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A cross-platform study of brand recall in online video advertising

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## Summary

This study investigates the effect of online video advertising on brand recall across online video platforms. The platforms included in the study are an online news-streaming platform, an online television-streaming platform, and an online video-sharing platform. In addition, we test the effects that frequency of ad exposure, satisfaction with the viewing experience, previous exposure to the platform, and age have on brand recall, which is measured by using unaided, aided, and extra aided recall scenarios. Online video-sharing platforms have a significantly stronger effect on aided and extra aided brand recall than online news-sharing platforms, implying that, in order to recall the advertised brand on an online video-sharing platform, additional brand triggers are required. Satisfaction has a significant but negative impact on all three brand recall scenarios, indicating that the more the viewer is immersed in the viewing experience, the less they will be able to recall the brand.

## 1. Introduction

Over the past years, there has been a rapid change of the advertising industry due to online media and the popularity of the Internet. Spending on digital advertising in Norway has been increasing for years and Statista (2017) predicts a spending on digital advertising of 8418 million NOK for 2017 (7.62% increase from 2016). Compared to other media, we see that in Norway spending on Internet advertising (7416 million NOK) in 2015 was almost twice as much as on TV advertising (3858 million NOK). This trend shows that digital advertising is becoming increasingly important and a topic of interest in marketing research. One way to measure the effectiveness of digital advertising in research is through brand recall. Brand recall measures how well consumers can remember an ad with or without additional triggers (Till & Baack, 2005). This has important implications for advertisers since the different conditions of brand recall imply an increase or decrease in additional spending on advertising. Ideally, the goal for advertisers and companies is that consumers can remember their brand in the unaided recall condition, therefore reducing additional marketing costs (Hammer et al., 2009).

Along with these trends in the media industry comes the rapid change that is occurring in the TV industry. Users across age groups are watching less TV (BI Intelligence, 2017) and, simultaneously, audiences watching TV are getting older (Marketing charts, 2017). According to Statista (2017), online TV is getting more and more popular, and will have penetrated the market entirely by 2021. It is therefore no surprise that marketers in Norway and other countries are spending more on advertising on digital platforms than on traditional television (eMarketer, 2016). In addition to advertising becoming more digital and television becoming less popular, the number of devices consumers use to access television and video content is increasing (Statista, 2017). In addition to laptops and desktops, especially smartphones and tablets drive the growth of online video usage (Data charts, 2015). Not only are we using more devices to consume video content, we are also increasingly spending more time on these devices. Whereas in 2014 the average time spent per day watching online video by US adults was 1 hour and 3 minutes, in 2015 it increased to 1 hour and 16 minutes. (eMarketer, 2015). The fact that people are now more than ever exposed to online video content means

that it is important for advertisers to understand consumers' online viewing behavior in order to produce effective video advertisements.

Social media platforms are evolving into video platforms and more and more videos are being shared (Zamfir, 2016; BI Intelligence, 2017). Mark Zuckerberg, CEO of Facebook even opted for a "video-first" strategy and stated that: "I see video as a megatrend. That's why I'm going to keep putting video first across our family of apps." (Guynn, 2016; Jarvey, 2017) In fact, around the time when this research was being completed, Facebook launched a new function ("Watch") in which one can watch original shows solely produced for Facebook. The partners producing the content will earn 55% of the advertising commercial revenue, and Facebook will be keeping the rest (Constine, 2017). Social media platforms are playing a leading role in the way consumers process online video content, which was predominantly associated with more traditional video platforms (e.g. news- and television-streaming platforms). The use of these different mediums to consume online video content is a topic that needs to be further explored.

With the trends in the media industry towards increased spending on digital advertising and the changes in the way people consume video content, online video advertising is becoming increasingly important. This type of advertising consists of video advertisements that appear before, during or after streaming videos online or on apps (Statista, 2017). Despite its widespread adoption, the question of what effects online video advertising has on viewers is still being explored. Due to changes in consumers' video watching behavior and their increased time spent on digital devices, media agencies are interested in knowing how well consumers can recall the advertisements and whether there is a difference between the platforms used for watching online video content. As a result, we paired up with a leading international media agency in Norway in order to answer these questions. Getting to understand the effects of online video advertising will allow media agencies to better consult their clients in questions such as what type of platform to advertise on and how frequently. In a world where rapid changes are happening in the way we watch and share online videos, it will be increasingly important for media agencies, advertisers and companies to understand what kind of effects online video advertising across platforms have on brand recall. In this paper, we research and analyze the differences of online video

advertising across platforms and frequencies and their effect on brand recall, as well as the role that satisfaction with the viewing experience, previous exposure to the platform, and age may have on levels of recall. Therefore, we formulate our research question as follows: *What are the effects of online video advertising on consumer brand recall across different online video platforms?*

## **2. Theoretical background and research model**

### **2.1 Brand recall**

Recall, as defined by Babin and Carder (1996), is “the form of memory that requires one to reconstruct a certain stimulus [...] since the stimulus is not present at the time of recall.” When it comes to advertising literature, this concept can be broken down into two types: unaided and aided (Till & Baack, 2005). The former indicates whether a person is able to recall a certain message (e.g. brand name) without any cues, whereas the latter measures whether they can recall it with the presence of a trigger (Padilla-Walker & Poole, 2002). Ideally, consumers would be able to recall the message without any help (i.e. unaided type), as this would help the brand in building top-of-mind awareness. However, this is not always achieved as a result of factors such as advertising clutter that hinder this process (Hammer et al., 2009). Donthu et al. (1993) measured the differences in advertising effectiveness between aided and unaided recall and found that, in general, the aided recall scores were higher than the unaided ones. This is due to the fact that aided recall is, as stated above, an assisted recall, which results in easier memory access for the consumer. However, past research also shows that factors such as higher attention and motivation can result in a deeper memory trace that can yield higher levels of unaided recall (Till & Baack, 2005).

For the purposes of this paper, the distinction between aided and unaided recall will be further explored by measuring a third type of recall: extra aided. This is defined by the presence of an initial cue followed by a more explicit trigger, in order to determine whether the inclusion of an additional cue has an effect on the consumer’s ability to recall the brand after being exposed to a certain ad.

### **2.2 Use of online video platforms**

#### ***2.2.1 Online video platforms***

Online video platforms are growing and more users are using the Internet to watch video content. There are different types of online video platforms and Cha (2013) differentiates between video-sharing websites, such as YouTube, and television-network sites such as Hulu and CNN.com.

Cha (2013) found that time spent using the Internet to watch video content on video-sharing websites (e.g. YouTube) reduced the time spent watching television. However, users who spent their time watching video content on television-network sites online (e.g. Hulu, ABC.com) did not reduce their time watching television. Cha (2013) explains this by highlighting that online television sites as well as traditional television are complementary products, as one can watch content you have missed on television and re-watch shows as well as gain more information about the shows and the actors (Ha & Chan-Olmsted, 2001). A study by Chyi and Lasorsa (2002) found similar results for newspapers and their online counterpart. Readers of newspapers indicated that they used online newspapers as a complementary product to other news media sources. Another distinction that can be made is based on the video content hosted on these different platforms. Whereas video-sharing sites like YouTube can have both videos produced by media agencies and consumers, and are rather short clips than long episodes; television-based websites exclusively have media-produced content (Cha, 2013).

As we explain below in Section 2.2.2, we make the distinction between television-streaming sites and news-streaming sites in addition to video-sharing sites. Cha and Chan-Olmsted (2012) found that due to the vast choice of different channels, types of platforms and content, goal-orientation as well as interest in particular types of content significantly influences the way viewers process video. With our research, we would like to not only define the different types of online video platforms, we would also like to further investigate the differences between the platforms by conducting an experiment. Until now, research on this topic has focused on definitions and descriptions of online video platforms (Ha & Chan-Olmsted, 2001; Chyi & Lasorsa, 2002; Cha & Chan-Olmsted, 2012; Cha, 2013). However, few experiments have been done on the viewer's behavior across different online video platforms or the various effects that online video advertising has on consumers. Completely missing is a study that investigates the different effects of online video advertising through a comparison between the different online platforms. Therefore, we would like to fill this research gap with our study across different online video platforms and the effects that online video advertising has on brand recall.

### ***2.2.2 Motivation***

Motivation influences which media we use, the way in which we use media, as well as possible effects from the media (Rubin, 1983; Bondad-Brown et al., 2012). The motivation behind television consumption is that of passing time, relaxation, habit, entertainment, arousal, and escape (Rubin, 1983). The most dominant motivation of consuming news across different platforms (i.e. newspapers, news magazines and news on television) is that of surveillance and gaining realistic, specific and up-to-date information (Flavian & Gurrea, 2007; Vincent & Basil, 1997; Perse, 1992). According to Haridakis & Hanson (2009), people watching YouTube have similar motivation as those watching television; however, there is a predominantly social aspect to watching content on the video-sharing website. YouTube allows you to share opinions, comment, and rate videos, as well as share the content through links, allowing the viewer to be at the center of the experience (Haridakis & Hanson, 2009). Through its social component, YouTube is said to not only satisfy traditional motivations of watching videos, but more importantly allows users to satisfy interpersonal needs, such as inclusion, control, and sensation-seeking (Barbato & Perse, 1992). Using a video sharing site such as YouTube requires great navigation and input, and is often influenced by previous activities such as reading a blog and visiting a social networking site, which leads to it being a more selective and targeted experience (Bondad-Brown et al., 2012).

The different characteristics of these platforms, as well as the difference in behavior and motivation to use either platform, leads us to believe that there are differences in not only viewing experience but also in memorability. Format, timing, and context of the medium influences the attention paid to and memorability of advertisement (Li & Lo, 2015). One factor that has not been studied is the effect that online video platforms have on ad memorability, which we believe plays a relevant role. Watching content with a specific purpose (e.g. to gain information) makes users more engaged with the content, whereas motives of relaxation and passing of time lead users to having greater affinity to the medium rather than the content (Rubin, 1983). Since online video platforms are growing and video is becoming a predominant way in which consumers interact with brands, a gap in research is being filled by our study on how online video

advertising affects viewers across different platforms. Such a study is necessary in order to efficiently and effectively target consumers on the various platforms.

Building on the different motivations to consume online content on the three platforms discussed, we hypothesize that online news websites, where the goal of information-seeking is most dominant, will lead to a higher focus on the content, and therefore higher memorability of the advertisement included in the video. We believe that, in this goal-oriented environment, no recall triggers will be necessary and that, therefore, brand recall will occur at the unaided level. We also hypothesize that viewers of online television platforms will have a lower focus on the content and higher focus on the medium and their experience, leading to an overall lower recall of advertisement. Due to clutter of several advertisements of other brands and a lower goal-oriented motivation, we believe that more triggers and cues will be necessary in order to recall the brand, and that this will coincide with the extra recall condition. Since YouTube is described as both a site influenced by previous activities and targeted goals, as well as intrinsic motivations of sensation and sharing (Barbato & Perse, 1992; Bondad-Brown et al., 2012), the viewer's motivation lies between that of information-seeking on news media and that of relaxation and entertainment of television networks. Since cues are needed in order to eliminate the clutter of the social sharing platform, such as likes, shares, comments, etc., we believe that participants will best recall the advertised brand in the aided recall condition. Based on these deductions, we hypothesize that:

*H<sub>1a</sub>: Unaided brand recall triggered by online video advertising is more effective on online news streaming platforms than on other online video platforms.*

*H<sub>1b</sub>: Aided brand recall triggered by online video advertising is more effective on online sharing platforms than on other platforms.*

*H<sub>1c</sub>: Extra aided brand recall triggered by online video advertising is more effective on television streaming platforms than on other platforms.*

### ***2.2.3 Satisfaction***

The Elaboration Likelihood Model (ELM) states that, when motivation to process an ad is greater, individuals are more likely to follow the central route to persuasion rather than the peripheral route, of which the prior is the one that leads to behavioral change (Kitchen et al., 2014). Within the context of the ELM model in advertising, satisfaction levels may play a role in the kind of route that the person will follow, and thus whether they will recall the brand or not (i.e. take the central route of processing) (Lampert et al., 2007). Nelson et al. (2004) studied players' attitudes towards advertising in computer games and found that seamless integration is crucial for success in game advertising, as messages that interrupt immersion result in negative reactions. In order to make users more involved in the processing of the ad, brands should then aim to grab the person's attention without disrupting the overall experience.

We can draw parallels between these findings, as well as the ELM model, and online video advertising. If an individual is satisfied with the video content in which the ad is featured and thus immersed in this viewing experience, they will be unaware of other stimuli and have low-involvement processing of the advertisement, which would result in lower brand recall. On the other hand, if the person is not satisfied with the content, they will be more open to other stimuli such as ads and thus have high-involvement processing of the advertisement, meaning they will be more likely to recall the brand (Lampert et al., 2007). Through our research, we would therefore like to show that satisfaction with the viewing experience has an effect on whether the consumer is able to recall the brand or not. We believe that people who are more satisfied will have a lower probability of recall than those who are less satisfied regardless of the presence of a trigger, as they are less likely to be paying attention to the ads that they are being exposed to. Our contribution to the literature would be the study of satisfaction levels within online video advertising in particular, as previous research has focused on other types of advertising (e.g. game advertising) (Nelson et al., 2004). Based on these deductions, we hypothesize that:

*H<sub>2</sub>: Higher satisfaction with the overall viewing experience leads to participants paying less attention to ads and, therefore, results in lower brand recall.*

#### ***2.2.4 Previous exposure***

Another factor that influences brand recall in an online environment is browsing behavior, as it involves a vital concept in any discussion surrounding recall and recognition – attention. Generally speaking, higher attention is predicted to be associated with higher recall, as opposed to lower attention. Li and Lo (2015) state that attention to an ad may be influenced by the amount of times the person has received the same stimulus in the past. As viewers in an online setting continue to be exposed to a certain stimulus over time (e.g. accessing a platform that features video advertising), their responses to that stimulus will eventually decrease (Nelson & Meyvis, 2008). This means that viewers become unaffected by the stimuli they are presented with when they are exposed to it regularly (Li & Lo, 2015). Therefore, we believe that, if participants are familiar with a platform and spend a lot of time on it, they will pay less attention to the experience and will therefore have lower levels of brand recall than participants who do not spend a lot of time on the platform. As described by various authors (Lally et al., 2010; Verplanken, 2006; Wood & Neal, 2007), strengthening an association between a situation and an action increases the level of automation of the behavior that occurs when exposed to that situation again (i.e. a habit is formed). Bargh (1994) describes automation among other things as lack of awareness. With our research, we therefore would like to show that people who have previously been exposed to the platform have an increasing automatic behavior when accessing that platform again. We believe that not only are people more automatic in the way they use the platform, they also show a lack of awareness of the online video advertising they encounter, which both lead to weaker brand recall.

In addition, users of user-generated online video platforms actively search for content and the more frequently they use the platform, the better their skills become in navigating the site and finding what they are looking for. Most content on such platforms is found through links and directly shared clips. These sites are more prone to navigation using keywords and are used in a selective and specific way (Bondad-Brown et al., 2012). This implies that the more users have navigated the site in the past, the better they know the site and, therefore, their processing of the site (i.e. processing of stimuli) is less than someone who is accessing the site for the first time. Therefore, we hypothesize that:

*H<sub>3</sub>: Higher previous exposure to platforms that feature online video advertising results in lower brand recall.*

### **2.2.5 Age**

We believe age to have a significant influence on the usage of online video platforms, as illustrated by the fact that older viewers of online videos may generally experience less easy access or navigation on these sites (Teo, 2001). As discussed in the previous section, habit formation leads to automated processing and, therefore, older users who are less prone to using online video platforms are expected to have less automated processing (i.e. are more likely to process the stimuli they are exposed to). Thus, older viewers are more highly involved when using an online video site and, according to the ELM model, this means that they are paying more attention to the process (Kitchen et al., 2014). Younger users, who are more prone to using online media, adopt specific ways in which they use and navigate the media (Mares & Woodard, 2006) without needing to pay much attention to what they are doing, indicating a low-involvement process (Kitchen et al., 2014) and a more automatic process (i.e. lack of awareness) (Bargh, 1994). According to Bondad-Brown et al. (2012), younger people also have slightly different motivations for using online media, and are more likely to use it for entertainment purposes, which again implicates low-involvement processing, hence being less aware of other stimuli. Younger adults are also more prone to multitasking when using media, resulting in them not paying attention to ad stimuli when exposed to it (Bondad-Brown et al., 2012). We therefore hypothesize that:

*H<sub>4</sub>: Younger viewers are generally less involved in an online video viewing session due to more experience on the platform and multitasking, and are therefore less likely to recall the advertised brand.*

## **2.3 Ad set-up in online video platforms**

### **2.3.1 Frequency of ad exposure**

One of the factors that can affect the way consumers react towards a certain brand is the number of times that they are exposed to the advertised brand. Frequency of ad exposure is an important but challenging topic of research, due to the fact that

there are too many variables that can mediate the effects of frequency, such as types of media, creative executions, exposure environments, among others (Lee & Cho, 2010).

The emphasis on frequency in advertising comes mainly from the widespread belief that repetition will increase effectiveness in terms of recall and recognition of the message (Cacioppo & Petty, 1979; Belch, 1982), affecting the recipient's attitudes towards a brand or purchase intentions (Cacioppo & Petty, 1979). This belief that repetition will increase memory of the message can be explained in terms of accessibility of information (Higgins, 1996). Thus, repeated exposure to the same ads can achieve higher accessibility of information relevant to those particular ads and, as a result, increase the likelihood that the stored information can be activated. Moreover, multiple exposures to an advertisement increase consumer awareness of the advertising message and facilitate consumer processing of the included material (Vuokko, 1997). In this way, advertising repetition can enhance consumers' brand attitude and recall. However, there are limits to how effective repetitions are, since this can lead to an increase in perceived intrusiveness, thus negatively impacting advertising liking and persuasiveness (van Reijmersdal et al., 2010). This interaction may result in non-linear effects where, after a certain number of repetitions, the level of annoyance in the consumer ends up growing exponentially (Fullerton & Taylor, 2002). Due to the fact that research findings differ considerably and indicate different exposure levels at which maximum attitude is reached (Nordhielm, 2002), the number of exposures that maximizes consumer response is still subject to continuous debate.

### ***2.3.2 Ad placements***

Brechman et al. (2016) describe three types of video-advertising placements – before the content, during the content, or after the content. Advertising before the content is commonly used on video-sharing platforms such as YouTube and short clips on news-streaming platforms. Whereas often in half-hour or longer programs (commonly on television-streaming platforms) advertisements are placed during the video content, where one or several ads are placed in each break. By interrupting the viewing experience, these ads aim to attract attention. However,

attracting attention does not automatically mean that the ads remain memorable (Li & Lo, 2015).

Comparing the different types of online video advertising placements amongst each other, Bellman et al. (2012) found that there was no significant difference in perceived intrusiveness between advertisements before or during the video content. However, advertising during the video content was seen to be more effective in terms of brand recall, compared to advertising in the beginning of the video content. Similarly, on television advertisement interrupting the program is more memorable to viewers. Krugman (1983) explains this by the momentum created by the program, which is followed by an unexpected commercial break.

As the literature in Section 2.3.1 and 2.3.2 indicates, research around frequency of ad exposure and ad placement in online video platforms is inconclusive, which is why we would like to address this issue in our study. Thus, we hope to fill a research gap on the amount of exposures that are most effective in television-streaming platforms when it comes to online video advertising. Based on our deductions around this topic, we hypothesize that:

*H<sub>5</sub>: On television-streaming platforms, brand recall triggered by online video advertising is more effective if the consumer is exposed to the ad on two opportunities (i.e. pre-roll and mid-roll), as opposed to one (i.e. pre-roll).*

## **2.4 Overview of previous research and current study**

Table 1 below presents an overview of the research discussed in Section 2.1, 2.2, and 2.3, as well as a summary of hypotheses and our study's contribution to the existing literature.

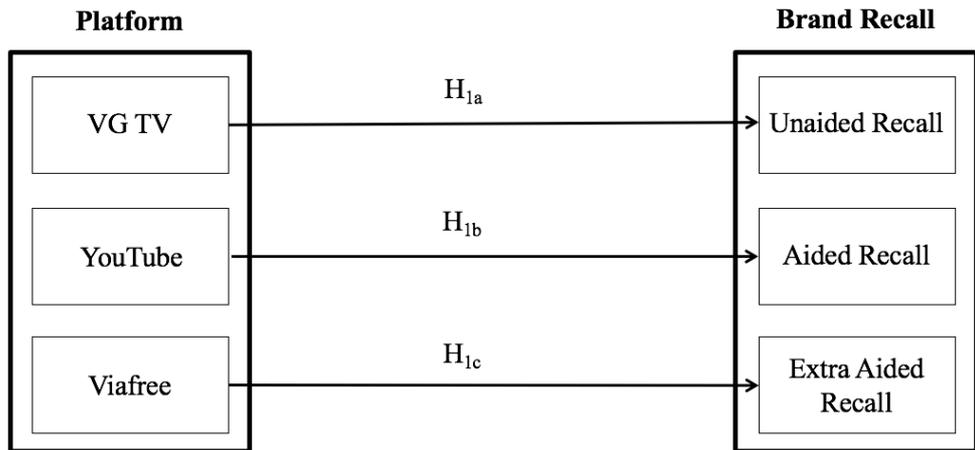
**Table 1: Overview of previous research and current study**

Variable	Previous research		Current study
<p>(Online video) <b>Platforms</b></p>	<p>Cha (2013)</p>	<ul style="list-style-type: none"> <li>- Time spent watching content on online video-sharing platforms reduces time spent watching television</li> <li>- Time spent watching television and news-streaming platforms does not reduce time spent watching television (complementary products)</li> <li>- Online television and news-streaming platforms have content produced by media agencies; YouTube has content produced by both media agencies and consumers</li> </ul>	<ul style="list-style-type: none"> <li>- Analyzing how these various online video platforms lead to different viewing behaviors due to contrasts in motivation, resulting in different levels of brand recall</li> </ul> <p><i>H<sub>1a</sub>: Unaided brand recall triggered by online video advertising is more effective on online news streaming platforms than on other online video platforms</i></p> <p><i>H<sub>1b</sub>: Aided brand recall triggered by online video advertising is more effective on online sharing platforms than on other platforms</i></p> <p><i>H<sub>1c</sub>: Extra aided brand recall triggered by online video advertising is more effective on television streaming platforms than on other platforms</i></p>
	<p>Chyi &amp; Lasorsa (2002)</p>	<ul style="list-style-type: none"> <li>- Newspapers and online newspapers act as complementary products</li> </ul>	
	<p>Cha &amp; Chan-Olmsted (2012)</p>	<ul style="list-style-type: none"> <li>- Choice of different channels and different types of platforms, as well as different content and goal-orientation, significantly influences the way viewers process video content</li> </ul>	
	<p>Rubin (1987)</p>	<ul style="list-style-type: none"> <li>- Motivation behind watching television is: Passing time, relaxation, habit, entertainment, arousal, and escape</li> </ul>	
	<p>Flavian &amp; Gurrea (2007); Vincent &amp; Basil (1997); Perse (1992)</p>	<ul style="list-style-type: none"> <li>- Motivation behind news consumption is: Surveillance as well as gaining specific and up-to-date information</li> </ul>	
	<p>Haridakis &amp; Hanson (2009); Barbato &amp; Perse (1992)</p>	<ul style="list-style-type: none"> <li>- Motivation to watch YouTube similar to that of watching television (i.e. entertainment); however, the social aspect is predominant (sharing opinions, comments, ratings, sharing links, etc.)</li> <li>- Satisfies viewers' interpersonal needs of inclusion, control, and sensation-seeking</li> </ul>	
<p><b>Satisfaction</b></p>	<p>Lampert et al. (2007)</p>	<ul style="list-style-type: none"> <li>- Satisfaction plays a role in which route person follows in the ELM Model, i.e. if they recall the brand or not (central vs. peripheral route of processing)</li> </ul>	<ul style="list-style-type: none"> <li>- Studying the effects of satisfaction with the viewing experience on brand recall in the specific case of online video advertising</li> </ul> <p><i>H<sub>2</sub>: Higher satisfaction with the overall viewing experience leads to participants paying less attention to ads and, therefore, results in lower brand recall</i></p>
	<p>Nelson et al. (2004)</p>	<ul style="list-style-type: none"> <li>- Seamless integration of advertising in online games leads to higher attention towards the advertised brands, whereas interruption of the player's immersion leads to negative reactions</li> </ul>	

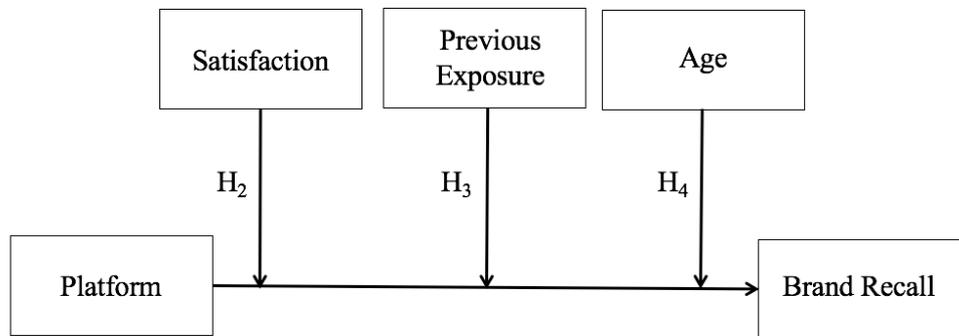
<b>Previous exposure</b>	Li & Lo (2015); Nelson & Meyvis (2008)	<ul style="list-style-type: none"> <li>- Attention to ad is influenced by the amount of times the person has received stimulus in the past</li> <li>- Response to stimulus decreases when exposed to it regularly</li> </ul>	<ul style="list-style-type: none"> <li>- Applying this research to online video advertising in order to show that previous exposure to the platform plays a role in whether the viewer is able to recall the brand or not</li> </ul> <p><i>H<sub>3</sub>: Higher previous exposure to platforms that feature online video advertising results in lower brand recall</i></p>
	Lally et al. (2009); Verplanken (2006); Wood & Neald (2007); Bargh (1994)	<ul style="list-style-type: none"> <li>- Level of automation is increased by constant exposure, which leads to habit formation</li> <li>- Habit formation, among other things, leads to a lack of awareness</li> </ul>	
<b>Age</b>	Teo (2001)	<ul style="list-style-type: none"> <li>- Older viewers are less prone to navigation on online sites</li> </ul>	<ul style="list-style-type: none"> <li>- Showing that different age leads to various interactions with the platform, hence different brand recall of online video advertising</li> </ul> <p><i>H<sub>4</sub>: Younger viewers are generally less involved in an online video viewing session due to more experience on the platform and multitasking, and are therefore less likely to recall the advertised brand</i></p>
	Mares & Woodard (2006)	<ul style="list-style-type: none"> <li>- Younger viewers are more familiar in using online media, and know how to navigate online media</li> </ul>	
	Bondad-Brown & Pearce (2012)	<ul style="list-style-type: none"> <li>- Younger people have slightly different motivation in using online media, and are more likely to use it for entertainment purposes</li> <li>- Younger people are likely to multitask when using online media</li> </ul>	
<b>Frequency</b>	Cacioppo & Petty (1979); Belch (1982)	<ul style="list-style-type: none"> <li>- Repetition increases effectiveness of recall</li> </ul>	<ul style="list-style-type: none"> <li>- Investigating frequency in online video advertising within television-streaming platforms due to inconclusive research</li> </ul> <p><i>H<sub>5</sub>: On television-streaming platforms, brand recall triggered by online video advertising is more effective if the consumer is exposed to the ad on two opportunities (i.e. pre-roll and mid-roll), as opposed to one (i.e. pre-roll)</i></p>
	Vuokko (1997)	<ul style="list-style-type: none"> <li>- Repeated exposure to ads leads to increases awareness of the advertising message</li> </ul>	
	Bellman et al. (2012)	<ul style="list-style-type: none"> <li>- Advertising during the video content is more effective in terms of brand recall</li> </ul>	

## 2.5 Conceptual research model

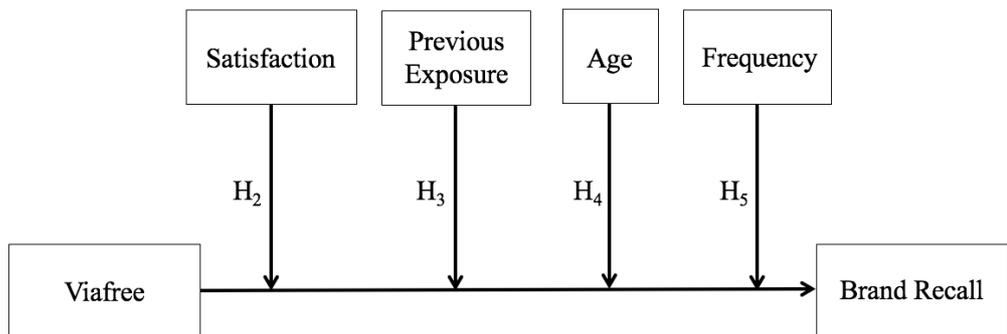
Based on our hypotheses, we have constructed our conceptual research models, which illustrate the main and moderator effects of platform on brand recall that will be explored across two separate studies (see Section 3). It is important to distinguish that, in the case of H<sub>1a</sub>, H<sub>1b</sub> and H<sub>1c</sub>, each of the different platforms is hypothesized to influence one of the recall scenarios. However, when it comes to the additional variables, we believe the effects to be the same across all recall conditions. Figure 1 and 2 depict the models being tested in study 1, whereas Figure 3 shows the model tested in study 2.



**Figure 1: Main effects of platform on brand recall (Study 1)**



**Figure 2: Moderator effects of platform on brand recall (Study 1)**



**Figure 3: Moderator effects of Viafree on brand recall (Study 2)**

### **3. Methodology**

Our research design consists of two studies that will address the different hypotheses mentioned in the theoretical background (Section 2) regarding online video advertising. The primary purpose of study 1 is to establish the effect that different online video platforms have on brand recall of online video advertising ( $H_{1a}$ ,  $H_{1b}$ , and  $H_{1c}$ ). In the case of study 2, we are interested in the effect that frequency of ad exposure ( $H_5$ ) has on brand recall with the use of a television-streaming platform (i.e. Viafree). In both studies, we will also look at the effects of satisfaction of the overall viewing experience ( $H_2$ ), previous exposure to the platform ( $H_3$ ), as well as age ( $H_4$ ) on the different levels of brand recall. The content of the shows and the advertisements were random throughout the study, as we do not take the effect of content into consideration in our research.

#### **3.1 Participants**

Our participant pool consists of 60 people (including pre-tests) between ages 18-40 living in the Oslo area. We used simple random sampling to allocate video content and advertisement in each of the conditions, meaning that every respondent had the same probability of being chosen. As a reward for their participation, subjects received a free trial period on one of the video platforms as well as the opportunity to win a radio.

#### **3.2 Study design**

For both studies, we partnered with a renowned media agency in Norway, which allowed us to mimic a relevant experiment that real businesses can resonate with. With their assistance, we were able to provide a realistic viewing experience with actual online platforms using real advertisements. However, the economic constraints that come with purchasing advertising space meant that we faced some limitations in running the experiments. There were different actors involved in the process, as the media agency had to coordinate with representatives from each video platform. This meant that we had to arrange specific dates with limited number of hours in which the ad campaign could run, resulting in a challenging recruitment process as people had to commit beforehand that they would be able to participate on that specific date at that specific time.

### ***3.2.1 Study 1: How do different online video platforms affect brand recall?***

In order to investigate how different online video platforms affect brand recall, we compared a news-streaming platform, VG TV, a television-streaming platform, Viafree, and a video-sharing platform, YouTube. As discussed earlier, we expected that brand recall triggered by online video advertising would be more effective on online news streaming platforms due to the more information seeking and goal-oriented nature of the viewing experience. In order to test this effect, we asked participants to watch video content on one of three different platforms: YouTube, VG TV, and Viafree. For each platform, there was a certain ad campaign, which participants were exposed to on one occasion. The ads placed on each of the platforms were revealed to us beforehand and we were certain that the participants would be exposed to them, thanks to the collaboration with the different online platforms and the media agency. These ad campaigns ran during a certain time frame, as mentioned above, allowing subjects to decide when (within the allocated time frame) and where they would participate in the study. The fact that participants were free to choose place and time, as opposed to being forced to watch the content in a lab setting, would allow for a more realistic viewing experience.

The participants were then asked to answer a short questionnaire after their viewing session was over, which included three questions that focus on brand recall (see Appendix 1 for full questionnaire). Each of these questions measured a different level of recall: unaided (i.e. whether the participant was able to recall the ad without any triggers), aided (i.e. whether the participant was able to recall the ad with the presence of a trigger - selecting the brand's name among a list of 10 brands), and extra aided (i.e. whether the participant was able to recall the ad with the presence of an extra trigger - selecting the brand's name among a list of 3 brands). In addition, we included questions that would measure previous exposure to the video platform (i.e. on average, how many hours a week does the participant spend on platform X), satisfaction (i.e. on a scale from 1 to 10, how satisfied they were with the viewing experience), and age.

In order to conceal the aim of our study, we communicated a cover story that we were analyzing people's impressions of the different platforms and their online

video viewing behavior in general. As participants were randomly allocated across the different conditions, this is a between-subjects design.

### ***3.2.2 Study 2: How do different frequencies of ad exposure affect brand recall in a television-streaming platform?***

In study 2, the focus was on the video platform Viafree and how frequency of ad exposure can affect the different levels of brand recall. In order to capture this effect, we asked participants to watch different video content on Viafree - one of the shows featured one ad exposure, whereas the other show featured two ad exposures. As in the case of study 1, the campaigns ran for a certain time frame to give participants the possibility to choose when and where to do the experiment.

The questionnaire was the same as in study 1, as we were interested in measuring the same levels of recall (i.e. unaided, aided, and extra aided). As in study 1, we also included questions that would measure previous exposure to the video platform (i.e. on average, how many hours a week does the participant spend on platform X), satisfaction (i.e. on a scale from 1 to 10, how satisfied they were with the viewing experience), and age. Participants were randomly placed in the two conditions (i.e. Frequency = 1 or Frequency = 2), which makes this a between-subjects design as well.

## **3.3 Manipulation checks**

In order to verify our survey and test our different conditions we performed a pre-test. We therefore chose to have two participants per condition to go through the different stages of our study.

### ***3.3.1 VG TV***

In order to test VG TV, we bought commercials on a specific channel. In this case the channel was NHL, and we knew that all commercials played on videos within this channel would show our selected commercial. The commercial was for a Norwegian insurance company. The participants were instructed to watch a number of videos within this channel and to then answer our survey.

In the unaided recall question, only one of the participants accurately recalled the commercial for the insurance company (see Table 2). In the aided recall question,

where ten options were presented, both participants successfully indicated that they had seen the controlled commercial (see Table 2).

**Table 2: Pre-test results on VG TV**

Pre-test (2 participants)				
	Unaided Recall	Aided Recall	Extra Aided Recall	No Recall
VG TV	1	2	2	0

In our VG TV condition, one participant managed to remember our commercial in the unaided question and both participants managed to recall the ad in the subsequent aided recall questions.

### **3.3.2 YouTube**

In order to test YouTube, we bought commercials on two different channels. One of the channels was a Swedish lifestyle blogger, the other one was a Norwegian gaming blogger. The participants could choose the channel of their liking and were asked to watch two episodes. This was due to the fact that the ad was guaranteed to appear at least once when watching two episodes (i.e. there was a 50% chance to see the advertisement when watching one episode).

In the unaided survey question, neither of the participants mentioned our controlled ad. In the aided research question, where they were presented with a list of brands, both participants managed to select the correct brand (see Table 3). They both correctly indicated that they had seen the ad in the explicit question and both correctly expressed that they saw it once (see Table 3).

**Table 3: Pre-test results on YouTube**

Pre-test (2 participants)				
	Unaided Recall	Aided Recall	Extra Aided Recall	No Recall
YouTube	0	2	2	0

In our YouTube condition, neither of the participants managed to correctly recall the brand in the unaided recall question.

### ***3.3.3 Viafree***

In order to test Viafree with one frequency, participants were asked to watch a specific episode of a television series. We could therefore control that they would be exposed to our advertisement only once. The advertisement was from a International betting company. After watching the show, they were asked to immediately complete the survey. The same set-up was used in order to test the Viafree platform with two frequencies, but using a different show. After watching the show, the participants were asked to immediately complete the survey.

The participants in the Viafree (Frequency = 1) study were not able to recall the advertisement in the unaided recall question (i.e. List the brands you saw in the commercial breaks), as shown in Table 4. However, in the aided recall question (i.e. a list of ten brands, one of the brands being the commercial we controlled) one of the two participants recognized our controlled advertisement. When specifically asked if they had seen our controlled advertisement, still only one of the two participants explicitly indicated that they had seen our ad, the other participant explicitly indicating that they had not seen it.

The participants in the Viafree (Frequency = 2) study were not able to recall the advertisement in the unaided recall question (see Table 4). However, both participants noted brands similar to the advertised brand we were controlling for. In the aided recall question, both participants did not recognize our brand. However, one of the participants selected a competitor brand that they had not

mentioned in the previous unaided recall question. When asked explicitly if they had seen our ad, both participants answered “no”.

**Table 4: Pre-test results on Viafree (Frequency 1 and 2)**

Pre-test (2 participants)				
	Unaided Recall	Aided Recall	Extra Aided Recall	No Recall
Viafree (Freq = 1)	0	1	1	1
Viafree (Freq = 2)	0	0	0	2

## 4. Data analysis

### 4.1 Descriptive analysis

In the following section, we will merely describe the data obtained in both studies. We will proceed to do a statistical analysis and explain the results in Section 4.2.

#### 4.1.1 Study 1:

For study 1 we gathered 14 respondents on Viafree, 13 on VG TV and 13 on YouTube. However, due to not fully completed surveys we had to eliminate two respondents on Viafree.

##### 4.1.1.1 Platforms

###### 4.1.1.1.1 VG TV

The results of the test on VG TV show us that out of the 13 participants, 4 participants recalled the grocery store commercial in the unaided recall question. These were the subsequent 4 who also mentioned seeing the brand in the aided recall. An additional 2 participants recognized our controlled commercial in the extra aided recall question. On VG TV, there is one pre-roll advertisement lasting about 15 seconds. The video clips lasted from a few seconds to a couple of minutes, which rather short when compared to Viafree.

###### 4.1.1.1.2 YouTube

For the YouTube study, we gathered 13 participants. They were asked to watch content on a specific channel, however which online videos they watched was free of choice. The advertisement was for an eyewear brand and lasted approximately 7 seconds. Two participants had managed to recall the advertisement in the unaided recall scenario. An additional four participants recalled the advertised brand in the aided recall condition. In the extra aided recall situation, only two additional participants managed to recall the brand.

###### 4.1.1.1.3 Viafree

None of the 12 participants indicated recalling the advertised brand. Neither in the unaided, aided or extra aided recall question. The pre-roll commercial is about 50 seconds with 3 commercials. The mid-roll break is 180 seconds with 7

commercials. The controlled advertisement was of a grocery store and lasted for 15 seconds. The show itself was 21 minutes, which is much longer than the content used on VG TV and YouTube.

*4.1.1.1.4 Comparison*

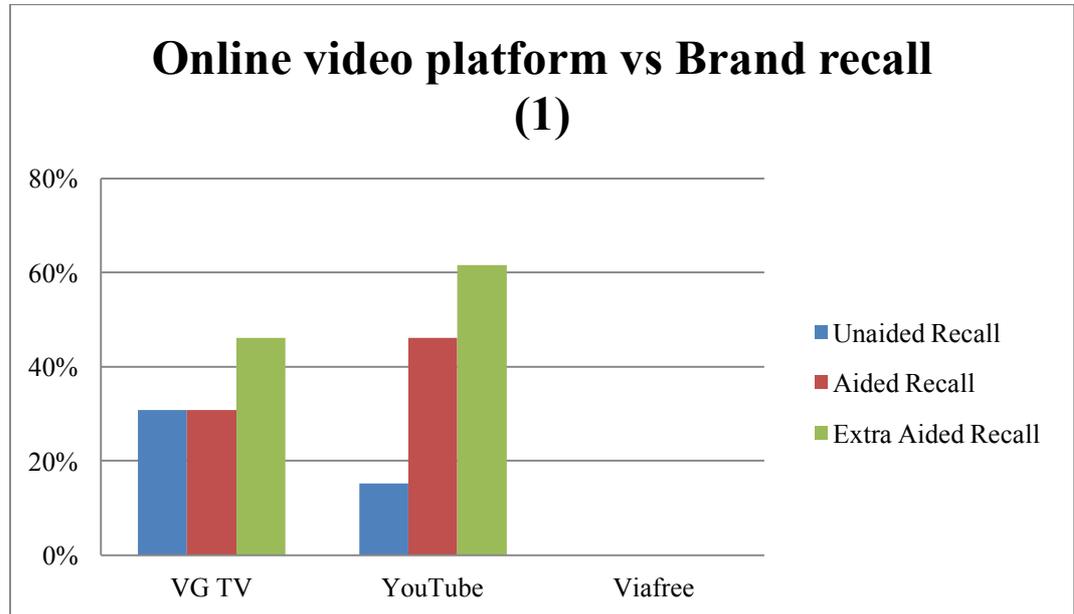
Looking at Table 5, we see that there are differences in probability of brand recall across all three platforms and brand recall conditions. For unaided recall, it seems that VG TV provokes higher unaided recall levels (0% on Viafree vs. 30.77% unaided recall on VG TV vs. 15.26% unaided recall on YouTube). However, looking at aided recall we see that on YouTube participant's probability to recall the advertisement measured by aided recall was higher compared to VG TV (0% on Viafree vs. 30.77% on VG TV vs. 46.16% aided recall on YouTube). Highest probability of recall was obtained in the extra aided condition, which is to be expected, as those participants who recognized the brand in the unaided recall condition also recognized it in the aided and extra aided ones. Similarly, when participants recognized the brand in the aided recall condition, they recognized it in the extra aided condition as well. On VG TV, 46.16% of participants managed to recall the brand in the extra aided recall condition, against 61.54% recalling the advertisement on YouTube and 0% on Viafree. These percentages were calculated by dividing the number of brand recalls by the number of participants, and we do not test for significant differences at this stage of our paper.

**Table 5: Brand recall across different online video platforms (Study 1: Model-free evidence)**

Platform	Unaided Recall	Aided Recall	Extra Aided Recall
VG TV	<b>30.77%</b>	30.77%	46.16%
YouTube	15.26%	<b>46.16%</b>	<b>61.54%</b>
Viafree	0.00%	0.00%	0.00%

Comparing the outcomes across platforms, we see immediately that participants on Viafree were not able to recall the brand in any of the three recall conditions

(see Table 5). In Figure 4, we see that unaided recall is strongest on VG TV, the online news-streaming platform. In addition to that, aided recall is strongest on YouTube. Recall on Viafree was zero across all three recall conditions.



**Figure 4: Brand recall on the different online video platforms (Study 1)**

**4.1.1.2 Satisfaction**

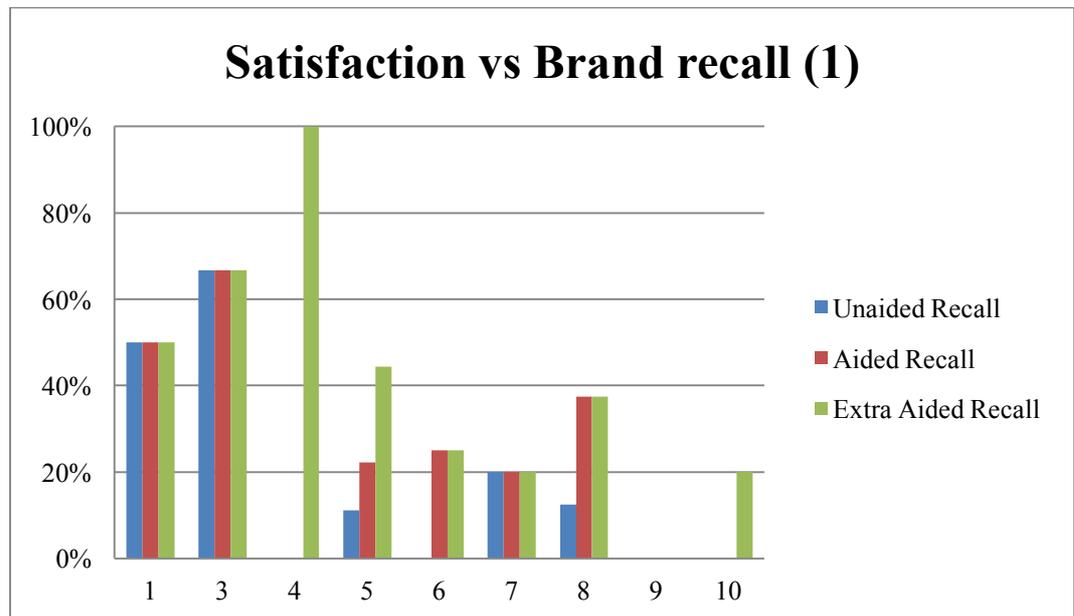
We measured satisfaction on a scale from 1 to 10, with 1 being not at all satisfied and 10 being very satisfied. Table 6 shows the percentage of participants who recalled the brand across the different levels of satisfaction.

**Table 6: Satisfaction across all three brand recall conditions (Study 1: Model-free evidence)**

Satisfaction	Unaided Recall	Aided Recall	Extra Aided Recall
1	50%	50%	50%
3	66.67%	66.67%	66.67%
4	0%	0%	100%
5	11.11%	22.22%	44.44%
6	0%	25%	25%
7	20%	20%	20%

8	12.5%	37.5%	37.5%
9	0%	0%	0%
10	0%	0%	20%

We can see in Table 6 that, out of the participants who recalled the advertised brand in the unaided recall condition, a higher percentage of participants were not satisfied with the viewing experience. Table 6 shows that people with satisfaction 3 have the highest probability of recalling the brand in the unaided condition. Similarly, in the aided recall condition, out of the people who recognized the ad, a greater part was dissatisfied with the viewing experience. Again, people with a satisfaction score of three were most likely to recall the brand. Similar results apply to extra aided recall, in which people with lower satisfaction scores were more successful at recalling the brand. Participants with a satisfaction score of 4 had the highest probability of recalling the brand. Therefore, we can conclude that the less satisfaction, the better the brand recall across all three recall conditions. Figure 5 shows a visual description of these results.



**Figure 5: Brand recall across different satisfaction levels (Study 1)**

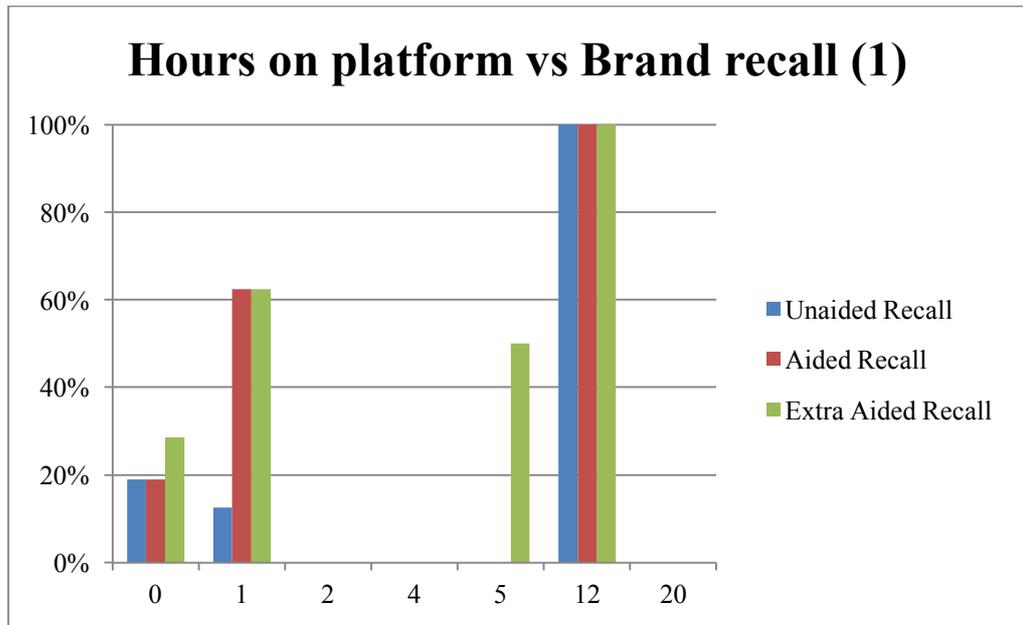
**4.1.1.3 Hours on platform**

We asked participants how many hours a week they watch online video content on the platform they were being tested on.

**Table 7: Hours on platform across all three brand recall conditions (Study 1: Model-free evidence)**

Hours on platform	Unaided Recall	Aided Recall	Extra Aided Recall
0	19%	19%	28.57%
1	12.5%	62.5%	62.5%
2	0%	0%	0%
4	0%	0%	0%
5	0%	0%	50%
12	100%	100%	100%
20	0%	0%	0%

It is clear from Table 7 that, across all three recall conditions, those who have spent less time on the platforms were better at recalling the advertised brand (except from one person who said s/he spent 12 hours a week on the platform). Except from the person watching 12 hours of content a week, people with 0 hours exposure a week had the highest probability (19%) of recalling the ad. In the aided recall condition, apart from the participant watching 12 hours of content a week, participants who watched one hour of content a week were more likely to recall the brand (62.5%) than others. The same results occurred in the extra aided recall condition. The depiction in Figure 6 also clearly shows that lower previous exposure to the online platform makes a big difference in participants being able to recall the brand across all three conditions, except for the one participant who indicated watching 12 hours of content a week.



**Figure 6: Number of hours across the three different brand recall conditions (Study 1)**

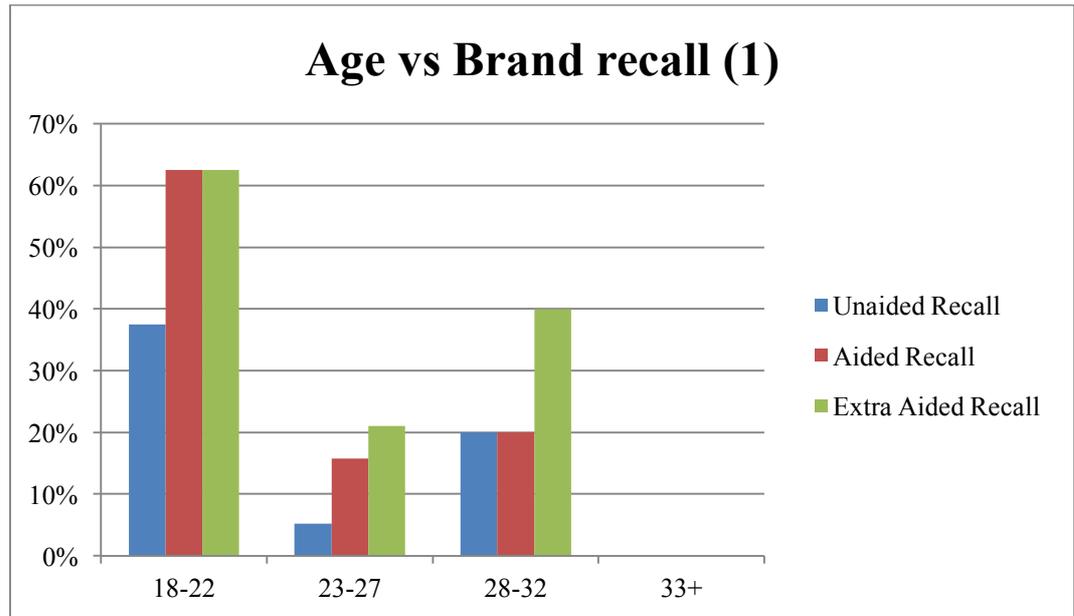
**4.1.1.4 Age**

In order to discuss the age variable, we have segmented the participants into four age groups (see Table 8). This is done in order to examine the tendencies found in the data.

**Table 8: Age across all three brand recall conditions (Study 1: Model-free evidence)**

Age	Unaided Recall	Aided Recall	Extra Aided Recall
18-22	37.5%	62.5%	62.5%
23-27	5.26%	15.79%	21.05%
28-32	20%	20%	40%
33+	0%	0%	0%

Table 8 shows that younger participants have a higher percentage of recalling the brand, and the older participants have a harder time at recalling the brand across all three conditions. 18 to 22 year olds were most likely to recall the brand across all three brand conditions, followed by the group of 28-32, 23-27 and finally the 33 plus group. The graph in figure 7 depicts these results.



**Figure 7: Brand recall across different age groups (Study 1)**

**4.1.2 Study 2**

For study 2, we gathered 24 respondents that were split equally into the two sample groups (i.e. one or two ad exposures). As in study 1, our analysis starts with a series of tables and graphs that describe the distribution of our data in each of the variables across the different levels of brand recall.

**4.1.2.1 Frequency of ad exposure**

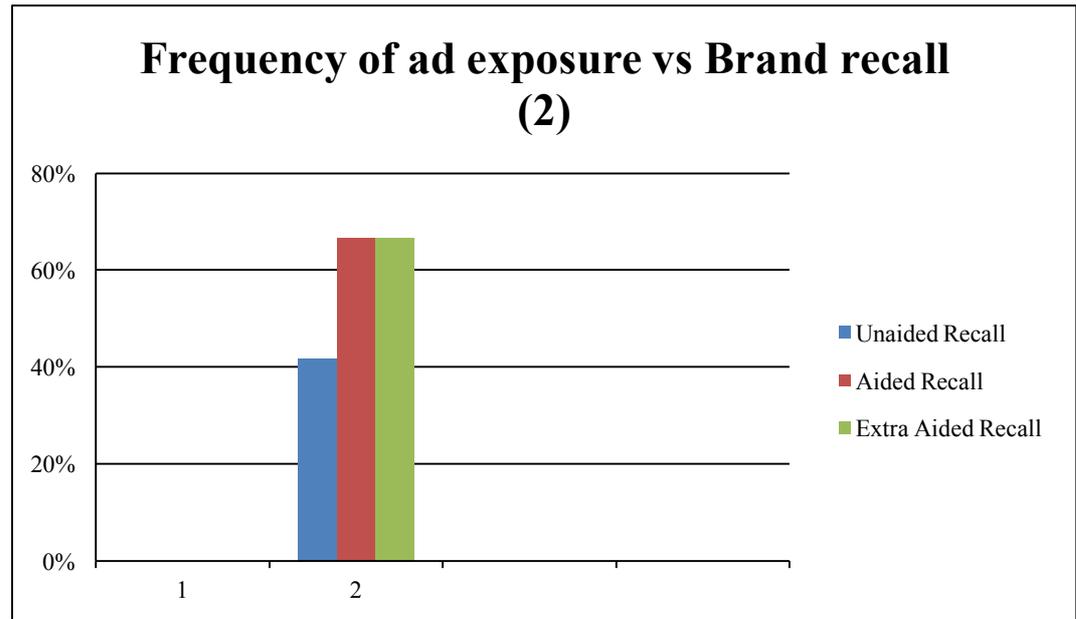
Table 8 shows the distribution of participants across recall conditions when they were exposed to the video ad on one occasion (i.e. Frequency = 1) and on two occasions (i.e. Frequency = 2).

**Table 9: Frequency across all three brand recall conditions (Study 2: Model-free evidence)**

Frequency	Unaided Recall	Aided Recall	Extra Aided Recall
1	0%	0%	0%
2	41.67%	66.67%	66.67%

As we can see in Table 9, none of the participants that were exposed to the ad on one opportunity recalled the brand. This is the case for all three conditions,

meaning that the presence of cues did not play a role in triggering recall. In the case of Frequency = 2, quite a high percentage of participants managed to recall the brand without being exposed to any triggers (i.e. 41.67%). Furthermore, the presence of the first trigger had a positive effect on recall, increasing its level to 66.67%, whereas the second trigger had no effect whatsoever (i.e. recall levels remained at 66.67%). Figure 8 illustrates the drastic difference between these two exposure conditions, which will be further analyzed in Section 4.2.2.



**Figure 8: Brand recall across frequencies of exposure (Study 2)**

**4.1.2.2 Satisfaction**

As in study 1, we asked participants how satisfied they were with the viewing experience on a scale from 1 to 10. Table 10 shows the behavior of the different participants across recall conditions according to their level of satisfaction.

**Table 10: Satisfaction across all three brand recall conditions (Study 2: Model-free evidence)**

Satisfaction	Unaided Recall	Aided Recall	Extra Aided Recall
1	0%	0%	0%
2	0%	50%	50%
3	75%	100%	100%
4	50%	50%	50%

5	0%	0%	0%
6	33.33%	66.67%	66.67%
7	0%	0%	0%
8	0%	0%	0%
9	0%	0%	0%
10	0%	0%	0%

In the case of satisfaction with the overall viewing experience, our data shows similar patterns between the unaided and aided conditions. We see that low satisfaction levels resulted in higher levels of recall across all conditions, with Satisfaction = 3 being the highest at 75% for aided and 100% for aided and extra aided. unaided being the highest one at 60% at Satisfaction = 3. On the other hand, high satisfaction levels indicated lower levels of recall in all three conditions, with Satisfaction = 7 and onwards resulting in no recall. This indicates that participants who were less satisfied with their viewing experience were more capable to recall the brand than those who were satisfied. Lastly, there is no difference in behavior between the two aided conditions, meaning that the presence of an additional trigger did not impact the participant’s ability to recall the brand under this variable. Figure 9 depicts the clear distinction in recall between low and high satisfaction levels.



**Figure 9 Brand recall across satisfaction levels (Study 2)**

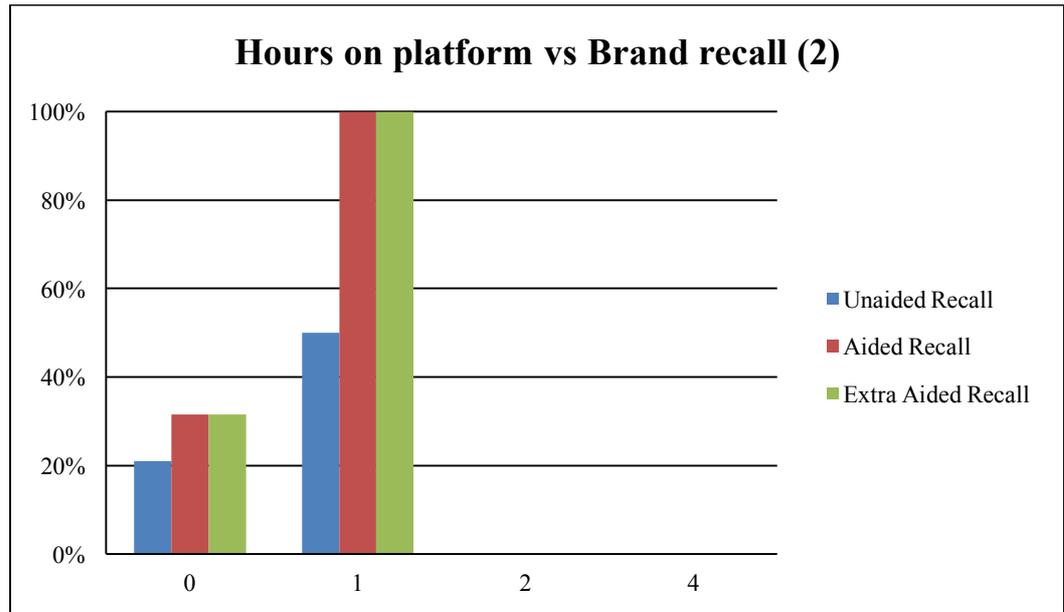
#### 4.1.2.3 Hours on platform

Our third variable in this study was previous exposure to the television-streaming platform Viafree. Alike study 1, we asked participants to disclose the average number of hours per week that they spend watching video content on this platform. Table 11 represents how previous exposure corresponds to the different recall conditions.

**Table 11: Hours on platform across all three brand recall conditions (Study 2: Model-free evidence)**

Hours on platform	Unaided Recall	Aided Recall	Extra Aided Recall
0	21.05%	31.58%	31.58%
1	50%	100%	100%
2	0%	0%	0%
4	0%	0%	0%

Based on the data presented above, we see that low previous exposure results in the highest levels of recall. For those participants who watch one hour of content a week, recall levels are at their highest in all conditions, with aided and extra aided being on top (i.e. 100%). No previous exposure to Viafree yields lower recall levels (i.e. unaided = 21.05%; aided and extra aided = 31.58%), but nevertheless higher than the rest. Neither of the participants who watch two hours of content or more a week recalled the brand. As in the case of satisfaction, the presence of an additional trigger did not have an impact on the participant's ability to recall the brand. Figure 10 illustrates the levels of recall across conditions based on previous exposure to Viafree.



**Figure 10: Brand recall based on previous exposure to Viafree (Study 2)**

**4.1.2.4 Age**

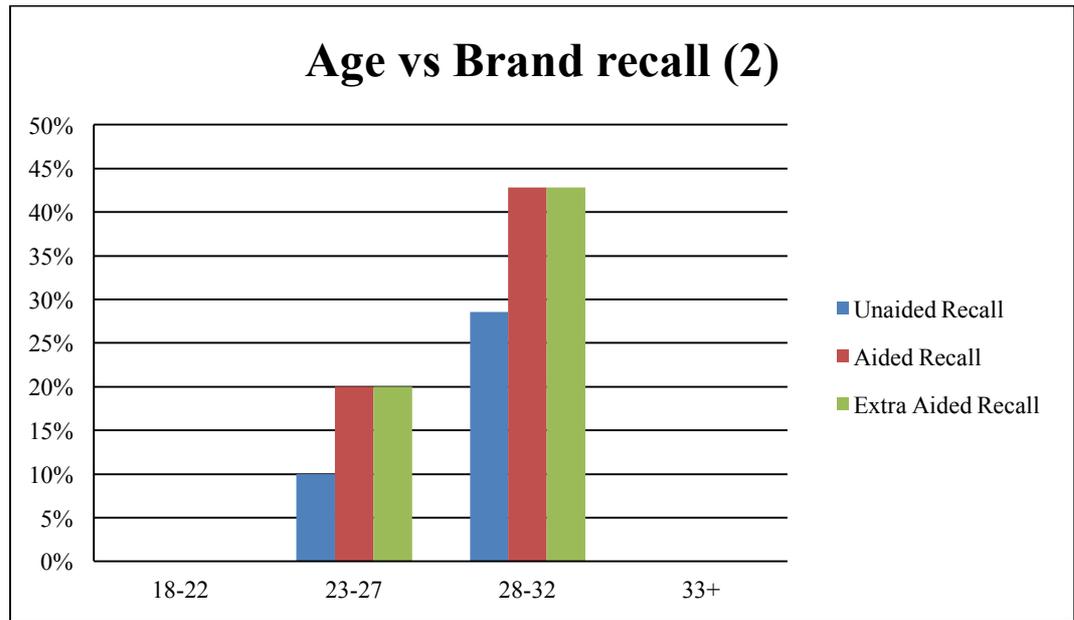
Finally, the age of the participants was also evaluated in this study. Table 12 shows how different age groups performed in recalling the brand.

**Table 12: Age across all three brand recall conditions (Study 2: Model-free evidence)**

Age	Unaided Recall	Aided Recall	Extra Aided Recall
18-22	0%	0%	0%
23-27	10%	20%	20%
28-32	28.57%	42.86%	42.86%
33+	0%	0%	0%

We see that, out of all the participants who recalled the brand, those at the ends of the age range (i.e. 18-22 and 33+) did not perform well, resulting in no recall across all three conditions. Participants in the group 28-32 performed best, with unaided recall at 28.57%, and aided and extra aided at 42.86%. As we see in the table, this group belongs to the older end of the age range. Lastly, the group 23-27 showed low levels of recall, with unaided at 10%, and aided and extra aided at 20%. Again, the presence of an additional cue did not play a role in triggering

recall. Figure 11 depicts the behavior of each of the age groups in terms of recalling the brand.



**Figure 11: Brand recall across age groups (Study 2)**

## 4.2 Statistical analysis

For each of our studies, we decided to run a logistic regression analysis that would illustrate the effects of the variables combined on the categorical dependent variable (i.e. brand recall). As we are interested in determining the probability of recall across all three conditions (i.e. unaided, aided, and extra aided) based on a set of variables that may or may not have a significant effect, this type of analysis was the most appropriate. In Table 13 below, we present an overview of the different variables used in both study 1 and study 2 along with an explanation of each of them in the context of our research.

**Table 13: Overview of variables included in the studies**

Variable	Description	Explanation
<b>Platform</b>	Type of platform the participant was exposed to during the study	VG TV (news-streaming platform), YouTube (video-sharing platform), Viafree (television-streaming platform)

<b>Satisfaction</b>	How satisfied the participant was with viewing experience on platform	On a scale from 1 to 10 (1 = not at all satisfied, 10 = very satisfied), how would you rate your overall viewing experience?
<b>Hours_Platform</b>	Number of hours spent watching online video content on platform assigned to the participant during the study	How many hours a week do you watch online video content on... (YouTube / VG TV / Viafree)?
<b>Age</b>	The age of the participant	18 – 43 years old
<b>Frequency</b>	Frequency of ad exposure on Viafree	One (i.e. pre-roll) or two exposures (i.e. pre-roll and mid-roll)

#### 4.2.1 Study 1

In study 1, we want to investigate what effect platform, satisfaction, hours spent on platform as well as age has on the different recall conditions, and what the probability is of recalling the advertised brand in each recall condition. The different models in this study are expressed as:

$$\text{Unaided Recall} \cong Z = \beta_0 + \beta_1 \text{Platform} + \beta_2 \text{Satisfaction} + \beta_3 \text{Hours\_Platform} + \beta_4 \text{Age}$$

$$\text{Aided Recall} \cong Z = \beta_0^* + \beta_1^* \text{Platform} + \beta_2^* \text{Satisfaction} + \beta_3^* \text{Hours\_Platform} + \beta_4^* \text{Age}$$

$$\text{Extra Aided Recall} \cong Z = \beta_0^{**} + \beta_1^{**} \text{Platform} + \beta_2^{**} \text{Satisfaction} + \beta_3^{**} \text{Hours\_Platform} + \beta_4^{**} \text{Age}$$

We start by analyzing our first dependent variable unaided recall, then move on to aided recall, which is finally followed by extra aided recall as our dependent variable.

#### ***4.2.1.1 Unaided recall***

All outputs discussed in this section can be found in Appendix 2.

##### *4.2.1.1.1 Model fit*

The “Model-Chi Square” shows a drop in -2LL of 10.091 and is significant at the 10% level ( $p = 0.073 > .1$ ), indicating that there is a significant difference at the 10% level between the null and the full model, with the null model being that which does not include any of the variables presented above (i.e. it only features the constant  $\beta_0$ ).

The “Cox & Snell R Square” takes a value of .233, and therefore does not represent a very good quality level. However, the “Nagelkerke R Square” shows a more promising statistic of .401.

The classification table shows an increase from 84.2% correctly classified participants in the null model to 86.8% of correctly classified in the full model, which is a very good score.

##### *4.2.1.1.2 Variable interpretation*

Table 14 shows an overview of the variables included in the equation. The only significant variable at the 10% significance level was satisfaction ( $\beta = -.499$ ;  $p = .087 < 0.10$ ). However, we will continue with an interpretation of the strength and direction of the betas.

We see that, compared to VG TV, Viafree ( $\beta_{1\_viafree} = -20.121$ ;  $p = .998 > .05$ ) has a lower beta than YouTube ( $\beta_{1\_YouTube} = -.073$ ;  $p = .952 > .05$ ); however, neither is significant. This indicates that participants are more likely to recall the brand on VG TV than on Viafree or YouTube, which is in line with  $H_{1a}$ . We can also see that brand recall is more likely on YouTube than on Viafree; however, these variables are not significant either. Satisfaction ( $\beta_2 = -.499$ ;  $p = .087 < 0.1$ ) has a significant ( $\alpha = 10\%$ ) negative effect on brand recall, congruent with  $H_2$ ,

stating that the more satisfied the participants were with the overall viewing experience during the study, the less they paid attention to the advertised brands. We therefore reject the null hypothesis. We see in Table 14 that the odds ratio of satisfaction decreases by .607 for every unit change in satisfaction. The more hours the participants watched the platform regularly outside of the study indicated that the better they were able to recall the brand ( $\beta_3 = .013$ ;  $p = .908 > .05$ ); however, this variable was not significant. This would go against  $H_3$ , stating that spending more time on a platform would lead to less focus on the ads. However, in order to support this opposite statement, it would have to be tested in a further study. Age has a rather small but negative and non-significant impact of  $\beta_4 = -.080$  ( $p = .502 > .05$ ), implying that the older the participant, the less likely he/she is to remember the advertised brand. This goes against our theory described in  $H_4$  that younger people are more experienced in using online media and are likely to multitask; however, further research would be required in order to confirm the opposite effect.

**Table 14: Variables in the Equation (DV: Unaided Brand Recall)**

	$\beta$	S.E.	Wald	df	Sig.	Exp(B)
VG TV			.004	2	.998	
Viafree	-20.121	10523.167	.000	1	.998	.000
YouTube	-.073	1.219	.004	1	.952	.930
Satisfaction	-.499	.291	2.929	1	.087	.607
Hours_Platform	.013	.114	.013	1	.908	1.013
Age	-.080	.120	.452	1	.502	.923
Constant	3.633	3.485	1.087	1	.297	37.826

In order to illustrate the equation and probability calculation, we use the following example in Table 15:

**Table 15: Example Unaided Brand Recall**

Variable	$\beta$	Example

Platform	-.073	YouTube
Satisfaction	-.499	1
Hours_Platform	.013	10
Age	-.080	18
$Z = \beta_0 + \beta_1 Platform + \beta_2 Satisfaction + \beta_3 Hours\_Platform + \beta_4 Age$		
$Z = 3.633 + (-0.073) + (-0.499 * 1) + (0.013 * 10) + (-0.08 * 18) = 1.751$		
With a probability of: $p = \frac{e^{1.751}}{1 + e^{1.751}} = 0.8521$		

This example demonstrates that a young person watching content on YouTube, who usually spends a lot of time on the platform and is not very satisfied with the viewing experience has a probability of 85.21% of recalling the brand. However, since most variables were not significant, this merely provides an example of calculating probabilities.

**4.2.1.2 Aided recall**

All outputs discussed in this section can be found in Appendix 3.

*4.2.1.2.1 Model fit*

The “Model-Chi Square” for the unaided recall model is 16.043 ( $p = .007 < .10$ ), which is significant at the 10% level, indicating that the full model is better than the null model. The “Cox & Snell R Square” has a value of .344, which is rather low, indicating a low model fit. The “Nagelkerke R Square” statistic shows a value of .503 meaning that the model fit is acceptable.

The classification table of the null model shows that the model correctly classifies 73.7% of the participants. In comparison, the full model shows that the model correctly classifies 84.2% of the participants, which is rather good. This improved number represents that the extra variables add value to the model.

4.2.1.2.2 Variable interpretation

YouTube ( $\beta_{1\_YouTube}^* = 2.056, p = .096 < .10$ ) and satisfaction ( $\beta_2^* = -.520, p = .047 < .05$ ) were the only variables that were significant at the 10% and 5% significance level respectively. However, we will continue with an interpretation of the strength and direction of all the variables included in the study (see Table 16).

In the aided recall study, we see that Viafree ( $\beta_{1\_viafree}^* = -20.271, p = .998 > .05$ ) has a negative but not significant beta in comparison to VG TV, meaning that aided brand recall on Viafree is less than on VG TV. YouTube has a beta of  $\beta_{1\_YouTube}^* = 2.056$  ( $p = .096 < .10$ ), which is significant at a 10% level, meaning that compared to YouTube, participants on VG TV have a harder time recalling the brand in the aided recall scenario. This is in line with  $H_{1b}$ , stating that on online video-sharing platforms, aided brand recall would be stronger than on other online video platforms, hence we reject the null hypotheses. Satisfaction with the viewing experience has a significant ( $\alpha = 5\%$ ) negative impact on aided brand recall ( $\beta_2^* = -.520; p = .047 < .05$ ). This is in alignment with  $H_2$  stating that participants are so wrapped up in the content of the video and the viewing experience that they blend out the advertisement; we therefore reject the null hypotheses. Table 16 shows that the odds ratio of satisfaction decreases by .594 for every unit change in satisfaction. The weekly number of hours the participant spends on the assigned platform outside of the study has a negative but not significant impact on aided brand recall ( $\beta_3^* = -.100; p = .355 > .05$ ). This supports our reasoning of  $H_3$  that the more hours spent on watching online video content on the platform; the less they pay attention the advertised brands. This reasoning would have to be further tested in additional studies. Age has a slightly negative but not significant impact ( $\beta_4^* = -.077; p = .501 > .05$ ) and this therefore indicates that, in the aided recall condition, participants who are older are increasingly likely to recall the brand, as explained by  $H_4$ .

**Table 16: Variables in the Equation (DV: Aided Brand Recall)**

	$\beta$	S.E.	Wald	df	Sig.	Exp(B)
VG TV			2.764	2	.251	

Viafree	-20.271	10400.113	.000	1	.998	.000
YouTube	2.056	1.237	2.764	1	.096	7.813
Satisfaction	-.520	.262	3.956	1	.047	.594
Hours_Platform	-.100	.108	.855	1	.355	.905
Age	-.077	.115	.452	1	.501	.926
Constant	3.795	3.257	1.357	1	.244	44.465

In order to demonstrate an example of equation and the probability calculation, we use the following example (see Table 17):

**Table 17: Example Aided Brand Recall**

Variable	$\beta$	Example
Platform	2.056	YouTube
Satisfaction	-.520	10
Hours_Platform	-.100	20
Age	-.077	15
$Z = \beta_0^* + \beta_1^* Platform + \beta_2^* Satisfaction + \beta_3^* Hours\_Platform + \beta_4^* Age$		
$Z = 3.795 + 2.056 + (-0.520 * 10) + (-0.100 * 20) + (-0.077 * 15) = -2.504$		
With a probability of: $p = \frac{e^{-2.504}}{1 + e^{-2.504}} = 0.0756$		

A young person watching an online video on YouTube, who on average spends 20 hours on the platform and is extremely satisfied with the viewing experience, has a probability of 7.56% of aided brand recall. Most variables used in this example were not significant, so therefore this merely presents an example of calculating probabilities.

### 4.2.1.3 Extra aided recall

All outputs discussed in this section can be found in Appendix 4.

#### 4.2.1.3.1 Model fit

The “Model Chi-Square” of the Extra Aided Recall model is 24.571, which is significant ( $p = .000 < .001$ ), suggesting an excellent model fit. The “Cox & Snell R Square” is .476, indicating a good model fit. The “Nagelkerke R Square” is .651, representing a good model fit. Looking at the Classification Table the null model correctly assigns 63.2% of the participants, whereas in the full model correctly assigns 81.6% of the participants, implying that we should continue our analysis with the full model.

#### 4.2.1.3.2 Variable interpretation

YouTube ( $\beta_{1\_YouTube}^{**} = 3.804$ ;  $p = .041 < .05$ ) and satisfaction ( $\beta_2^{**} = -.793$ ;  $p = .032 < .05$ ) are the only variables in the extra aided recall condition, which are significant at the 5% level (see Table 18). However, we will continue with an interpretation of the strength and direction of all the betas of the variables included in the model. The platform variable shows us that compared to VG TV, Viafree has a negative but not significant impact on extra aided brand recall ( $\beta_{1\_Viafree}^{**} = -21.310$ ,  $p = .998 > .05$ ), therefore indicating a trend going against  $H_{1c}$ . YouTube ( $\beta_{1\_YouTube}^{**} = 3.804$ ;  $p = .041 < .05$ ), has a positive and significant impact on extra aided brand recall compared to VG TV meaning that participants on YouTube are more likely to recall the advertised brand in the extra aided recall condition than on VG TV, hence we reject the null hypotheses. Satisfaction significantly decreases the ability to recall the brand in the extra aided recall scenario ( $\beta_2^{**} = -.793$ ;  $p = .032 < .05$ ) in accordance with  $H_2$ , we therefore reject the null hypotheses. The odds ratio of satisfaction decreases by .452 for every unit change in satisfaction (see Table 18). The number of hours participants use the platform outside of the study ( $\beta_3^{**} = -.148$ ;  $p = .181 > .05$ ) affects extra aided recall negatively, however not significantly, thus only hinting that  $H_3$  could be right. Age has a positive but not significant beta of  $\beta_4^{**} = .199$  ( $p = .123 > .05$ ). This suggests that the older the participant, the more likely s/he is to recall the brand in the extra aided recall scenario, which would be in accordance with  $H_4$ .

**Table 18: Variables in the Equation (DV: Extra Aided Brand Recall)**

	$\beta$	S.E.	Wald	df	Sig.	Exp(B)
VG TV			4.193	2	.123	
Viafree	-21.310	9621.666	.000	1	.998	.000
YouTube	3.804	1.858	4.193	1	.041	44.862
Satisfaction	-.793	.369	4.624	1	.032	.452
Hours_Platform	-.148	.110	1.790	1	.181	.863
Age	.199	.129	2.375	1	.123	1.220
Constant	-1.447	3.232	.200	1	.654	.235

In order to demonstrate the equation and probability calculation, we use the following example in Table 19:

**Table 19: Example Extra Aided Brand Recall**

Variable	$\beta$	Example
platform	-21.310	Viafree
Satisfaction	-.793	10
Hours_Platform	-.148	0
Age	.199	40
$Z = \beta_0^{**} + \beta_1^{**} Platform + \beta_2^{**} Satisfaction + \beta_3^{**} Hours\_Platform + \beta_4^{**} Age$		
$Z = (-1.447) + (-21.310) + (-0.793 * 10) + (-0.148 * 0) + (0.199 * 40) = -22.727$		
With a probability of: $p = \frac{e^{-22.727}}{1 + e^{-22.727}} = 0$		

A participant on Viafree who is very satisfied with the viewing experience, has never used it before and is 40 years old has a probability of 0% for extra aided brand recall. Again, not all variables used are significant, therefore only demonstrating how probabilities can be calculated.

#### ***4.2.1.4 Discussion Study 1***

Comparing the different types of brand recall on different platforms we see that only some of the variables are significant. In the unaided recall condition, only satisfaction ( $\alpha = 10\%$ ) is significant; in the aided recall condition, satisfaction ( $\alpha = 5\%$ ) and YouTube ( $\alpha = 10\%$ ) are significant; and in the extra aided recall condition, satisfaction ( $\alpha = 5\%$ ) and YouTube ( $\alpha = 5\%$ ) are significant. We can therefore say that satisfaction with the viewing experience is a significant determinant of brand recall, and  $H_2$  was fulfilled across all three brand recall conditions, thereby rejecting the null hypothesis. Since satisfaction has a negative beta across recall conditions, this implies that the more viewers are satisfied with the overall viewing experience, the less they pay attention to the brand. YouTube was significantly different from VG TV in the aided and extra aided recall condition, thereby satisfying  $H_{1b}$  and rejecting the null hypothesis. Hereby stating that on video-sharing platforms, participants are exposed to a platform with more clutter and distractions (shares, likes, comments), and their motivation being that of entertainment rather than goal-oriented (Barbato & Perse, 1992; Bondad-Brown et al., 2012), which leads to weaker unaided brand recall but a significant need of extra triggers in order to recall the brand in the aided and extra aided recall condition. Compared to the unaided recall condition, in which VG TV had a stronger beta than YouTube, this would concur with  $H_{1a}$ , that on news-streaming platforms participants are more focused on gaining information, and therefore overall more focused on the viewing experience (Flavian & Gurrea, 2007; Vincent & Basil, 1997; Perse, 1992). However, this variable was not significant and would have to be further investigated.

Despite only these few variables being significant, we decided to nevertheless provide an analysis of the additional variables. The probabilities presented in the examples, however, may be limited in terms of accuracy. Our findings indicate that the more hours participants spent on the platform outside of this study, the better they were able to recall the brand in the unaided condition, but the less they were able to recall it across the aided and extra aided recall scenarios. For the unaided recall condition, this is in contradiction to  $H_3$ , implying that the more hours the participant spends on the platform, the more likely they are to recall the brand without any additional triggers. According to Li and Lo (2015) and Nelson and Meyvis (2008), however, the more a person has been exposed to ad stimuli,

the less these stimuli will impact them. A possible explanation for the opposite outcome could be that these participants had been exposed to the same advertisements before, and therefore were able to recall the brands without additional stimulation. This would be an interesting topic for further research. Age had a negative effect in the unaided and aided recall situation, and a positive one in the extra aided condition. This contradicts H<sub>4</sub>, stating that the younger the participants, the easier it is for them to navigate on an online platform and the more likely they are to multitask, therefore not registering the advertised brands (Teo, 2001; Bondad-Brown et al., 2012). Younger people are considered to be “tech-savvy” and “addicted to the internet” (Thurlow, 2007), underlining how much time they spend online. According to Williams and Page (2011), in order to connect with a younger generation, electronic and visual communication should be used in order to motivate them. Older generations demand access to information and educational content when being communicated with (Williams & Page, 2011). An explanation for the result being the opposite of our defined H<sub>4</sub>, is that online video advertising might be able to capture young people’s attention better than other forms of online advertising by stimulating them through moving pictures.

#### 4.2.2 Study 2

Our main focus in study 2 is to determine whether frequency of ad exposure in a television-streaming platform (i.e. Viafree) has an effect on brand recall. As in study 1, we also incorporate other variables that may play a role in this interaction (i.e. Satisfaction, Hours\_Platform, and Age). Our models for each of the scenarios that will be analyzed are expressed as follows (note the change in coefficients from  $\beta$  to  $\gamma$ ):

$$\text{Unaided Recall} \cong Z = \gamma_0 + \gamma_1 \text{ Frequency} + \gamma_2 \text{ Satisfaction} + \gamma_3 \text{ Hours\_Platform} + \gamma_4 \text{ Age}$$

$$\text{Aided Recall} \cong Z = \gamma_0^* + \gamma_1^* \text{ Frequency} + \gamma_2^* \text{ Satisfaction} + \gamma_3^* \text{ Hours\_Platform} + \gamma_4^* \text{ Age}$$

$$\text{Extra Aided Recall} \cong Z = \gamma_0^{**} + \gamma_1^{**} \text{ Frequency} + \gamma_2^{**} \text{ Satisfaction} + \gamma_3^{**} \text{ Hours\_Platform} + \gamma_4^{**} \text{ Age}$$

#### 4.2.2.1 *Unaided recall*

All outputs discussed in this section can be found in Appendix 5.

##### 4.2.2.1.2 *Model fit*

We start by analyzing both the zero-model and the full model presented in the output. We see that the percentage of correct predictions is the same in both (i.e. 79.2%), based on the number of observed and predicted cases. In order to determine the suitability of the model, we look at the Model Chi-square and -2 Log likelihood values. As the -2LL value in the model is relatively low (i.e. 16.206), we can say that its quality is rather high. The Chi-square value (i.e. 8.357) reveals that the transition from the zero-model to the full model results in a drop in the -2LL of 8.357 (i.e. for the zero-model, the -2LL value is then 24.563). This change is significant at the 10% level ( $p = 0.079 < 0.10$ ), which allows us to draw two conclusions: (1) the full model is better than the zero-model; and (2) at least one of the regression coefficients of the variables in the study differs from zero ( $H_0$ : all of the regression coefficients in the full model, excluding the constant, are zero).

Despite the conclusions stated above, the R Square values in the model tell a different story. We see that both values (i.e. Cox & Snell and Nagelkerke) are on the lower end of the 0-1 range at 0.294 and 0.459, respectively, which indicates a lower quality of the full model.

##### 4.2.2.1.3 *Variable interpretation*

When we go through the different logistic regression coefficients, we see that they each have a different effect on the probability that a person with different frequency of exposure will recall the ad without any triggers (see Table 20). The Frequency variable shows that a change in frequency of ad exposure from 1 to 2 has a positive but not significant effect on brand recall of  $\gamma_1 = 20.548$  ( $p = 0.99 > 0.05$ ). On the other hand, Satisfaction and Hours\_Platform show a different pattern, with a negative but not significant effect of  $\gamma_2 = -0.090$  ( $p = 0.86 > 0.05$ ) and  $\gamma_3 = -0.699$  ( $p = 0.77 > 0.05$ ), respectively. This implies that if a participant is more satisfied with the viewing experience they have a slightly lower probability of recalling the ad. Similarly, the more hours a participant usually spends watching content on Viafree, the less likely they are to recall the advertisement.

Lastly, Age indicates that older participants have a lesser probability of unaided brand recall ( $\gamma_4 = -0.043$ ;  $p = 0.91 > 0.05$ ); however, its non-significant values show that further research needs to be done.

**Table 20: Variables in the Equation (Study 2; DV: Unaided Brand Recall)**

	$\gamma$	S.E.	Wald	df	Sig.	Exp(B)
Frequency	20.548	11267.182	.000	1	.999	838849191.800
Satisfaction	-.090	.507	.031	1	.860	.914
Hours_Platform	-.699	2.386	.086	1	.770	.497
Age	-.043	.386	.012	1	.912	.958
Constant	-39.794	22534.367	.000	1	.999	.000

In order to demonstrate the equation and probability calculation, we use the following example in Table 21:

**Table 21: Example Unaided Brand Recall (Study 2)**

Variable	$\gamma$	Example
Frequency	20.548	2
Satisfaction	-0.090	3
Hours_Platform	-0.699	0
Age	-0.043	21
$Z = \gamma_0 + \gamma_1 \text{ Frequency} + \gamma_2 \text{ Satisfaction} + \gamma_3 \text{ Hours\_Platform} + \gamma_4 \text{ Age}$		
$Z = -39.794 + 20.548 * 2 + -0.090 * 3 + -0.699 * 0 + -0.043 * 21 = 0.129$		
With a probability of: $p = \frac{e^{0.129}}{1 + e^{0.129}} = 0.5322$		

Based on the results presented above, a 21-year-old that has been exposed to an ad on two opportunities (i.e. pre-roll and mid-roll) who does not watch video content

on Viafree and has a low satisfaction level (i.e. 3 out of 10) has a 53.22% probability of recalling the brand being advertised without any cues. As the coefficients used to calculate these probabilities are not significant, this is simply a demonstration of the behavior that our findings seem to indicate.

#### ***4.2.2.2 Aided recall***

All outputs discussed in this section can be found in Appendix 6.

##### *4.2.2.2.1 Model fit*

In the case of aided recall, the percentage of correct predictions differs between the zero-model and the full model, with the former predicting an overall 66.7% of the cases and the latter a higher 79.2%. This indicates that the model with the included variables does a better job in predicting the outcome of each case, as opposed to the model that only includes the constant. In order to determine the suitability of the model, we look at the Model Chi-square and -2 Log likelihood values. As the -2LL value in the model is relatively low (i.e. 13.155), we can say that its quality is rather high. The Chi-square value reveals that the transition from the zero-model to the full model results in a drop in the -2LL of 17.398 (i.e. for the zero-model, the -2LL value is then 30.553). This change is significant at the 5% level ( $p = 0.002 < 0.05$ ), which allows us to draw the same conclusions as in the unaided scenario: (1) the full model is better than the zero-model; and (2) at least one of the regression coefficients of the variables in the study differs from zero.

The R Square values support the findings presented above. We see that the Cox & Snell R Square is around the middle of the 0-1 range (i.e. 0.516) whereas the Nagelkerke R Square is closer to 1 (i.e. 0.716), which indicates a higher quality of the full model.

##### *4.2.2.2.2 Variable interpretation*

Looking at the different logistic regression coefficients, we notice that they each have a different effect on the probability that a person with different frequency of exposure will recall the ad with the presence of a trigger (see Table 22). Following a similar but more pronounced pattern as in the unaided recall condition, the  $\gamma$  in Frequency shows that a change in frequency of ad exposure from 1 to 2 has a

positive but not significant effect on aided recall of  $\gamma_1^* = 138.060$  ( $p = 0.995 > 0.05$ ). Similarly, Hours\_Platform also has a positive but not significant effect equal to  $\gamma_3^* = 29.994$  ( $p = 0.995 > 0.05$ ), implying that, in this condition, the more hours the participant spends on Viafree, the more likely they are to recall the ad. On the other hand, Satisfaction has a negative but not significant effect of  $\gamma_2^* = -0.128$  ( $p = 0.806 > 0.05$ ), indicating that if a participant is more satisfied with the viewing experience they are slightly less likely to recall the ad, which is in line with the unaided condition. The effect of the Age variable is also equivalent to that in the previous condition, meaning that older participants once again have a lesser probability of aided brand recall ( $\gamma_4^* = -0.222$ ;  $p = 0.589 > 0.05$ ), but this needs to be addressed in future research due to its non-significant values.

**Table 22: Variables in the Equation (Study 2; DV: Aided Brand Recall)**

	$\gamma$	S.E.	Wald	df	Sig.	Exp(B)
Frequency	138.060	21011.882	.000	1	.995	9.097E+59
Satisfaction	-.128	.522	.060	1	.806	.880
Hours_Platform	29.994	4961.336	.000	1	.995	1.062E+13
Age	-.222	.411	.291	1	.589	.801
Constant	-268.884	42023.768	.000	1	.995	.000

In order to demonstrate the equation and probability calculation, we use the following example in Table 23:

**Table 23: Example Aided Brand Recall (Study 2)**

Variable	$\gamma$	Example
Frequency	138.060	1
Satisfaction	-0.128	9
Hours_Platform	29.994	4.5
Age	-0.222	26

$Z = \gamma_0^* + \gamma_1^* \text{Frequency} + \gamma_2^* \text{Satisfaction} + \gamma_3^* \text{Hours\_Platform} + \gamma_4^* \text{Age}$
$Z = -268.884 + 138.060 * 1 + -0.128 * 9 + 29.994 * 4.5 + -0.222 * 26 = -2.775$
With a probability of: $p = \frac{e^{-2.775}}{1 + e^{-2.775}} = 0.0587$

Based on the results presented above, a 26-year-old that has been exposed to an ad on one opportunity (i.e. pre-roll) who watches an average of 4.5 hours of video content on Viafree a week and has a high satisfaction level (i.e. 9 out of 10) has a 5.87% probability of recalling the brand being advertised with the presence of a trigger. Again, the fact that the coefficients used to calculate these probabilities are not significant means that we are only able to demonstrate the behavior that our findings seem to indicate.

**4.2.2.3 Extra aided recall**

After running the regression analysis for the extra aided recall condition, we notice that the values under model fit and variable interpretation are equal to those in the previous scenario, due to the fact that there are no changes in the dependent variable between these two conditions (i.e. aided and extra aided). In line with the previous conditions, we demonstrate the equation and probability calculation with the following example in Table 24:

**Table 24: Example Extra Aided Brand Recall (Study 2)**

Variable	$\gamma$	Example
Frequency	138.060	2
Satisfaction	-0.128	5
Hours_Platform	29.994	0
Age	-0.222	19
$Z = \gamma_0^{**} + \gamma_1^{**} \text{Frequency} + \gamma_2^{**} \text{Satisfaction} + \gamma_3^{**} \text{Hours\_Platform} + \gamma_4^{**} \text{Age}$		

$$Z = -268.884 + 138.060 * 2 + -0.128 * 5 + 29.994 * 0 + -0.222 * 19 = 2.378$$

$$\text{With a probability of: } p = \frac{e^{2.378}}{1 + e^{2.378}} = 0.9151$$

Based on the results presented above, a 19-year-old that has been exposed to an ad on two opportunities (i.e. pre-roll and mid-roll) who does not watch video content on Viafree and has a medium satisfaction level (i.e. 5 out of 10) has a 91.51% probability of recalling the brand being advertised after being exposed to an extra trigger. As in the previous two cases, we can only demonstrate the behavior that our results seem to indicate as none of the coefficients used to calculate these probabilities are significant.

#### ***4.2.2.4 Discussion Study 2***

The results of study 2 indicate that increasing frequency of ad exposure has a positive effect on brand recall in the case of the video platform Viafree across all conditions. When comparing the outcome of each of the exposure conditions (i.e. Frequency = 1 and Frequency = 2), we see that participants seem to be more likely to recall the ad when they are exposed to it on two opportunities (i.e. pre-roll and mid-roll) as opposed to one, which backs the literature (Krugman, 1983). This is in line with H<sub>5</sub>, but as the results obtained are not significant, further research is required. In the case of H<sub>3</sub> regarding previous exposure to the platform, the results show differing positions. The variable Hours\_Platform has a negative effect on unaided recall, whereas it has a positive one on the aided and extra aided conditions. Again, the fact that our variables are not significant means that these trends need to be revised in future studies. This implies that a participant who watches video content on Viafree will be more likely to recall an advertisement with the presence of a trigger, but will be less likely to recall the ad without it. These observations are in line with our findings from the Frequency variable, which indicate that two exposures are more effective than one. In terms of Satisfaction, the effects were the same on all scenarios, meaning that the more satisfied a participant is with their overall viewing experience, the less likely they are to recall the ad (Nelson et al., 2004). These findings are in line with H<sub>2</sub>, but they need to be further studied as the values are not significant. On the other hand, Age had a negative effect on brand recall across all three conditions, which

contradicts H<sub>4</sub>. Although not significant, this indicates that younger participants have a higher probability to recall the brand than their older counterparts. As mentioned in study 1, this opposite outcome of H<sub>4</sub> could be explained by the fact that electronic and visual communication seems to be more effective in connecting with younger generations (Williams & Page, 2011), which means that online video advertising might be more likely to capture their attention than that of older generations. Lastly, it is worth pointing out that the probabilities calculated in the examples may be limited in terms of accuracy, due to the non-significant b values obtained in the outputs.

**4.2.3 Summary of tested hypotheses**

Table 25 below presents an overview of results of study 1 and study 2, represented by the distinction supported/not supported and significance of each of the hypotheses that were tested.

**Table 25: Summary of tested hypotheses**

Hypothesis	Study 1			Study 2		
	Unaided	Aided	Extra Aided	Unaided	Aided	Extra Aided
<i>H<sub>1a</sub>: Unaided brand recall triggered by online video advertising is more effective on online news streaming platforms than on other online video platforms</i>	Supported, but not significant ( $\beta_{1\_viafree} = -20.121$ ; $p = .998 > .05$   $\beta_{1\_youtube} = -.073$ ; $p = .952 > .05$ )  *Reference category: VG TV	N/A	N/A	N/A	N/A	
<i>H<sub>1b</sub>: Aided brand recall triggered by online video advertising is more effective on online sharing platforms than on other platforms</i>	N/A	Supported and significant at $\alpha = 10\%$ ( $\beta_{1\_viafree}^* = -20.271$ ; $p = .998 > .05$   $\beta_{1\_youtube}^* = 2.056$ ; $p = .096 < .1$ )  *Reference category: VG TV	N/A	N/A	N/A	

<i>H<sub>1c</sub>: Extra aided brand recall triggered by online video advertising is more effective on television streaming platforms than on other platforms</i>	N/A	N/A	Not supported and significant at $\alpha = 5\%$ (i.e. online video advertising is more effective on online sharing platforms)  $(\beta_{1\_viafree}^{**} = -21.310;$ $p = .998 > .05  $ $\beta_{1\_YouTube}^{**} = 3.804;$ $p = .041 < .05)$  *Reference category: VG TV	N/A	N/A
<i>H<sub>2</sub>: Higher satisfaction with the overall viewing experience leads to participants paying less attention to ads and, therefore, results in lower brand recall</i>	Supported and significant at $\alpha = 10\%$ $(\beta_2 = -.499;$ $p = .087 < 0.1)$	Supported and significant at $\alpha = 5\%$ $(\beta_2^* = -.520;$ $p = .047 < .05)$	Supported and significant at $\alpha = 5\%$ $(\beta_2^{**} = -.793;$ $p = .032 < .05)$	Supported, but not significant $(\gamma_2 = -0.090;$ $p = 0.86 > 0.05)$	Supported, but not significant $(\gamma_2^* = -0.128;$ $p = 0.806 > 0.05)$
<i>H<sub>3</sub>: Higher previous exposure to platforms that feature online video advertising results in lower brand recall</i>	Not supported, but not significant $(\beta_3 = .013;$ $p = .908 > .05)$	Supported, but not significant $(\beta_3^* = -.100;$ $p = .355 > .05)$	Supported, but not significant $(\beta_3^{**} = -.148;$ $p = .181 > .05)$	Supported, but not significant $(\gamma_3 = -0.699;$ $p = 0.77 > 0.05)$	Not supported, but not significant $(\gamma_3^* = 29.994;$ $p = 0.995 > 0.05)$
<i>H<sub>4</sub>: Younger viewers are generally less involved in an online video viewing session due to more experience on the platform and multitasking, and are therefore less likely to recall the advertised brand</i>	Not supported, but not significant $(\beta_4 = -.080;$ $p = .502 > .05)$	Not supported, but not significant $(\beta_4^* = -.077;$ $p = .501 > .05)$	Supported, but not significant $(\beta_4^{**} = .199;$ $p = .123 > .05)$	Not supported, but not significant $(\gamma_4 = -0.043;$ $p = 0.91 > 0.05)$	Not supported, but not significant $(\gamma_4^* = -0.222;$ $p = 0.589 > 0.05)$
<i>H<sub>5</sub>: On television-streaming platforms, brand recall triggered by online video advertising is more effective if the consumer is exposed to the ad on two opportunities (i.e. pre-roll and mid-roll), as opposed to one (i.e. pre-roll)</i>	N/A	N/A	N/A	Supported, but not significant $(\gamma_1 = 20.548;$ $p = 0.99 > 0.05)$	Supported, but not significant $(\gamma_1^* = 138.060;$ $p = 0.995 > 0.05)$

## 5. Conclusion

Online video platforms are becoming more important for advertisers and media agencies. In our current day and age, people are shifting from watching traditional television to using various online platforms to watch video content when they want and where they want, across devices (BI Intelligence, 2017; Data charts, 2015). With social media companies like Facebook switching to a video-first strategy (Guynn, 2016), advertising on online video platforms is becoming a more important focus in the advertising and media industry (eMarketer, 2016). With the rise in online video platforms and people devoting more time to watching online video content, advertising on these platforms is taking a bigger part of companies' advertising spending (Statista, 2017). It is therefore important to understand the differences between online video platforms and how this affects brand recall. With this study, we were able to add to the literature on online video advertising by testing the differences between online video platforms, as well as what influence previous exposure, satisfaction, age and frequency could potentially have on brand recall.

In order to investigate the effect of online video advertising on different online platforms, we use brand recall. Recall is measuring the memory of a certain stimulus, when that stimulus is not present anymore (Babin & Carder, 1996). This is for example important in order to measure whether an online video viewer would recognize a pizza brand s/he was exposed to during an advertisement, when s/he is trying to decide what pizza to buy in the store. Ideally, the viewer would recognize the brand without the help of any additional triggers (i.e. unaided recall); however, more often than not, people need triggers and cues in order to recall a brand (i.e. aided recall) (Padilla-Walker & Poole, 2002). In our study, we added an additional level of aided recall, in order to give participants several cues to recognize the brands. As presented in theory, more people were able to recall the brand in the aided/extra aided condition than in the unaided condition, implying that people need several cues in order to recall the brand (Donthu et al., 1993). This effect was significant in the YouTube condition, where we found that in the aided and extra aided condition, participants were more likely to recognize the advertised brand on YouTube, an online-sharing platform, than on VG TV, a new-streaming platform. Since behavior on video-sharing platforms such as

YouTube is driven by navigation of the site, following recommendations, liking and commenting, there are many more components that come into play when forming brand recall, than on a new-streaming platform (Barbato & Perse, 1992; Bondad-Brown et al., 2012). We therefore deduct that, in order to properly process an ad on a video-sharing platform, additional triggers are necessary. These triggers could for example be showing the advertisement more than once during the online video, or providing additional cues through other ads such as banners or pop-ups. This would be interesting to explore in further studies.

Being fully immersed in the video platform and being satisfied with the video content has a significant impact on all brand recall conditions. As explained by the Elaboration Likelihood Model (ELM) in order for an advertisement to be thoroughly processed, the viewer of the ad must be highly involved in processing the ad. However, if the viewer of the online video is more focused on enjoying the video viewing experience, this processing of the advertisement does not take place (Nelson et al., 2004). We therefore advise that in order to make online video viewers actively process the ad and recall the brand, the ad must catch the viewer's attention through producing creative and relevant advertisements. Since we do not include the content of the shows watched during the study, or the content of the advertisement in this study, further investigation of this suggestion would be needed. However, research on information relevance has generally found that relevant information results in a more thorough processing, better recall (Rumelhart & Orthony, 1976), and more favorable behavior and attitude changes (Haberland & Dacin, 1992) when compared to irrelevant information. Relational processing, which "emphasizes similarities that unite, connect, or serve to categorize individual pieces of information" (Malaviya et al., 1999, p. 101), was found to make category information salient and enhance recall of product- and category-related themes. This shows that, in the case of online advertising, brand recall is greater in online environments that contain relevant elements of content for the consumer.

### **5.1 Managerial implications**

This research has several managerial implications that companies should take into consideration when allocating resources to online video advertising. Based on our results, people who were satisfied with the overall viewing experience were

unable to recall the brand (i.e. did not process the ad stimuli). Following the findings by Nelson et al. (2004), the content of the ads should grab the consumer's attention to ensure higher levels of recall. This means that advertisers should aim to produce content that is relevant and stimulating for the consumer. Second, in the case of online-sharing platforms such as YouTube, consumers are more likely to recall the ad after being exposed to one or two triggers, which is also in line with the literature (Barbato & Perse, 1992; Bondad-Brown et al., 2012). This indicates that advertisers featuring their video ads on YouTube should rely on extra measures that will increase the likelihood of triggering consumer brand recall (e.g. additional exposures or other types of ads).

The rest of our managerial implications are based on tendencies that we saw in our findings, but they need to be further researched due to the non-significant results obtained. When it comes to placing video ads on news-streaming platforms, our research indicates that there should not be need for extra cues in order to trigger brand recall, whereas television-streaming platforms require additional measures in order for the consumer to recall the ad. One example could be purchasing two ad exposures on video-sharing platforms and television-streaming platforms, which our research suggested to be more effective than merely one. In case of one exposure, we would recommend placing the ad in the mid-roll break in order to achieve higher levels of recall, which is supported by the literature (Krugman, 1983). Lastly, it appears that video ads need to be more customized for consumers who have had more previous exposure to the online video site. The more a person uses the site, the more difficult it is for brands to get their attention as they become desensitized to advertising, which means that the ads should be more tailored to each consumer based on previous behavior.

## **5.2 Limitations and suggestions for further research**

After carrying out the different sections of our study, we have identified several limitations that should be taken into consideration for future research in the field of online video advertising. First, the fact that we were only able to test frequency of ad exposure on one video platform (i.e. Viafree) resulted in a limited comparison between the three platforms. If we had been able to also manipulate the frequency variable in VG TV and YouTube, our analysis of the effectiveness

of these platforms in triggering brand recall would have been more thorough. This is something that should be incorporated in future studies.

Next, the nature of the ads that the participants were exposed to was not consistent across video platforms. The ads shown are from two different categories: food/supermarket (Viafree and VG TV) and eyewear (YouTube), which could have been a confound when measuring brand recall. Future research should maintain the same ad category across platforms or, in the case of studying the effect of ad category on brand recall, make sure that each category is present on every platform. In addition, the visibility of the brand name within the ad would be expected to play an important role in brand recall. However, this factor was not controlled for in our study.

Another limitation is given by the measurement of our dependent variable. As we only recorded brand recall immediately after exposure, we are not able to determine whether the memory of the brand in question will be preserved. Shapiro and Krishnan (2001) distinguished between explicit and implicit memory in their studies of ad recall and time delay, which would be interesting to research further on online video platforms.

Moreover, we were unable to control the placement of the ad within the commercial breaks on the platform Viafree, which was another limitation. As participants are exposed to several ads within the duration of a pre-roll (and mid-roll, in the case of Frequency = 2), the placement of the tested ad in this sequence can be an important factor in determining whether the person will recall it or not. We would recommend including ad placement as an extra variable in future studies (e.g. beginning, middle, end), which would add a deeper layer to this analysis by including the role of commercial break set-up.

Furthermore, the fact that the people in our sample could choose when and where to participate in each of the studies meant that we had no way of knowing whether they followed the instructions or what kind of distractions they were faced with. Future studies might opt for a lab setting that could allow researchers to control for these confounds.

Lastly, we did not have the monetary resources to recruit a significant number of participants for each of the studies. Moreover, as mentioned in Section 3, the times of the campaigns were limited, which also resulted in a challenge to get significant results. This means that our findings are limited in terms of generalizing to a wider population, but we hope they provide a base that will allow future studies to further develop this research field. We believe that replicating this study on a larger scale would lead to an even better understanding of brand recall in online video advertising across online video platforms.

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## 7. Appendix

### Appendix 1: Example of questionnaire - Viafree

The following questionnaire was sent to the participants in the Viafree platform condition. For the other two conditions, some of the questions were adapted to fit the characteristics of each of these platforms (i.e. YouTube and VG TV).

*Thank you for taking the time to watch the video that was sent to you. For the second part of the study, we ask you to answer and submit the following questionnaire - it will only take a few minutes.*

**Q1 What platform do you watch online video content on? (Select multiple responses)**

- Netflix (1)
- HBO (2)
- TV 2 Sumo (3)
- Viafree (4)
- Viaplay (5)
- YouTube (6)
- VG TV (7)
- NRK TV (8)

**Q2 On average, how many hours a week do you watch online video content on a streaming platform/app/website?**

---

*Display This Question:*

*If What platform do you watch online video content on? (Select multiple responses) Viafree Is Selected (Q1 = 4)*

**Q3 On average, how many hours a week do you watch online video content on Viafree?**

---

**Q4 Are you currently subscribed to an online TV content provider (e.g. Netflix, HBO Nordic, TV 2 Sumo)?**

- Yes (1)
- No (2)

*Display This Question:*

*If Are you currently subscribed to an online TV content provider (e.g. Netflix, HBO Nordic, TV 2 Sumo)? No Is Selected (Q4 = 2)*

**Q5 Which of the following reasons justify your decision to not own a subscription to an online TV content provider?**

- Too expensive (1)
- Able to access through a family member/friend (2)
- Time constraints (3)
- Not satisfied with the selection of content (4)
- Not satisfied with the interface (5)
- Preference for a traditional platform (6)
- Preference for a free online TV content provider (e.g. Viafree) (7)
- Other (8)

**Q6 What video content did you watch during this session? Please write the name of the show you watched on Viafree.**

---

**Q7 On a scale from 1 to 10 (1 = not at all satisfied, 10 = very satisfied), how would you rate your overall viewing experience?**

---

**Q8 Within 60 seconds, list the brands that you saw in the commercial breaks throughout your viewing session (separate with commas).**

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**Q9 Out of the following list of brands, which ones did you see in the commercial breaks throughout your viewing session?**

- Propr.no (1)
- Norsk Tipping (2)
- Meny (3)
- RiksTV (4)
- Coop (5)
- Head and Shoulders (6)
- Rema 1000 (7)
- Tine (8)
- Altibox (9)
- None of the above (10)

**Q10 Did you see any of the following brands in the commercial breaks throughout your viewing session? If so, how many times did you see it?**

	Did you see this brand?		How many times did you see it?			
	Yes (1)	No (2)	0 (1)	1 (2)	2 (3)	3 (4)
Meny (1)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Coop (2)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Riks TV (3)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**Q11 Age:**

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**Q12 Gender:**

- Male (1)
- Female (2)

## Appendix 2: Logistic Regression (Study 1) – DV: Unaided Brand Recall

### Case Processing Summary

Unweighted Cases <sup>a</sup>		N	Percent
Selected Cases	Included in Analysis	38	100,0
	Missing Cases	0	,0
	Total	38	100,0
Unselected Cases		0	,0
Total		38	100,0

a. If weight is in effect, see classification table for the total number of cases.

### Dependent Variable Encoding

Original Value	Internal Value
0	0
1	1

### Categorical Variables Codings

		Frequency	Parameter coding	
			(1)	(2)
Platform	Viafree	12	1,000	,000
	YouTube	13	,000	1,000
	VG TV	13	,000	,000

**Block 0: Beginning Block**

**Classification Table<sup>a,b</sup>**

	Observed		Predicted		Percentage Correct
			Unaided_Recall 0	1	
Step 0	Unaided_Recall	0	32	0	100,0
		1	6	0	,0
Overall Percentage					84,2

a. Constant is included in the model.

b. The cut value is ,500

**Variables in the Equation**

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-1,674	,445	14,158	1	,000	,188

**Variables not in the Equation**

			Score	df	Sig.
Step 0	Variables	Platform	4,446	2	,108
		Platform(1)	3,288	1	,070
		Platform(2)	,002	1	,961
		Satisfaction	4,492	1	,034
		hours_platform	,069	1	,792
		Age	,622	1	,430
		Overall Statistics		7,792	5

**Block 1: Method = Enter**

**Omnibus Tests of Model Coefficients**

		Chi-square	df	Sig.
Step 1	Step	10,091	5	,073
	Block	10,091	5	,073
	Model	10,091	5	,073

**Model Summary**

Step	-2 Log likelihood	Cox & Snell R	Nagelkerke R
		Square	Square
1	23,057 <sup>a</sup>	,233	,401

a. Estimation terminated at iteration number 20 because maximum iterations has been reached. Final solution cannot be found.

**Classification Table<sup>a</sup>**

	Observed	Predicted		Percentage Correct
		Unaided_Recall 0	1	
Step 1	Unaided_Recall 0	31	1	96,9
	1	4	2	33,3
Overall Percentage				86,8

a. The cut value is ,500

**Variables in the Equation**

	B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 <sup>a</sup> Platform			,004	2	,998	
Platform(1)	-20,121	10523,167	,000	1	,998	,000
Platform(2)	-,073	1,219	,004	1	,952	,930
Satisfaction	-,499	,291	2,929	1	,087	,607
hours_platform	,013	,114	,013	1	,908	1,013
Age	-,080	,120	,452	1	,502	,923
Constant	3,633	3,485	1,087	1	,297	37,826

a. Variable(s) entered on step 1: Platform, Satisfaction, hours\_platform, Age.

## Appendix 3: Logistic Regression (Study 1) – DV: Aided Brand Recall

### Case Processing Summary

Unweighted Cases <sup>a</sup>		N	Percent
Selected Cases	Included in Analysis	38	100,0
	Missing Cases	0	,0
	Total	38	100,0
Unselected Cases		0	,0
Total		38	100,0

a. If weight is in effect, see classification table for the total number of cases.

### Dependent Variable Encoding

Original Value	Internal Value
0	0
1	1

### Categorical Variables Codings

		Frequency	Parameter coding	
			(1)	(2)
Platform	Viafree	12	1,000	,000
	YouTube	13	,000	1,000
	VG TV	13	,000	,000

**Block 0: Beginning Block****Classification Table<sup>a,b</sup>**

	Observed	Predicted		Percentage Correct
		Aided_Recall 0	1	
Step 0	Aided_Recall 0	28	0	100,0
	1	10	0	,0
Overall Percentage				73,7

a. Constant is included in the model.

b. The cut value is ,500

**Variables in the Equation**

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 0	Constant	-1,030	,368	7,811	1	,005	,357

**Variables not in the Equation**

			Score	df	Sig.
Step 0	Variables	Platform	7,057	2	,029
		Platform(1)	6,264	1	,012
		Platform(2)	4,010	1	,045
		Satisfaction	2,238	1	,135
		hours_platform	,007	1	,931
		Age	1,589	1	,207
Overall Statistics			11,478	5	,043

**Block 1: Method = Enter****Omnibus Tests of Model Coefficients**

		Chi-square	df	Sig.
Step 1	Step	16,043	5	,007
	Block	16,043	5	,007
	Model	16,043	5	,007

**Model Summary**

Step	-2 Log likelihood	Cox & Snell R	Nagelkerke R
		Square	Square
1	27,758 <sup>a</sup>	,344	,503

a. Estimation terminated at iteration number 20 because maximum iterations has been reached. Final solution cannot be found.

**Classification Table<sup>a</sup>**

Observed	Aided_Recall	Predicted		Percentage Correct
		0	1	
Step 1	0	26	2	92,9
	1	4	6	60,0
Overall Percentage				84,2

a. The cut value is ,500

**Variables in the Equation**

	B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 <sup>a</sup>			2,764	2	,251	
Platform						
Platform(1)	-20,271	10400,113	,000	1	,998	,000
Platform(2)	2,056	1,237	2,764	1	,096	7,813
Satisfaction	-,520	,262	3,956	1	,047	,594
hours_platform	-,100	,108	,855	1	,355	,905
Age	-,077	,115	,452	1	,501	,926
Constant	3,795	3,257	1,357	1	,244	44,465

a. Variable(s) entered on step 1: Platform, Satisfaction, hours\_platform, Age.

## Appendix 4: Logistic Regression (Study 1) – DV: Extra Aided Brand Recall

### Case Processing Summary

Unweighted Cases <sup>a</sup>		N	Percent
Selected Cases	Included in Analysis	38	100,0
	Missing Cases	0	,0
	Total	38	100,0
Unselected Cases		0	,0
Total		38	100,0

a. If weight is in effect, see classification table for the total number of cases.

### Dependent Variable Encoding

Original Value	Internal Value
0	0
1	1

### Categorical Variables Codings

		Frequency	Parameter coding	
			(1)	(2)
Platform	Viafree	12	1,000	,000
	YouTube	13	,000	1,000
	VG TV	13	,000	,000

**Block 0: Beginning Block**

**Classification Table<sup>a,b</sup>**

Observed	Predicted		Percentage Correct
	0	1	
Step 0 Extra_Aided_Recal 0	24	0	100,0
	114	0	,0
Overall Percentage			63,2

a. Constant is included in the model.

b. The cut value is ,500

**Variables in the Equation**

	B	S.E.	Wald	df	Sig.	Exp(B)
Step 0 Constant	-,539	,336	2,569	1	,109	,583

**Variables not in the Equation**

	Score	df	Sig.	
Step 0 Variables Platform	10,892	2	,004	
	Platform(1)	10,231	1	,001
	Platform(2)	5,179	1	,023
	Satisfaction	2,446	1	,118
	hours_platform	,029	1	,864
	Age	,658	1	,417
Overall Statistics	16,147	5	,006	

**Block 1: Method = Enter**

**Omnibus Tests of Model Coefficients**

	Chi-square	df	Sig.
Step 1 Step	24,571	5	,000
Block	24,571	5	,000
Model	24,571	5	,000

**Model Summary**

Step	-2 Log likelihood	Cox & Snell R	Nagelkerke R
		Square	Square
1	25,445 <sup>a</sup>	,476	,651

a. Estimation terminated at iteration number 20 because maximum iterations has been reached. Final solution cannot be found.

**Classification Table<sup>a</sup>**

	Observed	Predicted		Percentage Correct
		Extra_Aided_Recal 0	1	
Step 1	Extra_Aided_Recal 0	20	4	83,3
	1	3	11	78,6
Overall Percentage				81,6

a. The cut value is ,500

**Variables in the Equation**

	B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 <sup>a</sup> Platform			4,193	2	,123	
Platform(1)	-21,310	9621,666	,000	1	,998	,000
Platform(2)	3,804	1,858	4,193	1	,041	44,862
Satisfaction	-,793	,369	4,624	1	,032	,452
hours_platform-	,148	,110	1,790	1	,181	,863
Age	,199	,129	2,375	1	,123	1,220
Constant	-1,447	3,232	,200	1	,654	,235

a. Variable(s) entered on step 1: Platform, Satisfaction, hours\_platform, Age.

## Appendix 5: Logistic Regression (Study 2) – DV: Unaided Recall

**Case Processing Summary**

Unweighted Cases <sup>a</sup>		N	Percent
Selected Cases	Included in Analysis	24	100,0
	Missing Cases	0	,0
	Total	24	100,0
Unselected Cases		0	,0
Total		24	100,0

a. If weight is in effect, see classification table for the total number of cases.

**Dependent Variable Encoding**

Original Value	Internal Value
0	0
1	1

### Block 0: Beginning Block

**Classification Table<sup>a,b</sup>**

	Observed		Predicted		Percentage Correct
			Aided_Recall 0	1	
Step 0	Aided_Recall	0	16	0	100,0
		1	8	0	,0
Overall Percentage					66,7

- a. Constant is included in the model.
- b. The cut value is ,500

**Variables in the Equation**

	B	S.E.	Wald	df	Sig.	Exp(B)
Step 0 Constant	-,693	,433	2,562	1	,109	,500

**Variables not in the Equation**

	Score	df	Sig.
Step 0 Variables	Frequency	12,000	1,001
	Satisfaction	4,722	1,030
	Hours Platform	,582	1,446
	Age	1,119	1,290
Overall Statistics	12,407	4	,015

**Block 1: Method = Enter**

**Omnibus Tests of Model Coefficients**

	Chi-square	df	Sig.
Step 1 Step	17,398	4	,002
Block	17,398	4	,002
Model	17,398	4	,002

**Model Summary**

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	13,155 <sup>a</sup>	,516	,716

a. Estimation terminated at iteration number 20 because maximum iterations has been reached. Final solution cannot be found.

**Classification Table<sup>a</sup>**

Observed	Aided_Recall	Predicted		Percentage Correct
		Aided_Recall 0	Aided_Recall 1	
Step 1 Aided_Recall 0	0	12	4	75,0
Aided_Recall 1	1	1	7	87,5
Overall Percentage				79,2

a. The cut value is ,500

**Variables in the Equation**

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1 <sup>a</sup>	Frequency	138,060	21011,882	,000	1	,995	9,097E+59
	Satisfaction	-,128	,522	,060	1	,806	,880
	Hours_Platform	29,994	4961,336	,000	1	,995	10617347150000,000
	Age	-,222	,411	,291	1	,589	,801
	Constant	-268,884	42023,768	,000	1	,995	,000

a. Variable(s) entered on step 1: Frequency, Satisfaction, Hours\_Platform, Age.

## Appendix 6: Logistic Regression (Study 2) – DV: Aided Recall

**Case Processing Summary**

Unweighted Cases <sup>a</sup>		N	Percent
Selected Cases	Included in Analysis	24	100,0
	Missing Cases	0	,0
	Total	24	100,0
Unselected Cases		0	,0
Total		24	100,0

a. If weight is in effect, see classification table for the total number of cases.

**Dependent Variable Encoding**

Original Value	Internal Value
0	0
1	1

### Block 0: Beginning Block

**Classification Table<sup>a,b</sup>**

Observed		Predicted		Percentage Correct
		Extra_Aided_Recal 0	1	
Step 0	Extra_Aided_Recal 0	16	0	100,0
	1	8	0	,0
Overall Percentage				66,7

- a. Constant is included in the model.
- b. The cut value is ,500

**Variables in the Equation**

	B	S.E.	Wald	df	Sig.	Exp(B)
Step 0 Constant	-,693	,433	2,562	1	,109	,500

**Variables not in the Equation**

	Score	df	Sig.
Step 0 Variables			
Frequency	12,000	1	,001
Satisfaction	4,722	1	,030
Hours_Platform	,582	1	,446
Age	1,119	1	,290
Overall Statistics	12,407	4	,015

**Block 1: Method = Enter**

**Omnibus Tests of Model Coefficients**

	Chi-square	df	Sig.
Step 1 Step	17,398	4	,002
Block	17,398	4	,002
Model	17,398	4	,002

**Model Summary**

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	13,155 <sup>a</sup>	,516	,716

a. Estimation terminated at iteration number 20 because maximum iterations has been reached. Final solution cannot be found.

**Classification Table<sup>a</sup>**

Observed	Extra_Aided_Recal	Predicted		Percentage Correct
		0	1	
Step 1	0	12	4	75,0
	1	1	7	87,5
Overall Percentage				79,2

a. The cut value is ,500

**Variables in the Equation**

		B	S.E.	Wald	df	Sig.	Exp(B)
Step	Frequency	138,060	21011,882	,000	1	,995	9,097E+59
1 <sup>a</sup>	Satisfaction	-,128	,522	,060	1	,806	,880
	Hours_Platform	29,994	4961,336	,000	1	,995	10617347150000,000
	Age	-,222	,411	,291	1	,589	,801
	Constant	- 268,884	42023,768	,000	1	,995	,000

a. Variable(s) entered on step 1: Frequency, Satisfaction, Hours\_Platform, Age.

## **Appendix 7: Preliminary Thesis**

ID number: **0986874**

ID number: **0987006**

# Preliminary Thesis

## - The digital transformation of video advertising: A study of how online video advertising affects brand recall -

Hand-in date:  
16.01.2017

Campus:  
BI Oslo

Examination code and name:  
*GRA 19502 Preliminary Thesis Report*

Programme:  
Master of Science in Strategic Marketing Management

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## 1. Introduction

In recent years, online video advertising has become a large player within the industry. Digital video advertising spending in the United States is projected to reach 9.15 billion U.S. dollars in 2017 while the number of digital video viewers in the United States will increase to 232.1 million users in 2020, from 213.2 million in 2013 (Statista, 2017). A study from 2014 found that 78.4 percent of U.S. Internet users watched online video content, whereas in European countries such as Spain the amount of Internet users watching said content was 92 percent, compared to 91 percent in Italy and 79.9 percent in the United Kingdom (Statista, 2017). Despite its widespread adoption, the question of what effects online video advertising has on the viewer is one that is still being explored. One of the aspects to this question is how this type of advertising affects brand recall. Due to the current transition of television from a traditional to a digital platform, exposure to video advertising is changing as a result of new viewing behaviors. Therefore, the way consumers register online video ads is an ongoing subject of research. Another dimension to this question is that online video ads come with different levels of interactivity across platforms. One of them being skippable and non-skippable ads, prominently featured in video platforms with short-form content, such as YouTube. However, when it comes to video platforms with long-form content, such as streaming websites, the consumer is forced to watch the ad (i.e. non-skippable). For advertisers, it would be interesting to know the kind of impact that these different formats have on the consumer, and whether commercial ads in this format make economical sense for the brand. In this paper, we would like to research and analyze these factors in order to contribute to the academic findings in this field and give companies insight into consumer behavior within online video advertising.

## 2. Theoretical background and research question

### *Online video platforms*

Online video platforms are growing and more users are using the Internet to watch video content. There are different types of online video platforms and Cha (2013) differentiates between video-sharing websites, such as YouTube, and Television-network sites such as Hulu and CNN.com. Cha (2013) found that time spent using the Internet to watch video content on video-sharing websites (e.g. YouTube) reduced the time spent watching television. However, users who spent their time watching video content on television-network sites online (e.g. Hulu) did not reduce their time watching television. Cha (2013) explains this by users spending time on television-network sites enjoy the content displayed both online and on television, whereas people spending their time to watch video-sharing websites do not have the same affinity towards watching TV. The motivation and needs satisfied by video-sharing websites are different than those from television network sites. This study shows that there are potentially different motivations and behaviors concerning the watching of online video content. This could potentially have an effect on how users react towards online advertising on the different online video platforms, and how users recall the advertisement, which we will investigate in this study.

### *Ad placements in online video platforms*

Brechman et al. (2016) describe three types of video-advertising placements – before the content, during, or after the video content. Advertising before the content is commonly used on YouTube. Whereas often in half-hour or longer programs, advertisements are placed during the video content, where one advertisement is placed in each break. The advantage for advertisers of one spot advertisement throughout the video content is that they are able to expose the audience repeatedly to it.

A study by Loughney et al. (2008) examined ABC.com Full Episode player, a free streaming platform with advertising. An hour-long episode would have an advertisement for a brand, presented four times in four short commercial breaks. In their study, they found that this exclusive advertiser, using repeated small

advertising breaks was as effective as traditional television advertising, and was not perceived as too intrusive.

Comparing the different types of online video advertising placements amongst each other, Bellman et al. (2012) found that there was no significant difference in perceived intrusiveness between advertisements before or during the video content. However, advertising during the video content was seen to be more effective in terms of brand recall, compared to advertising in the beginning of video content. Li and Lo (2015) explain this using the “attention spillover” effect that occurs during a program onto the advertisement. This is an effect we would like to replicate within our study and examine if we get similar outcomes.

According to advertising theory on traditional television content, the more advertisements shown, the harder it is to remember those advertisements (Hammer et al., 2009). This is explained by two factors. Firstly disengagement takes place during commercial breaks (Burke & Srull, 1988), which can lead to fast-forwarding through advertising breaks (Teixeira, 2012) or leaving the room during the breaks (Danaher, 1995). The showing of only one commercial has a positive effect on memory retrieval, and repetition of said commercial has a positive effect on recall (Anderson et al., 1998). The appearance of only one brand increases the chance of recall, since the brands are not competing for attention (Singh et al., 1994). However, there are limits to how effective repetitions are, since this can lead to an increase in perceived intrusiveness, thus having negative effects on advertising liking and persuasiveness (van Reijmersdal et al., 2010). It will be interesting to take a closer look at these effects and replicate them in an online video setting. Something that has not been closer studied is the effects of several different brands advertising throughout the video content. The study by Loughney et al. (2008) was done only using the same brand for the advertisements. In our study we would like to look at effects of different ads (brands) being displayed, and what effect this has on brand recall.

### ***Skippable vs. non-skippable ads on YouTube***

YouTube is the most popular online video community in the world with more than a billion users (YouTube, 2017). Video advertising is an essential part of

Google's monetization model for YouTube. Online video advertising on YouTube comes in different formats, and one of them is the in-stream video advertising, which is a short video, played prior to a video selected by the user. In 2010, Google compared skippable in-stream advertisements on YouTube to non-skippable in-stream advertisements. They did this based on the propensity to search for terms related to the content of the in-stream advertisements. They found that skippable video advertisements might be as effective as non-skippable advertisements. In addition to that, they found that viewers preferred skippable advertisements. (Pashkevich et al., 2012) This way user satisfaction with YouTube could be improved, and the negative consequences of advertisements could be reduced. This led to consequences such as less users leaving the site due to the advertisement, and users returning more frequently, due to the ability to skip the advertisement. Engagement was measured based on subsequent Google search, which might not reflect the actual advertising effectiveness. Looking more closely at the effects of skippable vs. non-skippable on brand recall, rather than just user engagement will allow us to make more conclusions useful for advertisers about the effectiveness of in-stream online video advertisements on YouTube. A focus on brand recall, rather than evaluation of subsequent search behavior, will give us a better understanding of whether the user registered the in-stream ad.

### ***Research question***

Building on relevant literature surrounding this topic, we identified two elements of online video advertising that require further research. We would like to study how online video advertising across different platforms (short form vs. long form content) and ad formats (i.e. skippable vs. non-skippable) affects brand recall. We hereby focus on YouTube and an online video streaming platform from TV3. Getting a better understanding of the way these factors can impact consumer behavior will give us valuable insights that companies could use in order to improve their current use of online video advertising. Therefore, we formulate our research question as follows: *What are the effects of online video advertising on brand recall across different platforms (short form vs. long form content) and ad formats (skippable vs. non-skippable)?* Based on our research question, we propose the following model:

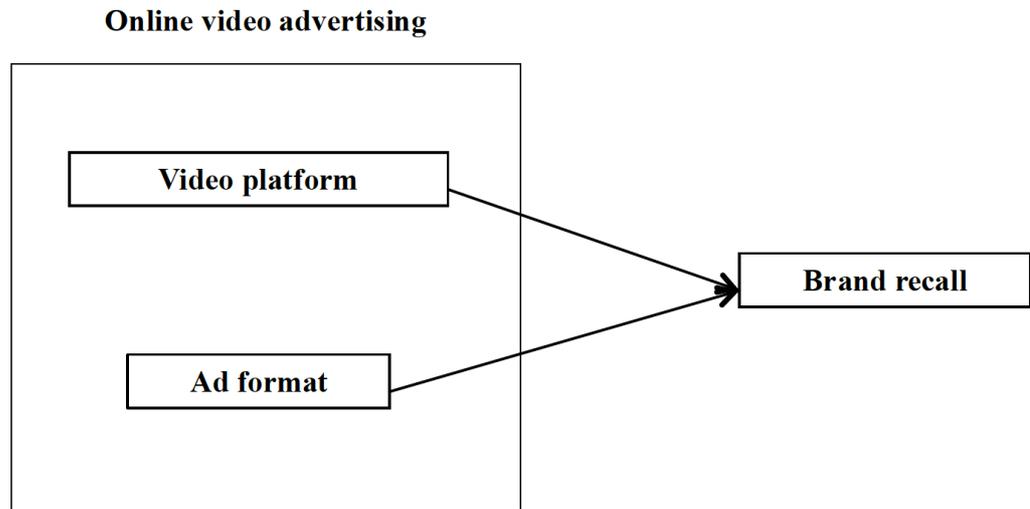


Fig. 1: Conceptual model (DV: Brand recall)

### 3. Methodology

For our research method, we propose to start with a linear regression analysis using existing data around online video advertising and its demographics in order to determine what factors may affect the way consumers react to it. The explanatory variables included in this analysis are age, gender, ad format, and video platform. Dummy variables will be created for “ad format” (i.e. 1 = skippable, 0 = non-skippable) and “video platform” (i.e. 1 = YouTube, 0 = TV3’s streaming platform). Since ads on streaming platforms are exclusively non-skippable, we have to consider this restriction in the interaction between these two variables. Our dependent variable for this analysis will be the percentage of video seen by the person exposed to the advertisement, which will be used as an indicator of how receptive the consumer was to the ad in question. These results will give us insight into the kind of current consumer behavior surrounding online video advertising, which will help us in designing the second part of our methodology. Our linear regression model is defined as follows:

$$Y = \text{Percentage of video seen} = \alpha + \beta_1 * \text{age} + \beta_2 * \text{gender} + \beta_3 * \text{ad format} + \beta_4 * \text{video platform}$$

$$H_0: \beta_1 = \beta_2 = \dots = \beta_k = 0$$

$$H_1: \beta_j \neq 0 \text{ for at least one } j$$

After this regression analysis, we intend to perform two studies in order to determine the effects of different online video platforms (short form vs. long form content) and ad formats (skippable vs. non-skippable) on brand recall. In study 1, we compare participants' reactions to non-skippable ads on TV3's streaming platform, Viafree, against non-skippable ads on YouTube. In study 2, we analyze their reactions on the same platform (i.e. YouTube) but different ad formats (i.e. skippable and non-skippable). Our sample will consist of 60 BI Norwegian Business School MSc students between ages 18-29, which will be divided equally between the two studies. The reasoning behind choosing a sample group comprised of college students is because about 76% of young Internet users (ages 18 to 29) view or download online videos, being the largest group to access this type of content (Madden, 2007). This means that they often are exposed to online video advertising, increasing the chances of natural behavior in our two studies. Moreover, the fact that they all attend the same university simplifies the process of recruiting participants. Finally, our subjects will be rewarded with giveaways for participating in our studies.

The purpose of study 1 is to determine the effect of online video advertising on brand recall using different platforms with the same ad format. In order to test this effect, we will ask participants in a computer lab setting to choose from one of two lists of different videos/shows on either Viafree or YouTube, which will include different video ads. In order to ensure that we have a balanced distribution of exposure to the two video platforms, we will divide the subjects into two groups: the list of choices for group 1 will be YouTube content and the one for group 2 will be Viafree content. Participants will then watch the content of their choice in a 30-minute session, which will end with a Qualtrics survey featuring questions about both the videos they watched and the ads they were exposed to (e.g. Which videos/shows did you watch? On a scale from 1 to 10, how would you rate each of these videos? Out of this list of brands, which one/s do you recall having seen during the session?). In order to increase the likelihood of obtaining accurate results, we will construct a cover story in which we communicate that our objective is to study their preferences regarding video content and whether

this differs across platforms. That way they will not be paying any more attention to the ads within the videos than they would have done in a natural setting. Lastly, the fact that this study features two different online video platforms will also allow us to determine differences in brand recall between short form and long form content (i.e. over/under 7 minutes long).

In the case of study 2, the purpose is to determine the effect of online video advertising on brand recall using the same platform but different ad formats. The procedure is the same as the one in study 1, but the list of videos that will be handed to participants will only be comprised of YouTube content featuring both skippable and non-skippable ads. Subjects will also have 30 minutes to browse and watch the content of their choice, and the Qualtrics survey will be similar to that of study 1. Our cover study will be slightly different, as the supposed objective in this case will be to study the way they interact with YouTube content and what kind of video genres they are most interested in. In order to ensure that we have a balanced distribution of exposure to the two ad formats, we will also divide the participants into two groups: the list for group 1 will be YouTube content with skippable ads and the one for group 2 will be YouTube content with non-skippable ads.

The data that we obtain from study 1 and study 2 will be collected and processed using the statistical analysis and data mining software SPSS. We will perform an ANOVA analysis in each study, which will allow us to examine the differences in the mean values of the DV (i.e. brand recall) for the two categories of our IVs (i.e. either video platform or ad format). Using this method will provide us with insightful statistics that will show, among other things, the strength of each of our IVs on the DV ( $\eta^2$ ) and the different variations in the DV ( $SS_{\text{between}}$ ,  $SS_{\text{within}}$  and  $SS_y$ ). Once we analyze our data, we will be able to compare the results from studies 1 and 2 to our findings from the regression analysis, providing a more holistic framework to draw conclusions from.

#### **4. Time plan**

Our implementation plan forward will consist of three phases: The first phase (January-February) will involve establishing our conceptual framework (literature

review and formulation of hypotheses), as well as developing and fine-tuning our research method. That way we will have the necessary tools to move on to the second phase (March-April), which will include our data collection (pre-tests, study 1 and study 2). Lastly, the third phase (May-August) will consist of the data analysis and interpretation, which will allow us to draw conclusions as well as to determine the implications and limitations of our thesis project.

## 5. References

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