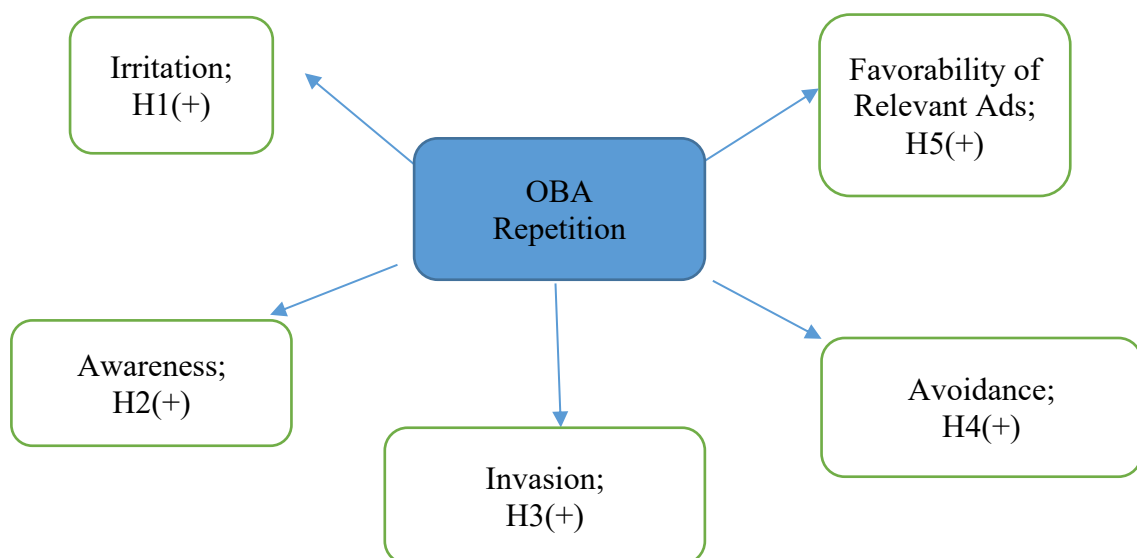
In this study, since the focus is on consumer behavior, technical factors of programmatic advertising on Youtube were ignored. It was not taken into consideration different levels of frequencies as well due to the fact that we predict the perception of frequency level alters from one person to another.

3.2. Research Type

The type of this study, in which the effect of repetition and behavioral targeting, which is one of the internet advertising methods, on purchase intention and behavior is tried to be determined, is in the "situation determinant, descriptive" research category. Because what is desired to be done with this study is to be able to make a determination-definition for the existing situation.

3.3. Research Hypotheses

The hypotheses are formed based on the literature discussed above and each hypothesis mentions a single theory or study. As a summary of the literature, selected sources associated with hypotheses. McCoy et al. (2017) refer to awareness by stating that repeating ads help users to remember products and increase awareness of it. Furthermore, Jung (2017) points out that with the development of programmatic advertising technology, the relevancy of ads has higher impacts on users with the right frequency capping. However, Birmingham (2015) states that overexposure to online behavioral advertising is a trap and advertisers are victims of it. Overexposure causes irritation as well as a reduction in the value derived from them (Ducoffe, 1995). Eventually based on reactance theory (Brehm & Brehm, 2013) if users are forced to see ads there will be an opposite reaction and avoidance occurs. To sum up, the conceptual model and hypotheses are built as presented below.



Hypothesis 1: There is a positive correlation between irritation and OBA repetition

Hypothesis 2: There is a positive correlation between brand awareness and OBA repetition

Hypothesis 3: Frequently exposed online behavioral ads cause invasion feeling on users

Hypothesis 4: Repetition of ads causes ad avoidance on Youtube.

Hypothesis 5: Relevancy between ad and interest of the user increases the chance of likeability of the ad.

3.4. Data Collection

Google forms are used to collect answers. Questionnaires of 257 people participating in the study were conducted between 22 April – 05 May 2021. The questionnaire form consists of two parts. In the first part of the questionnaire, there are three questions on the demographic information of the participants. The seventeen questions in the second part of the questionnaire consist of a scale for the participants' attitudes towards internet advertisements. The second part of the questionnaire form was created to measure the purchase intention of the participants, their behavior and awareness of the OBA. Except for the measurement of demographic characteristics, all other expressions in the scales are included in the questionnaire form as a five-point Likert type. Scale items include the answers ranging from "1 = Strongly Disagree", "2 = Disagree", "3 = Undecided", "4 = Agree" and "5 = Strongly Agree".

In the questionnaire phrases that mention each point are as follows;

Table 1. Components of Factors and Reliability Scores

Factor	Question	Statement	Cronbach's Alfa
Irritation	Q4	Youtube ads are distracting and annoying when I see them too often.	0.728
	Q5	It is irritating to see 'the same ads' on Youtube.	0.720
Awareness	Q6	I remember products or brands better when I see their ads more than once.	0.769
	Q7	I recognise brands when I see their ads repeatedly shown in a short period of time.	0.773
	Q8	Youtube ads are more convincing when it comes from a brand that I am recently interested in.	0.781
Invasion	Q9	It does not bother me that advertisers collect information about my interests.	0.748
	Q10	I feel insecure when I see too many personalized ads.	0.723

	Q11	I feel invaded when I see advertisements that are very personalized.	0.727
Avoidance	Q12	I considered using or have already used an ad-blocker software to block Youtube ads.	0.742
	Q14	I immediately skip the ad after countdown if I see the same ad too often.	0.743
	Q16	I would prefer if there were no personalized ads on Youtube.	0.743
Favorability of relevance	Q13	Ads are more favourable when Youtube contents and advertisements are related.	0.774
	Q15	Youtube ads help me find products that best suit my interests.	0.782
	Q17	I would prefer if there were more related ads on Youtube to my interests.	0.771

Source: Compiled by author

After collecting all the data, survey data was cleaned and unrelated answers were extracted from the data such as answers coming from outside of Estonia. Afterward, JASP was used for hypothesis testing and all other outputs. JASP is a no-code R based statistical program which is founded by scholars from the University of Amsterdam (Jasp team, 2020).

3.5. Reliability

One of the common methods used to analyze the reliability of the data is the calculation of Cronbach's alpha coefficient. Cronbach's Alpha should have a minimum value of 0,6 to have enough reliability for the regression analysis. A score of over 0.7 is considered a good score (Bland & Altman, 1997).

Table 2. Single Reliability Test

Single-Test Reliability Analysis ▼

Frequentist Scale Reliability Statistics ▼	
Estimate	Cronbach's α
Point estimate	0.761
95% CI lower bound	0.717
95% CI upper bound	0.800

Source: Compiled by Author based on JASP output

The results of the reliability analysis of the OBA impact scale, which consists of expressions about the effect of online behavioral advertising on participants, are given in the table above. According to the results shown in the table, the reliability value of the scale is 0.761. According to the analysis result, it is seen that the scale is at a reliable level.

4. Findings

4.1. Descriptive Statistics

Within the scope of the research, demographic questions such as gender, age and residence were asked to the participants.

According to the results, while 58% of the participants are women, it is seen that 41% of them are male participants. There is less than 1 percent of other gender people. This distribution reveals that the study sample did not differ greatly in terms of gender, however, according to the Worldbank database the gender ratio is 52.7 percent of the population is women(Worldbank,2021).

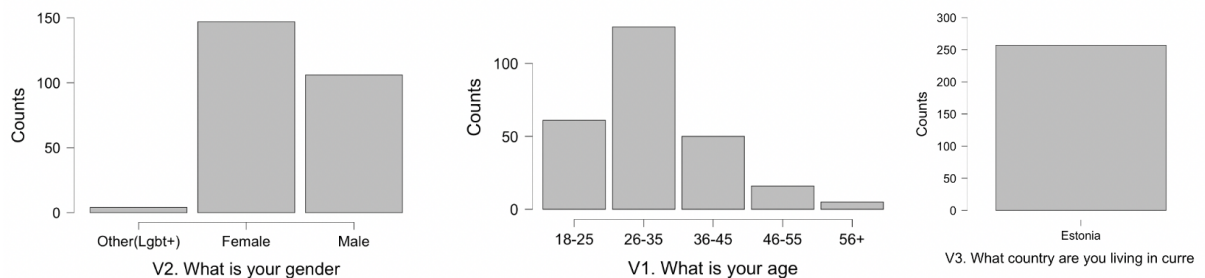


Figure 2. Descriptive Statistics Results of the Thesis Survey

Source: Compiled by Author based on JASP output

When looking at the age of the demographic features, it is possible to state that the participants are young. Looking at the frequency distribution of age information, 22.2% of the participants are in the 18-25 age range, 46.4% in the 26-35 age range, 20.3% in the 36-45 age range, 7.8% in the 46-55 age range and Finally, it is seen that 4.4% of them are 56 and above. This sample is suitable for this study, as the majority of the YouTube user group consists of youngsters (An et al., 2017).

The second part of the survey contains questions related to our variables. The second part starts with question 4 and question 5 which mention the irritation variable.

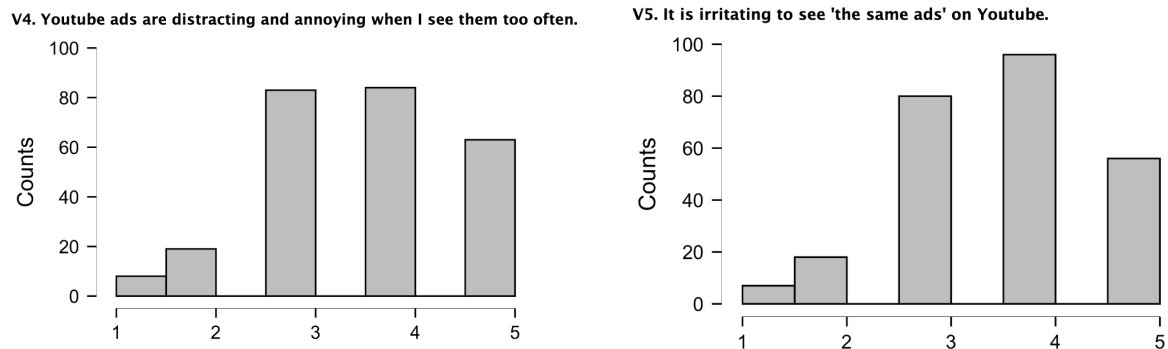
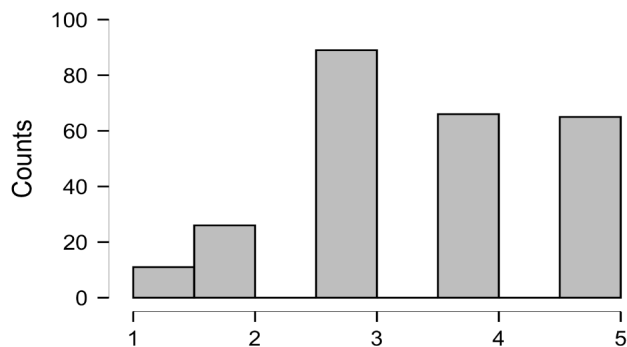


Figure 3. Thesis Survey Results of the Irritation Factor Questions

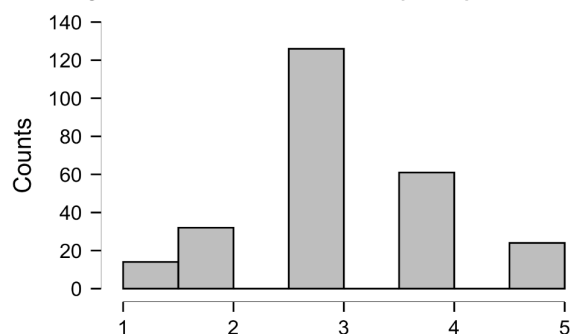
Source: Compiled by Author based on JASP output

According to the results, our respondents find Youtube ads as distracting and annoying. The mean of the answers for question 4 is 3.61 with a 1.01 standard deviation. Also, question 5's results prove to us that seeing the same ads are irritating for the users with the mean of 3.685 and 0.979 standard deviations.

V6. I remember products or brands better when I see their ads more than once.



V7. I recognise brands when I see their ads repeatedly shown in a short period of time.



V8. Youtube ads are more convincing when it comes from a brand that I am recently interested in

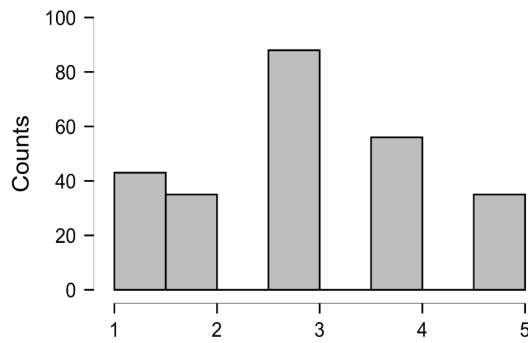
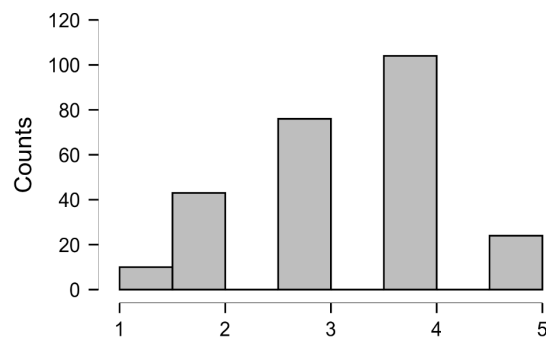


Figure 4. Thesis Survey Results of the Awareness Factor Questions

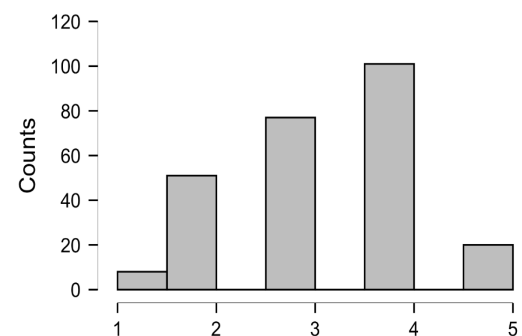
Source: Compiled by Author based on JASP output

Questions 6,7 and 8 are formed to understand the OBA repetition and awareness relationship. According to the answers, the respondents memorize and recognize brands better, however, there is a small effect to convince users to buy these products. The means of questions are 3.56, 3.119, and 3.02 respectively.

V10. I feel insecure when I see too many personalized ads.



V9. It does not bother me that advertisers collect information about my interests.



V11. I feel invaded when I see advertisements that are very personalized.

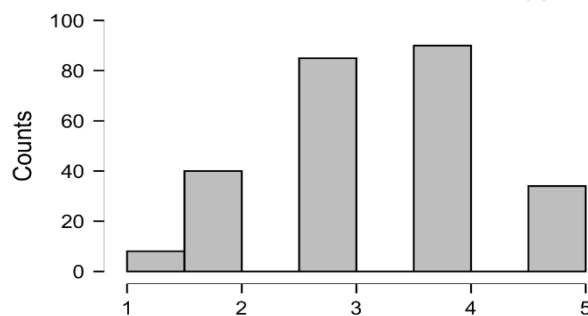


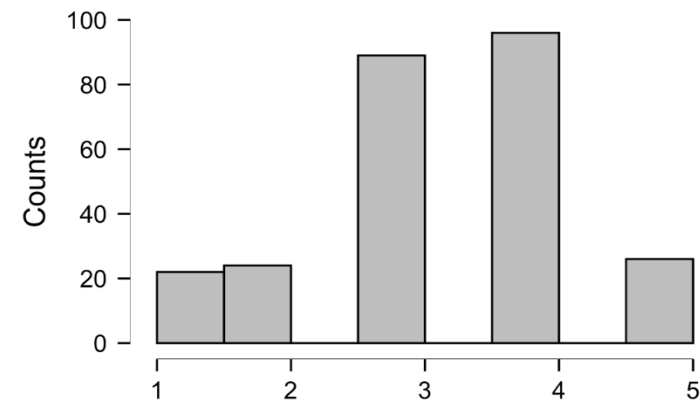
Figure 5. Thesis Survey Results of the Invasiveness Factor Questions

Source: Compiled by Author based on JASP output

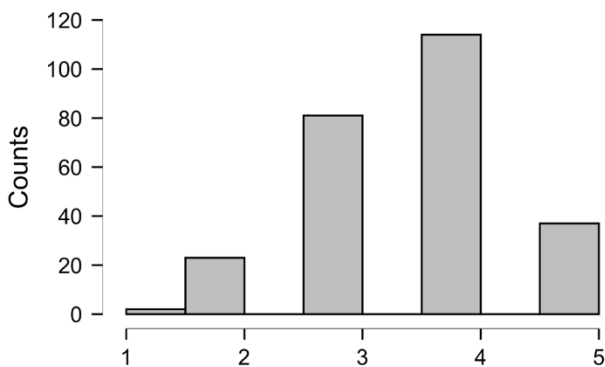
The answers related to invasion feeling against OBA repetition clearly show us that personalized ads lead to insecure and invasion thoughts in the minds of our sample.

Interestingly when genders are compared, men are less sensitive to behavioral targeting than women with a 6 percent difference of question 6; 9 percent less in the results of question 10 and lastly 8 per cent less for question 11.

V12. I considered using or have already used an ad-blocker software to block Youtube ads.



V14. I immediately skip the ad after countdown if I see the same ad too often.



V16. I would prefer if there were no personalized ads on Youtube.

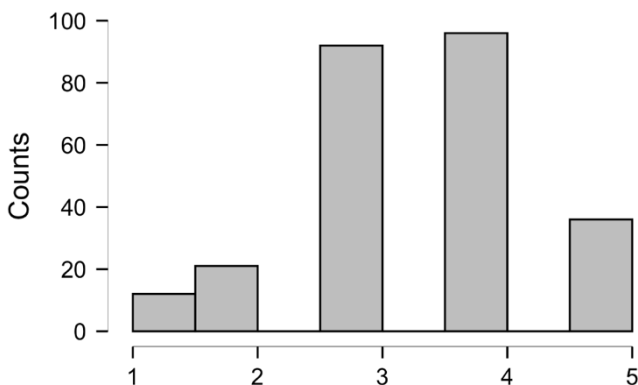


Figure 6. Thesis Survey

Results of the Ad Avoidance Factor Questions

Source: Compiled by Author based on JASP output

The above expressions are formed based on the literature to explain the relationship between ad avoidance and OBA repetition. 44 per cent of the users articulate that they avoided Youtube ads by using an adblocker program. Similarly, 88 per cent of the people who voted 5 for question 12 skip Youtube ads immediately after countdown overs. Only 12 percent of the respondents are comfortable with personalized ads based on the results.

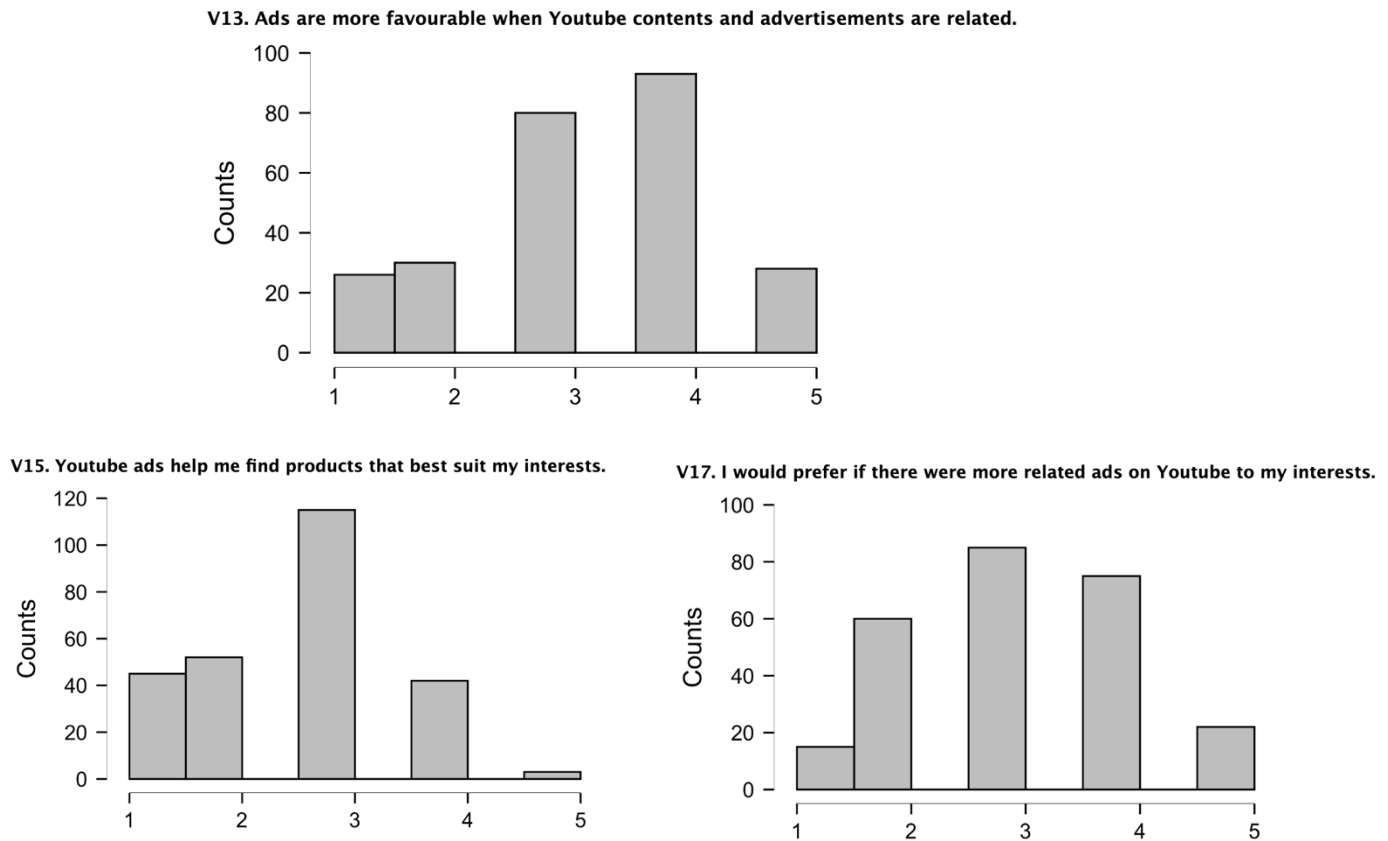


Figure 7. Thesis Survey Results of the Favorability of Relevance Factor Questions

Source: Compiled by Author based on JASP output

Lastly, the favorability of relevance is examined by questions 13, 15 and 17. According to the results of question 13 when Youtube content and advertisement are showing similarities, it is more favorable for the audience. Also, it is seen that people who feel invaded with personalized ads, also sympathize with ads more when it is related to the content. Interestingly, fewer users believe Youtube ads are matching to their real interests. Lastly, the respondents slightly dislike relevancy to their interests based on the answers of question 17 with the mean of 2.97.

4.2. Model Findings

In this section of the study, in order to determine the effect of factors affecting the acceptance of repetitive advertisements on consumer attitude, a simple linear regression analysis was performed and the results were presented in tables. In each model OBA repetition is independent variable while dependent variables are irritation, awareness, invasion, avoidance and favorability of relevance respectively.

When it comes to our hypothesis related to the relationship with online behavioral advertising repetition and irritation, our hypothesis was formed as;

Ho : There is not a significant correlation between irritation and OBA repetition

H1 : There is a positive correlation between irritation and OBA repetition

Table 3. Hypothesis testing results of OBA repetition and irritation

Model Summary - Irritation

Model	R	R ²	Adjusted R ²	RMSE
H ₀	0.000	0.000	0.000	0.954
H ₁	0.576	0.332	0.329	0.781

Coefficients

Model		Unstandardized	Standard Error	Standardized	t	p
H ₀	(Intercept)	3.683	0.059		61.899	< .001
H ₁	(Intercept)	0.881	0.254		3.472	< .001
	Repetition	0.762	0.068	0.576	11.253	< .001

Source: Compiled by Author based on JASP output

In order to determine the suitability of the data for regression analysis, it was examined whether some assumptions (normal distribution of the data, examination of Zresid and Zpred graph (Hair et al., 1995) were analysed.

Based on the results of our first hypothesis test, the irritation variable explains 33.2 percent of the effects of OBA repetition in the model. According to the test results, the correlation between OBA repetition and irritation is at a significant level. Also, a 1 unit increase in repetition causes an increase of 0.762 irritations, which means there is a positive relationship between our dependent and independent variables. It simply means that when OBA repetition increases, a Youtube viewer is irritated more.

Our second hypothesis was built as;

Ho : There is not a significant correlation between brand awareness and OBA repetition

H1 : There is a positive correlation between brand awareness and OBA repetition

Table 4. Hypothesis testing results of OBA repetition and awareness

Coefficients						
Model		Unstandardized	Standard Error	Standardized	t	p
H ₀	Intercept	3.262	0.052		62.495	< .001
H ₁	Intercept	3.508	0.272		12.903	< .001
	Repetition	-0.067	0.073	-0.058	-0.921	0.358
Model Summary - Awareness						
Model	R	R²	Adjusted R²	RMSE		
H ₀	0.000	0.000	0.000	0.837		
H ₁	0.058	0.003	-0.001	0.837		

Source: Compiled by Author based on JASP output

As can be seen above our hypothesis has failed to be proved at a significance level. With not being in a significance level, it is seen that a 1 unit increase in OBA repetition causes 0.067 of a decrease in awareness. This can be explained by the theory of advertising blindness effect of repetition, which was mentioned in the literature part (Schmidt & Eisend, 2015).

The third hypothesis is modeled as;

Ho : There is not a significant correlation between brand awareness and OBA repetition

H1 : Frequently exposed online behavioral ads cause invasion feeling on users

Table 5. Hypothesis testing results of Oba repetition and invasion

Model Summary - Invasion						
Model	R	R ²	Adjusted R ²	RMSE		
H ₀	0.000	0.000	0.000	0.834		
H ₁	0.386	0.149	0.146	0.771		
Coefficients						
Model	Unstandardized		Standard Error	Standardized	t	p
H ₀	(Intercept)		3.344	0.052	64.249	< .001
H ₁	(Intercept)		1.700	0.250	6.788	< .001
	Repetition		0.447	0.067	0.386	6.690 < .001

Source: Compiled by Author based on JASP output

The output of the test shows us that the Invasion variable explains 14.9 percent of our model. Based on the result H1 is supported, which means that there is a positive correlation between invasiveness and OBA repetition. 1 unit increase in OBA repetition leads to an increase of 0.447 in invasion feeling among our sample users.

Our fourth hypothesis formed as;

Ho : There is not a significant correlation between ad avoidance and OBA repetition

H1 : Frequently exposed online behavioral ads cause ad avoidance

Table 6. Hypothesis testing results of Oba repetition and avoidance

Model Summary - Avoidance

Model	R	R ²	Adjusted R ²	RMSE
H ₀	0.000	0.000	0.000	0.705
H ₁	0.416	0.173	0.170	0.643

Coefficients

Model		Unstandardized	Standard Error	Standardized	t	p
H ₀	(Intercept)	3.472	0.044		78.909	< .001
H ₁	(Intercept)	1.977	0.209		9.469	< .001
	Repetition	0.406	0.056	0.416	7.298	< .001

Source: Compiled by Author based on JASP output

As can be seen above our hypothesis is proved at a significance level. It is seen that a 1 unit increase in OBA repetition causes a 0.406 of increase in avoidance. The output of the test implies that the avoidance variable explains 14.9 percent of our model.

Lastly, the favorability of relevance is explained with the hypothesis as below;

Ho : There is not a significant correlation between favorability of relevant ads and OBA repetition

H1 : Relevance between ad and interest of the user increases the chance of likeability of the ad.

Table 7. Hypothesis testing results of Oba repetition and favorability of relevancy

Model Summary - Relevance

Model	R	R ²	Adjusted R ²	RMSE
H ₀	0.000	0.000	0.000	0.755
H ₁	0.168	0.028	0.024	0.745

Coefficients

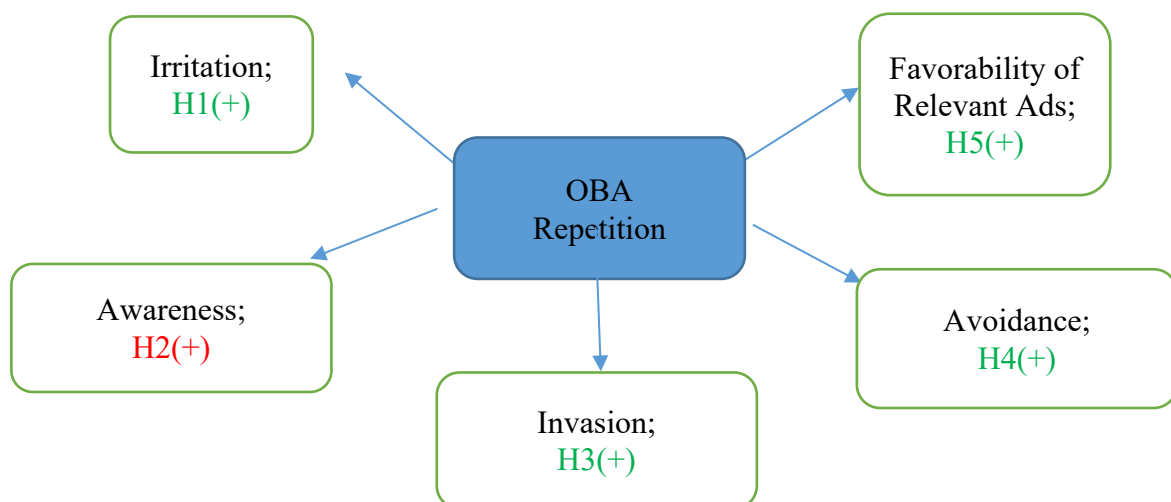
Model		Unstandardized	Standard Error	Standardized	t	p
H ₀	(Intercept)	3.003	0.047		63.788	< .001
H ₁	(Intercept)	2.355	0.242		9.730	< .001
	Repetition	0.176	0.065	0.168	2.725	0.007

Source: Compiled by author

Even if the R square is too low for this variable, our hypothesis is supported in 0.01 significance level with a very low p value. 1 unit increase in OBA repetition results in a 0.176 increase in the chance of favorability of a relevant ad.

To sum up, there is a significant relationship between OBA repetition and irritation, invasion, avoidance and lastly relevance. However, the relationship between OBA repetition and awareness has failed to be proved. The relationship between brand awareness and repetition as McCoy et al. (2017) mentioned is not valid for our sample. In contrary, there are strong ties with irritation and repetition as Ducoffe (1995) and Tang et al. (2015) referred in the literature. Together with irritation feeling invasiveness another result of OBA repetition, which was discussed by Kim&Huh (2017) previously. Last but not least, as Brehm&Brehm (2013) mentioned in the reactance theory, avoidance habit against OBA repetition is observed.

Conclusion and Implications



By conducting this research, it was aimed to determine how consumers or participants are affected by OBA repetition, also known as repetition caused by behavioral targeting, in their purchase intentions and behaviors. In addition to the main objective of the research, this research was also conducted in order to have an opinion about the participants' awareness of OBA methods and their approach to repeating behavioral advertising. In this direction, the results collected from the research sample were analyzed. In the analysis phase; Reliability, five different bivariate regression and simple linear regression analysis were performed.

Considering the results of the analysis of this study conducted with Youtube users living in Estonia to measure the effect of repetition caused by behavioral targeting on consumer purchase intention and behavior, it can be said that there is a negative relationship between repetition and consumer purchase intention and behavior.

According to the results obtained from the analysis of the study, the reaction of the participants positively affected by security feeling, relevancy of ads, yet the most obvious result of repetitive advertisements was annoyance. As a matter of fact, when the previous studies were examined, studies based on the advertising value theory of Ducoffe (1996) (Ducoffe, 1996; Van-Tien Dao et al., 2014: 271; Murillo et al., 2016: 439-440; Wang and Zhang, 2005) concluded that the value perceived by the consumer from social media ads of information, entertainment and reliability positively affects the behavior and attitudes of the consumer towards advertising.

Disturbance negatively affects purchase intention. Therefore, if companies organize their advertisements on Youtube less frequently and in a way that users will encounter less while watching content, it will make the advertisement more effective (Niu et al., 2021). Otherwise, based on our research results users may have negative perceptions of both the ad and the advertiser, thus the purchasing intention of the consumers may be negatively affected.

In the literature part, it was mentioned that users have a tendency to favor more related ads to themselves (Malheiros et al., 2012). This statement also aligns with our hypothesis testing results. However, it was also found out that users feel insecure when ads are too personalized. This can be explained by the Panopticon model. The panopticon is originally a prison model and was developed by Jeremy Bentham. According to this model, a supervisor is positioned in the middle of the prison so that he can watch all the prisoners, but no prisoner can see this guardian. Therefore, prisoners have to keep an eye on their behavior, for fear of being watched (Stoycheff et al., 2019). Online behavioral marketing

surveillance, just like the Panopticon model, constantly monitors internet users, but users do not know when and by whom. According to our survey results, it was clearly shown that users are not happy with being traced all the time online.

As it was mentioned in the literature part Kronrod and Huber (2015) state that more frequently shown relevant ads sharpens users' annoyance against the brand. We found out that this statement is true for Estonian Youtube viewers as well.

Based on the results, it was determined that a large number of users, especially young Youtube users, use ad blocking programs. This result is similar to the results of previous research specifically done on a sectoral basis (PageFair & Adobe, 2017).

In conclusion, all of the stated hypotheses are validated except from the second hypothesis which says OBA repetition increases brand awareness. Youtube is still one the strongest platform by giving chance to advertise as a video for advertisers. Being said, Youtube is a platform where brands are increasing awareness as well as introducing new products and services. In this study, it is found that being so aggressive on Youtube is not always the best strategy. Frequency capping is a feature that advertisers can limit the number of ads shown to a particular user. Based on this study results, it is highly recommended for advertisers to optimize their campaigns at this manner. To increase the performance of the campaigns that are shown on Youtube, different metrics can be considered about performance including video quality, video content and advertising message etc. Behavioral targeting is not only component of a good converting campaign, thus it is useful to understand negative effects of online behavioral advertising repetition. As it was quoted in the literature, repeated ads should be used until the level where learning and familiarity happens, nothing more than that (Schmidt & Eisend, 2015).

Future Studies and Recommendations

In the study, Only Youtube users' attitudes, motivations and behaviors were questioned. The effects of variables originating from advertising campaigns themselves (such as creative strategies, message content), advertiser origin (such as brand effect, brand reputation, product image) were excluded from the scope of the study. It will be useful to include these variables in future studies. For future studies, it is also beneficial to study other platforms including Facebook, Instagram, Tiktok, etc. Another limitation of our research was location based. In the future to enrich literature, it will be useful to study

countries where advertising expenditure is much higher such as the United States or the United Kingdom. The opportunity cost of missed users due to ad avoidance is much higher in those countries since the competition is also more intense. Therefore, it would be an interesting perspective to the programmatic advertising and consumer behavior literature.

Lastly, this study was conducted to understand consumer behavior, however, there is a possibility that advertisers have their own reasons to be less sensitive against repetition. That's why it would be interesting to see their point of view and another side of the equation with a study conducted with advertisers.

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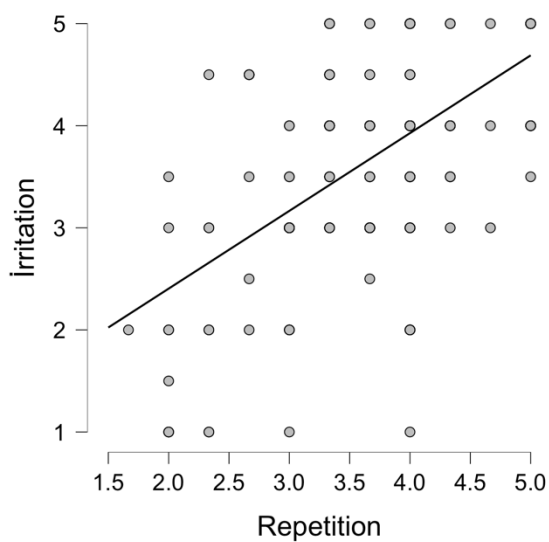
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Appendices

APPENDIX A

Regression Diagram Irritation – OBA Repetition

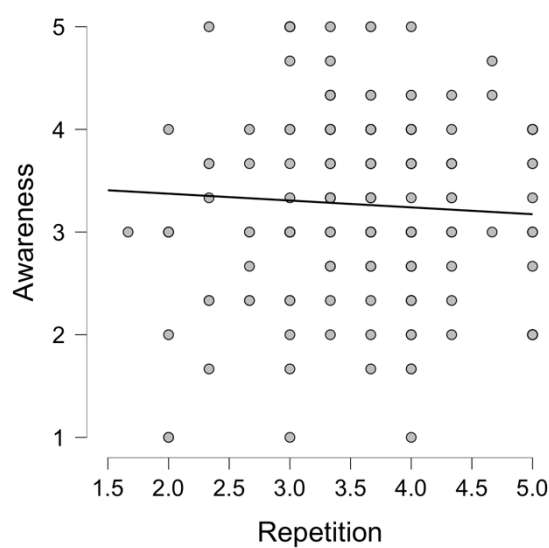
Repetition vs. Irritation



APPENDIX B

Pearson's r correlation diagram Awareness – OBA Repetition

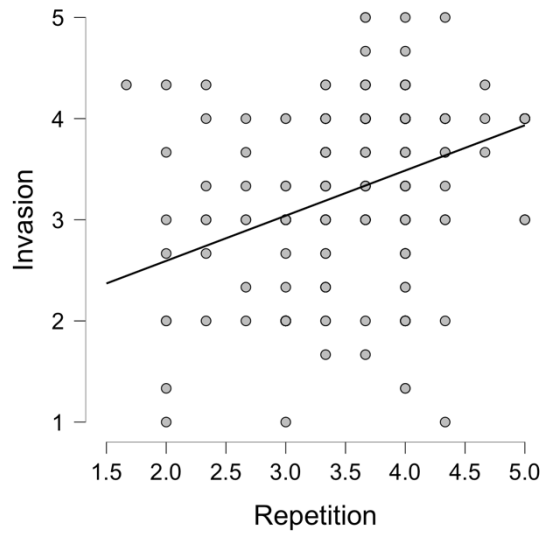
Repetition vs. Awareness



APPENDIX C

Pearson's r correlation diagram Invasion – OBA Repetition

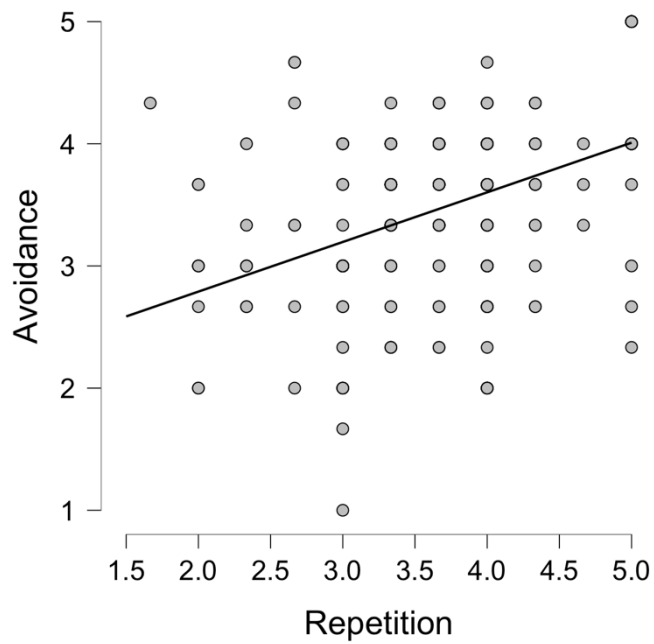
Repetition vs. Invasion



APPENDIX D

Pearson's r correlation diagram Avoidance – OBA Repetition

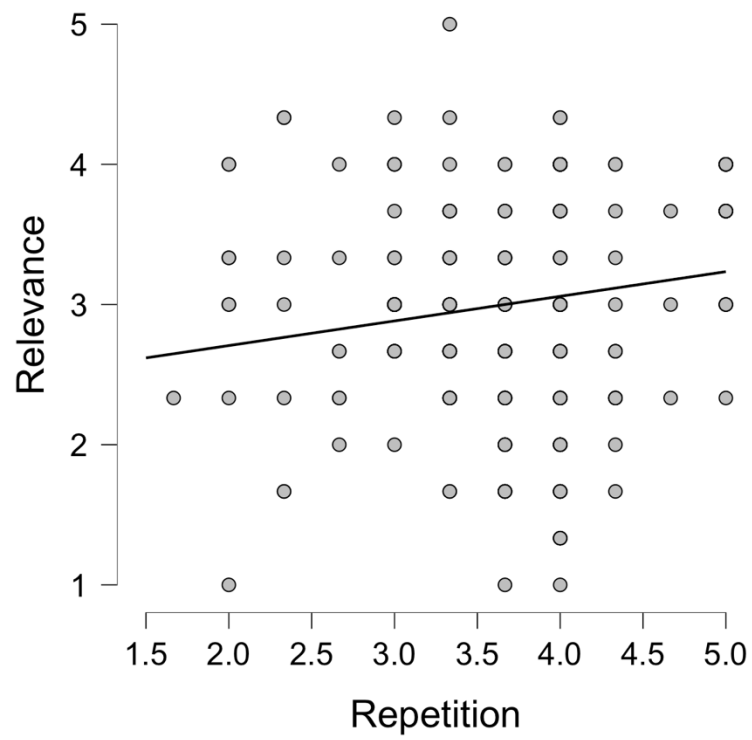
Repetition vs. Avoidance



Appendix E

Pearson's r correlation diagram Relevance – OBA Repetition

Repetition vs. Relevance



Resümee

KORDUVATE VEEBIREKLAAMIDE MÕJU TARBIJA KÄITUMISELE

Muharrem Demir

Tehnoloogiliste ja sotsiaalsete muutuste tagajärjel areneb reklaamimaastik üha rohkem ja tänapäeval nimetatakse veebipõhise reklaami põhiaspekti automatiseeritud reklaamiks. See on algoritmilise digireklaami strateegia, mis aitab kaasa lõppkasutajate sihtimisele reaajas. Varasematest uuringutest tuleb välja, et enamasti ei optimeerita reklaamide sageduse piiramist, eriti Youtube'i platvormil, ja see on käitumispõhise veebireklaami valdkonnas üks suurimaid probleeme. Lisaks väidavad teadlased, et reklaamide kordamine või sagedus mõjutab tarbijate käitumist näidatud kampaaniate suhtes, mis viib meid uurimisküsimuseni: *"Kuidas korduvad veebireklaamid mõjutavad kasutaja käitumist?"*. Antud uurimuse eesmärk on laiendada teadmisi, kuidas järjepidev sihitud reklaamide näitamine Youtube platvormil mõjutab tarbijate käitumist nende suhtes. Uurimuse käigus selgus, et ärritus, isikliku ruumi piiramise tunne, asjakohasuse eelistus, teadlikkus ja vältimine on mõisted, mida on uuritud varasemates uuringutes seoses käitumispõhise reklaamiga. Käesolevas töös kasutati kvantitatiivset uurimismeetodit, et uurida antud mõisteid ja nende seost kordus teguritega. Seejärel viidi läbi statistiline analüüs, koos korrelatsioon- ja regressioonanalüüsiga, et teha kindlaks, kas püstitatud hüpoteesid saavad kinnitust. Uurimuse tulemusena selgus, et korduvad reklaamid Youtube platvormil mõjutavad tarbija käitumist, põhjustades ärritust, reklaamide vältimist ja isikliku ruumi piiramise tunnet. Tulemuste kohaselt selgus, et bränditeadlikkuse ja reklaami kordumise vahel pole olulist seost.

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