

Effective mobile display advertising: *The impact of product involvement and creativity*

Abstract

Mobile advertising is rapidly becoming one of the most important media channels, but research is scant and the effectiveness contended. Not all product types are proven to be effectively advertised in the mobile phone, as attention in general is believed to be low. At the same time, advertising creativity has been a field, which has attracted research focus over the past years as a tool for achieving higher attention and information processing. The purpose of this study is to provide a deeper understanding of mobile display advertising, by investigating the effectiveness for both higher and lower involvement products, as well as the impact of creativity.

A large quantitative questionnaire-based field experiment with 13,824 respondents was conducted. 13 known brands were recruited to advertise high and low involvement products with three different content types produced by professional advertising bureaus. The campaigns ran in Sweden's most popular mobile news feed, Aftonbladet, and effects on brand attitudes and brand purchase intentions were measured.

The results showed significant positive effects on purchase intentions and attitudes for lower involvement products and on attitudes for higher involvement products. Furthermore, lower involvement products showed larger effects on purchase intentions. Perceived creativity was not found to have a positive effect, but results rather suggest that it might actually have a negative effect for lower involvement products. The results empirically support that both higher and lower involvement products can be successfully advertised in the mobile phone, where advertising in the mobile phone reminds the customer of previously encoded information and existing needs. However, creativity may have less favorable effects, something which needs to be researched further.

Keywords

Mobile advertising, product involvement, brand intentions, brand attitudes, creativity, news feed, Elaboration Likelihood Model

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Presented

May 25, 2016

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Acknowledgements

The following study was conducted in collaboration with Schibsted Media Group Sverige. Throughout the coming sections, we will critically review different components. This shall not be seen as a critique of neither Schibsted, nor any other collaboration partner. We are very thankful for all the support given to this study and for the time and effort put into different stages by Schibsted and their partners.

Two persons in particular deserve special thanks: **Staffan Engström**, Head of Mobile at Schibsted and supervisor, and **Louise Isaksson**, Intern at Schibsted Mobile. You have been invaluable to us - as knowledgeable visionaries, dedicated and organized professionals and as leaders and supporters during happy and hard times. Thank you.

In addition, our tutor Erik Modig has been wonderful throughout the process. Thank you for providing insight, guidance and many interesting discussions.

Furthermore, there are several individuals who we want to thank, in alphabetical order:

Anders Lithner - Inizio

Anette Hallgren - Inizio

Charley Ohlsson - Associate Ad Platform Product (or simply Ad Tech Guru)

Estelle Douglas - Business Strategist Mobile

Ivana Pecirep - Adsets

Joakim Mared - Technical Consultant

Joanna Dalen - Ad Operations

Johan Åsen - Product Director

Josefin Kvarnström - Head of Schibsted Content Studio

Katarina Wendelin - Schibsted Content Studio

Magnus Nilsson - Mobile Product Specialist

Pia Nordström - Ad Operations

Thomas Schultz - Business Strategist Mobile

And of course, friends and family, for your support and encouraging words.

Erik Schuss and Martin Söndergaard, Stockholm 2016

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Definitions

Click-through rate: The percentage of people that click on an advertisement.

Content type: Type of technology used in advertisement. The three types used in this study are:

- *Rich media*
Slides or spin cubes, with between two to four different sides, which automatically switched sides, or manually, if the viewer chose to swipe the ad.
- *Static banner*
A classic, square shaped still picture.
- *Video*
Consists of a shorter looped version of the entire video once it was in-screen. This loop continued in perpetuity, or until the video was clicked on, which instead loaded a longer video.

Cookies: In this study a cookie refers to a file added to the mobile phone upon visiting a website that contains an identification code or other record.

Creativity: Creativity is usually defined as being the result of two other constructs, divergence and relevance. Relevance has to do with how relevant or valuable a certain ad is to the individual consumer. An ad is considered divergent if it contains elements that are new and surprising.

Exposure: In this study, a visitor is counted as exposed if the advertisement has loaded on their device. For the visitor to see the advertisement, scrolling the feed is required.

Impression: An impression happens every time an advertisement is loaded.

Interstitial: An advertisement inserted between content.

Mobile advertising: "Mobile advertising is the communication of products or services to mobile device and smartphone consumers. The mobile advertising spectrum ranges from short message service (SMS) text to interactive advertisements." (Investopedia)

Mobile phone: - In this study defined as a mobile phone with a larger touchscreen interface, which has Internet access.

News feed - List of news presented vertically.

Product involvement: Is determined by the perceived risk of a potential purchase. A higher involvement purchase might be a car, whereas a lower involvement purchase might be a toothbrush.

1 Introduction

Sit down, relax. It is time to read another thesis. During this time, you may be interrupted at a few points by a certain device. In fact, it was probably not that long ago since you interacted with it. We are talking about your mobile phone. There is so much going on in it, demanding your attention - conversations with friends, important e-mails and photos of cute kittens. A never-ending stream of messages and pictures call for you to not only see them, but also engage with them by clicking, reacting and interacting. In such a distracting world and on such a small space, can someone really catch your attention and get a message through to you? Can someone affect you beyond giving an occasional click? TV watching is decreasing, printed news media is now digital and media consumers are moving from desktop to their mobile devices (eMarketer 2015c). With the mobile phone rapidly becoming the top medium of the future, creating effective mobile advertising to build brands is a must as well as a daily challenge for the modern advertiser.

1.1 Background

In order to give an understanding of what mobile advertising is and the relevance of it to advertisers, we will firstly present knowledge gathered by the industry and research firms. It will then be followed by a review of the current knowledge in academics, which then will lead to a defined problem area and the specific research questions.

1.1.1 Current state of the mobile advertising practice

The use of mobile phones is widespread, with estimates of 7.3 billion mobile subscriptions worldwide in Q4 2015. 3.4 billion are smartphones - and this number is continuing to grow (Ericsson 2016). Additionally, consumers spend a considerable amount of time on their phones - US adults use their mobile devices for non-voice activities on average 2 hours and 51 minutes every day. In fact, the only medium which US adults spend more time on is the television (eMarketer 2015b). More importantly, the trend is that digital media consumption is growing, driven by mobile devices, while all other media types are experiencing a decrease in usage (eMarketer 2015c). This poses a challenge for marketers, as they need to learn to cope with a new media landscape, where mobile is a major part.

With such a large amount of users and a large proportion of their time spent in front of the mobile display, it may not come as a shock that advertising in the mobile phone is increasing rapidly. What only a few years ago may have been one of many channels, mainly as an interesting tool for direct marketing, is now becoming one of the main media channels. In the UK alone, mobile advertising spending increased by 60.3% last year (compared to 16.4% for digital advertising spending as a whole) (IAB UK a 2015) and the global spending on mobile advertisements in 2016 is estimated to be over \$100 billion - 51% of digital advertising (eMarketer 2015a).

However, there is still room for growth. In relation to how much time consumers spend in the mobile phone, the proportion of advertising spending is still low compared to other media types. As has been the case for other new media types in history, advertising spending often lags behind the shift in consumer behavior, as marketing managers need to have solid proof of the medium's effectiveness before reallocating portions of their budgets towards it (Fulgoni and Lipsman 2014, p. 11)

Within the mobile phone, there are different ways for advertisers to reach customers. According to the latest report by the IAB, display advertising and search advertising share most of the revenues in the US, with display taking the lead. There is also a small other-segment, which mainly comprises of text message advertising (IAB 2016).

Mobile advertising types 2015

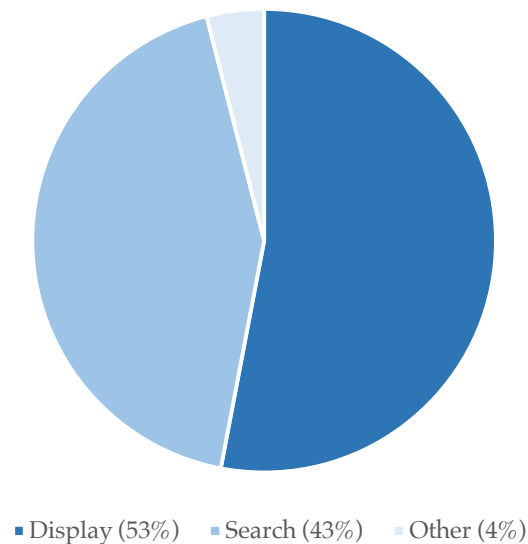


Figure 1: Mobile advertising revenues in the U.S. 2015 divided by format (IAB 2016)

Within the largest source of advertising revenues, display advertising, there are different channels depending on which activities are conducted. In a study on US consumers in 2014 by PriceWaterhouseCoopers, the most common activity conducted on their mobile devices was checking news, weather and sports, with 97% doing so at least once per week. This was followed by accessing social networks (87%), accessing a video website (79%), playing games (77%) and using the GPS to find locations (73%) (PricewaterhouseCoopers 2014). When looking at where advertising impressions come from, we get a similar picture. Opera Mediaworks finds, drawing data from their network of more than 1.1 billion unique users, that Social Media and News & Information are the largest sources of mobile display advertising impressions, with Social Media only slightly ahead (Opera Mediaworks 2015).

1.1.2 Current state of mobile advertising research

Advertising in the mobile phone is a nascent research field, with the early studies coming from the beginning of the new millennium (Shintaro and Barwise 2011, p. 60). As the technology has developed, so have the focus areas for research. Initially, research was directed mainly towards the use of SMS and MMS messaging (Shintaro and Barwise 2011, p. 59), and has now developed to a wide variety of areas with the emergence of touch screens, smartphones and 3G/4G technology (Billore and Sadh 2015, p. 163).

And why talk about the mobile phone advertising and not simply about digital advertising? The main reason is that mobile phone has specific characteristics from a marketer's point of view in that it is more portable, wireless and geographically traceable through its GPS capa-

bilities than desktop advertising. The portability makes it accessible throughout the day, but also implies a small screen size, limiting the information an advertising message can contain (Shankar and Balasubramanian 2009, p. 119).

In regards to outcome measures for advertising effectiveness, the existing research on mobile advertising is largely made around driving conversion. Several studies focus on promotions and targeted coupon redemption (Andrews et al. 2015; Bacile, Ye and Swilley 2014; Danaher, Smith, Ranasinghe, Kulan and Danaher 2015) and factors influencing the click-through rate (Ghose, Goldfarb and Han 2013; Molitor, Reichhart and Spann 2012; Okazaki 2004). Additionally, considering the earlier mentioned characteristics of the mobile phone, a natural specific area in relation to conversion that has attracted interest and research is the targeting of specific geographic locations (Fong, Fang and Xueming 2015; Molitor et al. 2012).

The click-through rate is a popular metric for measuring the success of display ads, possibly due to the fact that the data is easily understood at the same time as being fast and cheap to collect. However, click-through rates are shown to have little relation to actual advertising effectiveness (Fulgoni 2016, p. 10). Research on the effect of mobile display advertising on hierarchy of effect-metrics is scarce and provide a mixed picture when it comes to the mobile phone. One of the first quantitative field experiments, done by Barwise and Strong (2002) in the U.K., examined young consumers' response towards text message advertising. The results provided indications that awareness and attitudes could be positively affected through the medium, but the effects were not statistically significant (Barwise and Strong 2002, p. 20).

The most recent, arguably the most relevant and, to the best of our knowledge, the only study on specifically banner advertising and hierarchy of effects measures in the mobile display was made by Bart, Stephen and Sarvary (2014). They collected data from mobile display advertising banner campaigns for 54 brands on websites and in apps and categorized the products depending on if they were higher or lower involvement and utilitarian or hedonic. Attitudes and purchase intentions were then measured for users exposed as well as for a control group with online questionnaires. Results indicated that only higher involvement and utilitarian products could be effectively advertised through the mobile phone display.

1.2 Problem area

The explanation presented is based on the Elaboration Likelihood Model, where Bart et al. (2014) argue that this product type is the only one that can successfully be made to be processed through the model's central route, a more cognitive way of processing. The study used small rectangular banner ads, which Bart et al. (2014) argues can only work as a reminder of previously encoded information, rather than making new claims because of the limited space. As higher involvement, utilitarian products usually are based on more clear and factual messages, Bart et al. (2014) mean that they are easier to communicate in such a medium and better remembered. Lower involvement products were not believed to work as they are mainly driven by peripheral cues, such as pictures and colors, which in a low attention medium like the mobile phone and on such small banners, are too hard to register given the large amount of distracting content surrounding the ad.

These results are somewhat contradicting the arguments made by Shankar and Balasubramanian (2009), who propose, based on their review of previous research, that mobile advertising is mainly effective for lower involvement products through the peripheral route of the Elaboration Likelihood Model. This by highlighting and reminding already existing needs

and in some cases creating new ones. In a recent publication by Grewal, Bart, Spann and Zubcsek (2016) this difference is explained by that the context in which the advertisements are presented, e.g. different websites, may have been a major part in affecting involvement, which in turn is determining advertising response.

With the mobile medium on the rise, there is still much to learn. We have yet to establish that mobile advertising in general works. To the best of our knowledge, only higher involvement products have been shown to be successful in mobile display advertising, which if true would prove a challenge for many brands, including all large fast moving consumer goods producers.

Both Bart et al. (2014) and Shankar and Balasubramanian (2009) mean that mobile advertising mainly works as a reminder, of either previously encoded factual information or of needs, which in turn has an effect on the products which function best in the mobile phone. However, only Bart, Stephen and Sarvary (2014) have tested this claim and gained support for their view. In the empirical studies conducted, Both Barwise and Strong (2002) and Bart et al. (2014) focus on a special media type, text messages or small banners, yielding mixed results. As previously mentioned, Bart et al. (2014) attribute the lack of effects for lower involvement products to the small size of the banners used in their study, limiting the possibility for consumers to register more superficial cues, needed for such advertisement.

Testing the effectiveness of mobile advertising for both higher and lower involvement products, regardless of content type or product type, to establish if mobile advertising can be effective at all from a branding point of view, seems to be the next step.

Furthermore, when talking about the mobile phone, the low attention paid to the medium is frequently brought up as a main challenge. One way to deal with this would be through advertising creativity. Even though marketing bureaus have long known that creativity plays an important role in effective advertising, it has just recently sparked the interest within academia. (Smith, Chen and Yang 2008, p. 47). Therefore, not much research has been done in the area, although it has been found several times that creativity has the potential to increase brand attitudes, acting through many different mechanisms. If the creativity is higher for an advertisement, it can draw attention to the advertisement, based on that attention, motivation to process and the depth of processing have been shown to increase by creativity (Smith, MacKenzie, Yang, Buchholz and Darley 2007, p 829). The impact of advertising creativity in the mobile phone has, to the best of our knowledge, not been previously tested. It would be an interesting sub-area to examine, as a tool to learn more about higher and lower involvement products as well as advertising in general in the mobile phone.

1.3 Purpose and research question

The purpose of this thesis is to provide further knowledge to the nascent but growing field of mobile display advertising research, regarding the differing impact of mobile advertising for higher and lower involvement product types. More specifically, the main research question is:

- *Can both lower and higher involvement products be successfully advertised in the mobile phone?*

Where if a product can be successfully advertised means that exposure to advertising material in the mobile phone leads to a consumer response, in terms of a positive attitude change, or a positive shift in purchase intentions, or both.

To further develop an understanding on how one can effectively advertise in the mobile phone the sub research question is:

- *Does the effectiveness of advertising for higher and lower involvement products differ depending on perceived advertising creativity?*

1.4 Delimitations

This study was conducted in a news feed setting, one of the most common contexts for mobile display advertising (Opera Mediaworks 2015). More specifically, the campaigns were executed at the mobile web site and application of Aftonbladet, Sweden's most read newspaper, and also the most visited mobile newspaper (KIA 2016). We also limited us to placing the advertisements on what is referred to as interstitial two, the second advertisement shown in the feed and the content types used are static banners, rich media and video with the dimensions of 320x320 pixels. There are also other places for advertising in the mobile phone - for example search, or within display; social media. Contexts may have an impact on results, but these are beyond the scope of this thesis to study and one should only with care generalize the findings beyond contexts similar to the mobile news feed.

As we used Aftonbladet, this gives first of all a limitation in terms of geography, where we only looked at Swedish customers, from all over Sweden. We acknowledge that cultural differences may provide different results in terms of e.g. mobile advertising acceptance and advertising effects, which are not examined in this thesis. The study was made during several days but for a limited period in March/April 2016, at all hours of the day and all over Sweden. Differences depending on time, weather, season and geography would be interesting to research, but it is beyond the scope of this thesis (Grewal et al. 2016). As in Bart et al. (2014), we only looked at an advertising frequency of either one or zero, generating an exposed group who have seen the advertisement once, and an unexposed control group. Advertising repetition may give differing effects, but this was not researched further in this thesis. In terms of advertised brands, we only looked at existing and known brands, results for new brands may vary from the ones found here. Furthermore, we limited ourselves to looking at brand attitudes and purchase intentions as measures of advertising effectiveness, similar to the methodology in Bart et al. (2014), but focusing on the effects on the brand as a whole to

give a more general picture. However, in contrast to Bart et al. (2014), we limited ourselves to looking at product involvement in terms of which involvement is perceived in regards to the category and we did not divide based on if the product was utilitarian or hedonic. Lastly, we only considered the mobile medium in isolation in this study, even though it would be interesting to further test the interaction with other media types.

1.5 Expected contribution

With the availability of several content types and a large data set, this study can provide knowledge about if mobile display advertising in general is effective or not, which is still contended. Furthermore, establishing if and how different product types can be advertised in the mobile phone will provide both insights to scholars as well as recommendations for practitioners on how the degree of involvement towards your product affects how you chose to advertise it in the mobile phone. Finally, if we can learn more about the mechanisms behind how mobile advertising works, it can provide guidance for how resources are to be allocated and campaigns designed for practitioners, as well as a basis for further academic research.

2 Theoretical framework

In the following section, we present relevant theories and models to generate hypotheses regarding how mobile advertising works depending on product involvement. Part 2.1 and 2.2 deal with the primary research question of how product involvement affects mobile advertising effectiveness. Part 2.3 deals with the special case of creativity.

2.1 The Elaboration Likelihood Model

The Elaboration Likelihood model, commonly referred to as the ELM, is a model for describing how attitudes can be changed depending the character of the stimuli. It was developed by Cacioppo and Petty (1984) in the early to mid-1980s and is considered one of the most influential and cited models in advertising to date (Kitchen, Kerr, Schultz, McColl and Pals 2014).

According to the Elaboration Likelihood Model (fig. 2) there are two different processing routes that can be activated through an advertisement - the central and the peripheral route. In the central route, a person engages in a more elaborate and thorough consideration of the information presented. Processing takes place in the peripheral route if a person is not motivated or able to consider the information in a more deliberate manner, for example because of distractions or because the information is of lower perceived relevance. In such a case, judgment is based on less sophisticated methods, e.g. rather the number of arguments than their content, or if a person with high credibility is the transmitter of the message. The routes shall be seen as anchor points in a continuum, rather than two mutually exclusive routes, where the likelihood of thinking more elaborately about the information will be higher if you are motivated and able to process a message. The central route is believed to persuade in a more enduring manner, but the peripheral route can also affect attitudes - even if those are less likely to be stable and enduring. (Cacioppo and Petty 1984, p. 673). This model will be applied to the mobile display advertising context below.

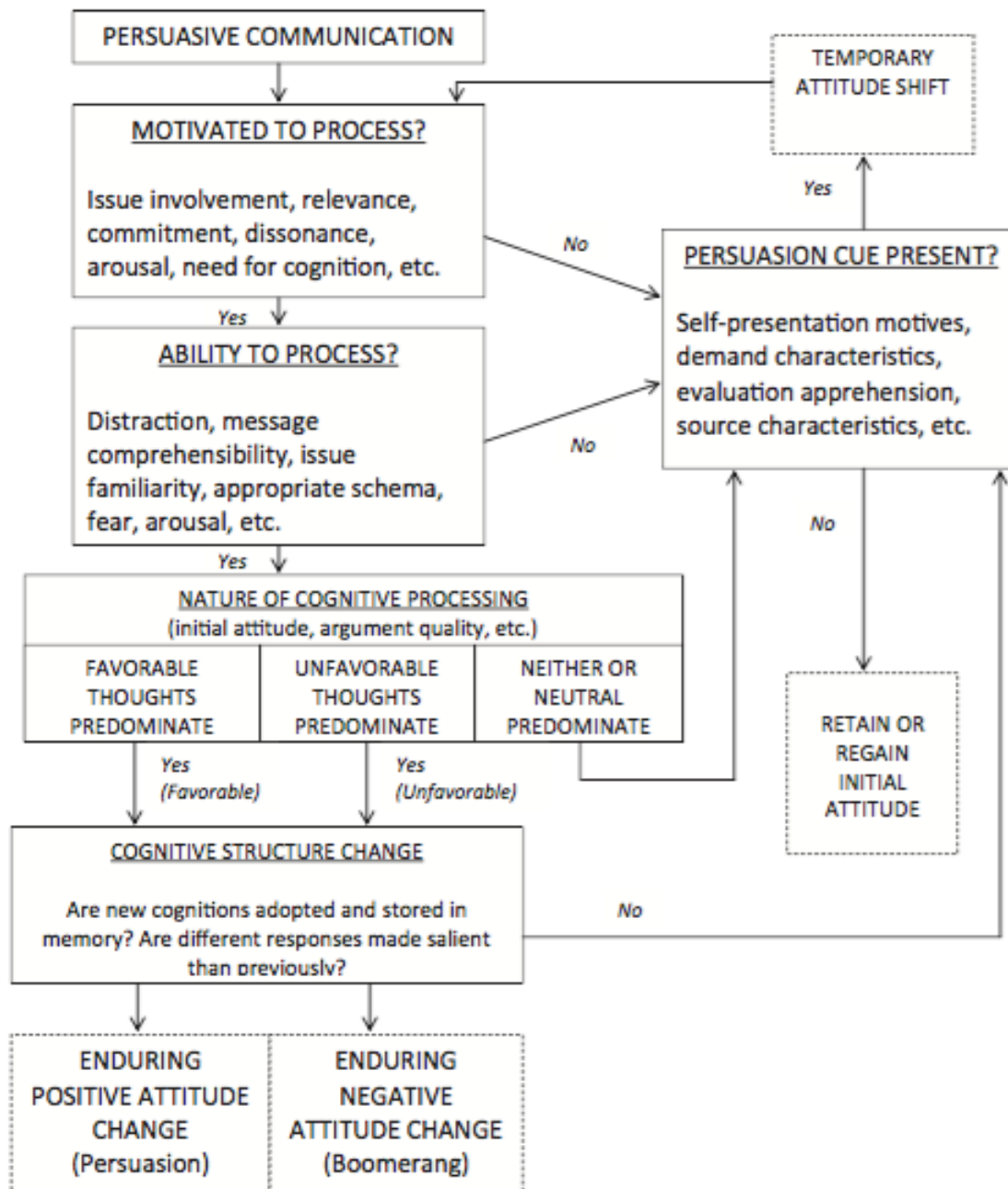


Fig. 2: The Elaboration Likelihood Model (Petty and Cacioppo 1983, p. 6)

2.2 The Elaboration Likelihood Model in the Mobile context

The Elaboration Likelihood Model has been used extensively in advertising research, including the mobile phone context (Shankar and Balasubramanian 2009; Bart et al. (2014). Below, we discuss how the characteristics of the mobile phone influence a receiver's ability and motivation to process mobile advertising.

2.2.1 Effects of mobile phone characteristics on processing ability

One of the main concepts of a mobile phone is its portability, meaning that you can carry it with you and that you use it in a wider range of situations, places and times during the day, sometimes in combination with another activity (Shankar and Balasubramanian 2009, p. 119). This means that the mobile phone is used more frequently in more distracting environments (Bart et al. 2014, p. 272). In most mobile display advertising contexts, consumers are also usually conducting a primary task that differs from processing an advertisement, such as reading the news in the news feed. As consumers usually focus their involvement and attention on such tasks, less cognitive resources are available for the secondary task of processing advertising information (Wang and Lin 2011, p. 421). These factors reduce a consumer's ability to process, which in turn can negatively affect the likelihood of extensively elaborating on the information in the advertisement (Cacioppo and Petty 1984, p. 673). Furthermore, the mobility comes at the price of a smaller device, with a smaller screen size, limiting the amount of information that can be delivered (Shankar and Balasubramanian 2009, p. 119). Especially if the advertisement is small, distracting content surrounding the ad can reduce your ability to process it (Bart et al. 2014, p. 272). To summarize, processing ability is likely negatively affected by the characteristics of the mobile phone.

2.2.2 Product involvement

The degree of involvement with a stimulus, in terms of personal relevance, is a key factor influencing elaboration likelihood. The division of higher and lower involvement products can be fruitful when analyzing different phenomena within marketing, giving an understanding of how advertising response differs depending on product type. Rossiter, Percy and Donovan (1991) suggest that the involvement of a product is determined by the perceived risk of purchasing the product for the typical target audience (Rossiter et al 1991, p. 14). The construct has been connected to the Elaboration Likelihood Model and its different processing routes (Rossiter et al. 1991).

It has been argued that lower involvement products usually use the peripheral route (Rossiter et al 1991) and rely on more superficial attributes for persuasion, whereas high involvement products tend to favor the more elaborate central route processing of factual information and arguments (Bart et al. 2014, p. 277). Product involvement impacts the motivation to process, where a higher involvement with the product corresponds to an increased personal relevance of the product, increasing the likelihood of central route processing. (Cacioppo and Petty 1984, p. 674).

A difference between the Elaboration Likelihood Model and the Rossiter et al. (1991) concept is that product involvement is viewed as a dichotomous, rather than a continuous variable (Rossiter et al. 1991). Due to methodological reasons we have chosen to use this dichotomous approach in this study, as it gives clearer guidelines. The two different product types are referred to as of being of higher or lower involvement, using relative terms rather than abso-

lutes, as we do not want to give the impression that the brands researched are archetypes of the polar extremes on the involvement spectrum.

2.2.3 Higher and lower involvement products in the mobile phone

Previous studies on mobile advertising of different products give mixed results, with Bart et al. (2014) suggesting that only higher involvement, utilitarian products can effectively be advertised in the mobile phone. This is explained as being because of that the mobile advertisement works as a reminder of previously encoded information, which in turn triggers memory recall and elaborate processing of product-specific features. The study was conducted using small, rectangular banner ads, which Bart et al. (2014) argues are unable to successfully communicate peripheral cues. The reason given is that the relatively small size of the advertisement, on small screen, makes the consumer unable to register peripheral cues - making only clear and factual claims able to successfully reach the consumer (Bart et al. 2014). Shankar and Balasubramanian (2009) suggest that the advertisements in the mobile news feed rather works as a reminder of existing needs, and possibly as a tool for creating new needs, favoring the peripheral route and lower involvement products. Higher involvement products can under this assumption also be advertised in a similar way with peripheral cues working as reminders of attitudes created by other advertisement (Shankar and Balasubramanian 2009, p. 123).

Based on the low attention and thus low ability to process information in the medium, as described previously, we find it likely that it is difficult to process new information more elaborately, but that a reminding effect exists, calling upon previously encoded information and needs. That the latter is true for higher involvement has some support from Bart et al. (2014), while for lower involvement this has only been hypothesized by Shankar and Balasubramanian (2009), but not empirically supported. Given that peripheral cues can be successfully communicated, persuasion should also be able to work through the peripheral route and as Bart et al. (2014) consider the advertisement size to be determining this, we suggest that larger square-shaped advertising content types and different media types can facilitate for peripheral route processing. Based on this, using the same dependent effect measures of attitudes and purchase intentions, we hypothesize that generally, with sufficiently large advertisements:

Hypotheses	
H1a	Mobile display advertising of lower involvement products has a positive effect on attitudes
H1b	Mobile display advertising of lower involvement products has a positive effect on purchase intentions
H1c	Mobile display advertising of higher involvement products has a positive effect on attitudes
H1d	Mobile display advertising of higher involvement products has a positive effect on purchase intentions

2.2.4 Different effects on attitudes in the mobile phone

Furthermore, we expect any attitude changes to be fairly modest, as is often found in similar advertising (Bart et al. 2014). However, there may be differing effects depending on product involvement. If higher involvement products can successfully be processed through the central route, this should in turn produce higher and more enduring effects on attitudes. As we believe this to be the case given successful memory recall, we hypothesize that:

Hypothesis	
H2a	Mobile display advertising of higher involvement products has a larger positive effect on attitudes than mobile display advertising of lower involvement products

If recalling previously encoded information drives attitude changes, a higher level of awareness of the product advertised should improve the ability of recall, as well as the ability to process due to higher issue familiarity (Cacioppo and Petty 1989, p. 673). Consequently, we also hypothesize that:

Hypothesis	
H2b	Mobile display advertising of higher involvement products with a higher prior awareness has a larger positive effect on attitudes than mobile display advertising of higher involvement products with lower prior awareness

2.2.5 Different effects on purchase intentions in the mobile phone

When it comes to forming purchase intentions, the case may be different. As previously noted, Shankar and Balasubramanian (2009) suggest that mobile advertising is most effective at reminding of and highlighting already existing needs, rather than making consumers engage in more elaborate analysis of new information. (Shankar and Balasubramanian 2009, p. 123). Advertisers of lower involvement products may only need to remind the consumer of the product for a purchase to take place, assuming that the existing attitude is above a threshold, as the consumer in this case is not interested in making the optimal choice, but rather a satisfactory choice (Hoyer 1984, p. 823). With lower involvement products, reminding of a need is likely to have a more direct effect on purchase intentions than for higher involvement products, where the decision making process is longer. This is referring to the difference between the classical higher involvement decision making AIDA model and cases of more low-involvement decision making, where higher involvement purchases are driven by more extensive persuasion and a prior attitude change, while lower involvement purchases can be driven based on reminding of previous trial and experience of the product (Vakratsas and Ambler 1999) p.28. This theory is only incorporated to an extent in the Elaboration Likelihood Model, but the mechanism could be induced for lower involvement products if the peripheral cues are sufficiently focused on presenting elements reminding the consumer about needs. Based on this reasoning, we hypothesize that:

Hypothesis	
H3a	Mobile display advertising of lower involvement products has a larger positive effect on purchase intentions than mobile display advertising of higher involvement products

In line with the reasoning regarding higher involvement and the effect of higher prior awareness, a larger amount of previously encoded associations to a brand due to experiences should lead to a clearer reminder of the needs when seeing an advertisement for that brand. Therefore, we also hypothesize that:

Hypothesis	
H3b	Mobile display advertising of lower involvement products with a higher prior awareness has a larger positive effect on purchase intentions than mobile display advertising of lower involvement products with lower prior awareness

2.3 Creativity in the mobile phone context

Creativity is usually defined as being the result of several constructs, commonly defined as divergence and relevance. An ad is considered divergent if it contains elements that are new, unusual or surprising. Relevance has to do with how relevant or valuable a certain ad is to the individual consumer and is closely linked to the concept of involvement (Smith et al. 2007, p. 829).

As stated before, the low attention characteristics of the mobile phone leads to a decreased probability among visitors to use the central route when processing ads, something which may be affected by the character of the advertisement, especially by advertising creativity. It has been found several times that creativity has the potential to increase brand attitudes. If the creativity is higher for an advertisement, we believe this to draw attention to the advertisement, based on that attention, motivation to process and the depth of processing have been shown to increase by creativity (Smith et al. 2007, p. 829).

If creativity can increase the likelihood of more elaborate processing, the route to persuasion will be taken to a larger extent through elaborate consideration of the information and arguments presented, which in turn should favor higher involvement product attitudes (Cacioppo and Petty 1984, p. 673). As previously reasoned however, we do not believe this to improve the effect on purchase intentions. This belief is supported by that Smith et al. (2008) did not find significant effects of creativity on purchase intentions, leading us to focus on attitudes in this section.

The increased information processing and scrutiny is not necessarily assumed to be positive for low involvement products however, as they rely on peripheral cues and in reality may not have much to back their claims with. An example would be that being reminded about

candy may increase your desire for candy, but the opposite may be true if you start considering the benefits and costs of eating it or elaborating about what it contains. Also, involvement product types many times play on the consumer's lower needs, which may not be in their interest to follow long term. But instead, when relying on the peripheral cues and lower level of elaboration they succumb to their sensory, short-term, needs (Rossiter et al. 1991, p. 16).

Based on this, we believe that advertising creativity can have varying impact on different products advertised in the mobile phone, with mainly positive effects for higher involvement products. Therefore we posit that:

Hypotheses	
H4a	Perceived higher advertising creativity has a larger positive effect on attitude than perceived lower creativity for higher involvement products
H4b	When creativity is perceived as higher, mobile display advertising has a larger positive effect on attitudes for higher involvement products than for lower involvement products

3 Methodology

3.1 Scientific approach

As our study uses a deductive approach, we used already established theories within marketing research to generate a number of hypotheses to examine whether these models also apply to the mobile display (Bryman and Bell 2015). To make sure that the study's conclusions would have external validity (Bryman and Bell 2015, pp. 40-69), that is, be applicable in a real world setting, consumers were exposed to real brands in a real mobile news feed. The advertisements were designed by advertising bureaus without our interference. Since previous studies have shown that the effects of mobile advertisements are small (Bart et al. 2014, p. 272), a large sample of 13,824 questionnaire responses was collected as to be able to study the effects. An important factor to consider in this section is the technical limitations posed by the mobile medium, because of size and challenges with measurability.

3.2 Study design

The study type is a field experiment, where respondents were randomly assigned to either an unexposed control group or an exposed group and in turn, they were randomly exposed to only one of 13 brands. The brands advertised either higher or lower involvement products, and each brand had three equally large campaigns. In order to give a more general view of mobile display advertising regardless of advertising content type, all advertised products had three campaigns with either banner, rich media or video content, to which the respondents were randomly assigned. Each advertisement campaign ran for five days, and two days after the campaign ended, a questionnaire was sent out to returning visitors when they entered Aftonbladet. The questionnaire looked the same for all respondents within a brand and consisted of two pages. The first page contained close-ended questions with hierarchy of effect measures, using seven-point bipolar scales. The second page measured the construct of perceived creativity using shorter five-point bipolar scales, due to space limitations.

3.2.1 Campaign design

The study was conducted in collaboration with Schibsted, one of the largest media companies in Sweden, who manages the largest mobile news feed in the country (KIA, 2016), Aftonbladet, on which the study was conducted. The concept of higher and lower involvement product types were introduced to the company's marketing professionals, who were subsequently asked to gather potential advertisers and later categorize them. The criteria for inclusion in the study was that the general public had to have awareness of the brand, the mean awareness of each campaign was later tested through the responses gathered in the questionnaire. Once all the data had been gathered and the analysis began, the classification was compared to our own, following the guidelines and examples presented in Rossiter and Percy's grid (Rossiter et al. 1991, p. 13). As the advertisers participating in the study were to be kept confidential, the same path of classification was chosen as Bart et al. (2014), rather than letting a separate expert jury decide upon product type. Additionally, due to the nature of the mobile phone, size restricted us from asking questions about the visitor's perception of what type of product it was.

Once a brand had been admitted to the study, they were instructed to make an advertisement for each of the three different content types, but for the same product. The design of the different campaigns were made by professional advertising bureaus without any interaction or guidelines from us, to make sure that the campaigns were a good sample for how mobile advertising usually looks, thus increasing external validity. The material used in the advertisements had never been used before. The study and advertisements were presented in both the web-based mobile version of the company’s news feed, as well as the mobile application version.

Table 1: Campaigns divided by higher and lower involvement

Higher involvement products	Lower involvement products
Credit card company A	Betting company
Credit card company B	Candy company
Insurance company	Fast food company
Interior design company	Information search service A
Telecom company A	Information search service B
Telecom company B	
Toy company	
Travel agency	

Table 2: Number of respondents in each group

	Exposed	Unexposed
Lower involvement	2,084	2,416
Higher involvement	4,466	4,858

The study included three different content types; static banner, rich media and video. The rich media advertisements consisted of slides or spin cubes, with between two to four different sides, which could either switch sides automatically, or manually if swiped. The video advertisements presented a shorter looped version of the entire video once it was in-screen. This loop continued in perpetuity, or until the video was clicked on, which instead loaded a longer video.



Image 1: Examples, from left to right: Static banner, rich media and video (not from brands or campaigns participating in the study).

3.2.2 Questionnaire design

The questionnaire consisted of two pages with questions regarding the hierarchy of effects on the first page, whereas on the second page, the visitor was presented with the advertisement used in that particular campaign and asked about questions related to creativity.

Formulations in Swedish used for the questionnaire regarding the hierarchy of effects were those that Schibsted usually uses, as to make this data comparable to other data previously collected within the company. As all of the questions were similar in their formulation to established measures, although not completely the same, the measure reliability and validity should still be sufficient. This is especially considering that they have been provided by Inizio, an established market analysis specialist, a method used similarly by Bart et al. (2014), who have made their interpretations of academically established measures. Had other measurements been used instead, there would have still been a problem with the measure reliability and validity, since much is lost in translation from English to Swedish. Due to the limited size of the mobile phone screen and due to concerns of decreasing visitors' satisfaction by asking them to answer long questionnaires, only one question was used per construct for the hierarchy of effects, instead of the preferred multi-item questions, which might limit the internal validity.

On the second page of the questionnaire, the ad for the static banner of that specific brand was presented and asked for a rating on three different questions regarding creativity. The questions were based on Smith et al. 2008, p. 56) but due to size limitations, only 5-point bipolar scales could be used. This is not optimal, as it reduces the expected variation of results, but it was the best alternative given the technical limitations. An index was created from the three questions used to measure creativity, as Cronbach's alpha was 0.891, exceeding 0.7. Additionally, we were only able, due to technical reasons, to present the static banner format to the visitor when determining creativity on page two, which is why all tests done using the creativity variable were only on the static banner campaigns.

It was not technically feasible to present the questions in different orders to different individuals, as to decrease the possible systematic measuring errors. Previous research in the mobile phone has been carried out with the same limitations as described above (Bart et al. 2014, p. 273). The same questionnaire was presented to unexposed and exposed visitors of that specific brand. The questions were presented in Swedish as to ensure respondent comprehension. Below follows the list of the variables measured on page one, and a list of the Swedish formulations of the questions can be found in the appendix.

Questionnaire design	
Awareness	Question: How familiar are you with [brand]?
	Scale: Never heard of - Very familiar, 1-7
Attitudes	Question: How would you describe your overall opinion of [brand]?
	Scale: Very negative - Very Positive, 1-7
Purchase intentions	Question: I will likely purchase from [brand] within [time period]?
	Scale: Not likely at all - Very likely, 1-7
	Comment: [Time period] was decided depending on the industry of the product type with the time period ranging from one month to a year by marketing specialists at Inizio.
Creativity	Question: Regardless of whether you have seen this ad or not, what is your opinion of it:
	Scale: Not creative at all - very creative, 1-5
	Scale: Not relevant at all - very relevant, 1-5
	Scale: Not different at all - very different, 1-5

3.2.3 Execution

The data was collected in March and April of 2016. All campaigns ran for a total time of five days, from Wednesday to Sunday, with all the different content types for one brand running in parallel. Each advertisement was presented on the second advertisement position in the news feed, called interstitial two, and had a total size of 320x320 pixels for all content types on the mobile web-version, as well as the app version of the news feed. For it to be viewed, the visitor needed to scroll down, and if so is done, the advertisement covered the entire screen horizontally and approximately 60% of the screen vertically, but the exact number differed depending on the ratio of the screen size. When using the term exposed in this study, what is actually meant is if the advertisement has been loaded or not, which it does automatically together with the rest of the feed. Due to technical limitations we were not able to measure whether the advertisement was actually in-screen for the individual, but only if it were loaded or not. This is a common measuring limitation in the business, which we unfortunately could not overcome.

The steps for exposure for each individual respondent were the following	
1	Visitors were assigned one of the advertised brands at random. Since the number of impressions for each campaign were approximately the same, there was an equal chance for the visitor to end up in one campaign rather than another
2	One of the three campaign content types for that specific brand was randomly chosen
3	The device received a cookie from the news feed to enable tracking of the visitors' exposures
4	If the visitor returned, one of two things would happen:
	<ul style="list-style-type: none"> ○ If the same advertised brand was chosen at random, the same content type would be presented
	<ul style="list-style-type: none"> ○ If another brand was randomly chosen than the one initially chosen in step 1, the cycle began anew at step one

This cycle was run for visitors until the total number of impressions initially decided upon for that campaign was reached. Since we could not beforehand ensure how many times a visitor would return, the frequency variable could not be controlled and was therefore instead determined when looking upon the entire data set.

The traceability of each device was not perfect, as readers could visit the news feed on another web browser on the same phone, or use a different phone entirely and be presented with one of the campaigns. The visitor could also be browsing the web in "incognito/private mode" in the same browser, which meant that no cookies could be installed, or that it simply deleted cookies after the visitor had completed their browsing session, rendering it impossible to know afterwards if they had been exposed or not. The probability of being exposed at random where it cannot be traced is very low considering the amount of impressions, around 500,000 for each brand, in relation to the number of visits every week for Aftonbladet - 33,000,000 (KIA, 2016), why we deem this possible limitation in internal validity to be rather small. The questionnaires were sent out two days after the completion of the entire campaign to the web browser or application upon visiting the feed. To decrease the perceived effort needed to answer the questionnaire and therefore increase response rate, the questionnaire was loaded on top of the news feed, giving the feeling that you did not leave the landing site of the news feed.

3.3 Sampling of respondents

Looking at the demographic table below, we see that Aftonbladet is largely representative of Sweden's population (Schibsted, 2015) This user base is not only broad, but very large. According to KIA-index, Aftonbladet has around 6 million unique visitors on the mobile news feed alone every week, making it the most visited mobile site in Sweden all categories¹ (KIA, 2016).

¹ KIA-index only includes brands that have actively chosen to be a part of their comparisons. No international sites can be found on this list.

Table 3 showing gender comparisons between Aftonbladet and Sweden from March 2015

	Aftonbladet Mobile	Sweden
Male	54%	50%
Female	46%	50%

Table 4 showing age comparisons between Aftonbladet and Sweden from March 2015

	Aftonbladet Mobile	Sweden
16-29	28%	23%
30-49	44%	34%
50-64	22%	24%
65-80	7%	19%

Table 5 showing demographic comparisons between Aftonbladet and Sweden by region, from March 2015

	Aftonbladet Mobile	Sweden
Stockholm	25%	22%
Uppsala	4%	4%
Södermanland	3%	3%
Ostergötland	4%	5%
Jönköping	3%	4%
Kronoberg	2%	2%
Kalmar	2%	2%
Gotland	1%	1%
Blekinge	1%	2%
Skåne	13%	13%
Halland	3%	3%
Västra Götaland	17%	17%
Värmland	3%	3%
Örebro	3%	3%
Västmanland	3%	3%
Dalarna	3%	3%
Gävleborg	3%	3%
Västernorrland	3%	3%
Jämtland	1%	1%
Västerbotten	3%	3%
Norrbotten	3%	3%

The size and breadth of Aftonbladet should make results from testing done on their platform generalizable to other mobile news feeds in Sweden. We do acknowledge differences in relationship to the mobile phone in other cultures (Choi, Hwang and McMillan 2008), which should be taken into account before generalizing the results found in this study beyond cultures similar to Sweden.

Due to technical reasons, we could not collect the response rate for this questionnaire, although Schibsted usually sees a response rate of 5-8% when conducting similar types of questionnaires. Some groups might be more prone to not answer questionnaires, but if it is sent out repeatedly the likelihood of missing these individuals will decrease. To avoid decreasing the visitors' satisfaction, the limitation of only sending out the questionnaire once per device was made, which might lead to some skewness in the data and the validity of the results. This limitation was accepted since it is in line with previous research (Bart et al. 2014).

The questionnaire responses were gathered using the company Inizio and their service Ad-Map. Limits were set for the amount of respondents looking to be reached, 100-200 responses among unexposed and 300-350 responses among exposed, but due to technical reasons the amount of responses were set as intervals rather than precise numbers. Since the viewers were only presented with the questionnaire after they had been exposed, there was no way for the respondents to know beforehand that they were a part of a study, which is why this approach, with two different groups and comparing results between individuals was used, rather than comparing the answers provided by the same individual before and after exposure. This was done to decrease the possible bias that might occur if respondents know that they are a part of a study, and therefore increases their attention towards the specific brand being researched.

Even though the visitors of Aftonbladet are a good cross section of the Swedish population as shown above, this does not directly convert into our sample, even though random selection was applied. This has to do with the fact that the tables above show unique visitors and do therefore not take into account the average times of visit to the sites per visitor. This means that individuals that visit the site more frequently are more likely to have answered the questionnaire since the randomization is based on the visits, not unique visitors. Demographical data could not be gathered in the study due to screen size limitations and consideration of the visitor experience, otherwise this data could have been cross-checked with the data describing Aftonbladet and Sweden on average, to observe any potential skewness in the sample.

Since the random selection element is based on visits rather than unique visitors, one individual might theoretically have answered the questionnaire of a different brand, although the likelihood of this is very small considering the total campaign sizes and the number of visits to the feed every week, why it was deemed an acceptable limitation.

3.4 Data analysis tools and tests

Professionals at Schibsted were responsible for the technicalities of administering the advertisements. Inizio technically collected the questionnaire responses and delivered to us a data set with all the campaigns included, with one row of data corresponding to each individual questionnaire response. We then imported this data set into IBM SPSS Statistics 23 for analysis.

Independent t-tests were used to compare mean effect scores between unexposed and exposed groups and one-way ANOVAs were used to compare different campaigns on one dependent variable for the control group. Two and Three-way ANOVA tests were used to check for interaction effects between different groups. If interaction effects were found, the analysis continued by determining simple two-way interactions, simple simple main effects and simple simple comparison. The significance level was set to 5%.

Higher and lower awareness groups were created by deeming all brands below the general brand awareness mean of the control group as “lower awareness”, and all those above “higher awareness”. By first determining the mean awareness for all brands (4.77), we were then able to create two groups that could be compared against each other. Worth noting here is that this does not represent a general construct of typically higher or lower awareness brands, but we reason that those brands which consumers already have previous knowledge of, are easier to be reminded of, why this method is used.

A creativity index was created through using the mean of the three creativity questions posed for each individual. Cronbach’s alpha ensured the scales’ reliability. Higher creativity were those with a mean of 4 to 5. Lower creativity were those with a mean of 1 to 2. Remaining individuals were not used for these analyses.

3.5 Reliability and validity

To insure reliability for the manipulated variable, the level of product involvement was judged independently from one another by people with different backgrounds to decrease possible biases. Cronbach’s alpha was used to check for internal consistency and reliability for our creativity index. Additionally, the large sample size used increases the study’s reliability.

As the questions posed regarding hierarchy of effects measures have been used for a long time on this specific news feed and were derived from the marketing specialist Inizio and reviewed by industry and academically experienced individuals, they can be assumed to have a validity, even though they do not completely overlap with formulations developed in academia. If the study is to be reproduced, the same exact wording used in the study as formulated in Swedish can be found in the appendix.

The respondents were randomly assigned to either higher or lower involvement products, although the likelihood of ending up in the exposed group rather than the unexposed group is higher if you are a frequent visitor to the feed, as we had no control over who or when visits to the site are made. Previous studies have shown that attitudes towards the mobile phone and advertisements in it can affect the advertisement’s impact (Shintaro et al. 2007). This is one of the largest limitations with this study, but was necessary to make in the trade-off between control of the study and the results being generalizable.

Reviewing the demographical data between Aftonbladet Mobile and Sweden and considering that the studied advertisements were presented as it is usually done, results from this study should be generalizable to other feeds in Sweden in particular. As discussed in section 5.5, limitations, asking respondents to answer a questionnaire might lead to overly rational answers that do not fully capture the changes in actual purchase behavior, something that is mostly relevant when discussing lower involvement products.

4 Results and analysis

In the following sections we present and discuss the results and based on this, we either reject or accept the hypotheses posed.

4.1 Control for factors potentially affecting the results

Because of limited questionnaire space, we were not able to add questions controlling for a successful manipulation. However, we can control for some general sources of skewness in the results. The first one is potential variations in previous awareness, attitudes and purchase intentions of the campaigns, which is presented in terms of the values reported by the unexposed control group below.

Table 6: Awareness, Attitudes and Purchase intentions for the control group

Effect variables	Awareness	Attitude	Purchase intentions
Mean (SD) for all campaigns	4.77 (2.40)	3.78 (2.02)	2.22 (1.94)
Mean (SD) for lower involvement	5.17 (2.40)	4.25 (2.14)	2.86 (2.21)
Mean (SD) for higher involvement	4.57 (2.38)	3.54 (1.92)	1.90 (1.70)
Highest for any campaign	5.82 (2.15)	4.78 (2.06)	3.76 (2.43)
Lowest for any campaign	2.40 (1.90)	2.30 (1.52)	1.21 (0.96)

The general average of awareness and attitudes verifies that the brands to a large extent are known and not highly disliked or liked. Furthermore, the general purchase intentions are fairly low. Worth noting is the differences between higher and lower involvement products, which were found significantly different using a t-test ($p < 0.001$). They are however not extreme and we are mainly considering the marginal effects of exposure in test below, but given that higher prior attitudes and awareness may increase this effect, this is a small albeit potential source of error.

Furthermore, we made these tests on both banners, rich media and videos, to give a general picture of the effects of mobile display advertising. In order to ensure that results do not vary considerably based on this, we conducted a three-way ANOVA with content type, product involvement and exposed or unexposed as the independent variables against awareness, attitudes and purchase intentions in turn. This yielded no significant interaction effects, indicating a low probability of potential error from this source. The results themselves may be surprising, but one has to note that this is data from single exposures.

4.2 Higher and lower involvement products in the mobile phone

4.2.1 Mobile display advertising has a positive effect on attitudes and purchase intentions for lower involvement products

Although mobile advertisement for lower involvement products has not been studied, Shankar and Balasubramanian (2009) hypothesized that an effect should be prevalent, with the reason being that the advertisement can work as a reminder of existing needs for lower involvement products. For both effect variables for lower involvement products, the difference between unexposed and exposed is significant using an independent t-test ($p > 0.001$). In other words, the results are in line with the stated hypotheses, meaning that advertisement in the mobile media can be effective for lower involvement products.

Table 7: Mean comparison of lower involvement products for attitudes and purchase intention

Effect variables	Unexposed mean (SD)	Exposed mean (SD)	Difference	Significance
Attitude	4.25 (2.13)	4.64 (1.83)	0.67	< 0.001
Purchase intention	2.86 (2.21)	3.53 (2.43)	0.39	< 0.001

Hypotheses		
H1a	Mobile display advertising of lower involvement products has a positive effect on attitudes	Supported
H1b	Mobile display advertising of lower involvement products has a positive effect on purchase intentions	Supported

4.2.2 Mobile display advertising has a positive effect on attitudes, but not on purchase intentions, for higher involvement products

Higher involvement products being marketed in the mobile medium have previously shown effect with the explanation that the advertisement triggers previous memories (Bart et al. 2014). For attitude, the hypothesis is empirically supported when using an independent t-test ($p > 0.001$), whereas the same test for purchase intention is was significant ($p = 0.212$).

Table 8: Mean comparison of higher involvement products for attitudes and purchase intentions

Effect variables	Unexposed mean (SD)	Exposed mean (SD)	Difference	Significance
Attitude	3.54 (1.92)	3.96 (1.76)	0.42	< 0.001
Purchase intention	1.90 (1.70)	1.95 (1.70)	0.05	0.21

Hypotheses		
H1a	Mobile display advertising of higher involvement products has a positive effect on attitudes	Supported
H1b	Mobile display advertising of higher involvement products has a positive effect on purchase intentions	Not supported

4.3 Different effects on attitude in the mobile phone

As argued for in 2.2.4, mobile advertising is believed to work primarily through a reminder mechanism, where higher involvement products are processed through the central route and lower involvement products are processed through the peripheral route. Due to different decision making processes depending on product involvement, higher involvement should see a larger effect increase than lower involvement products on attitudes, as central route processing of previously encoded information should yield higher results (Cacioppo and Petty 1984). Furthermore, this result should manifest itself to an even larger extent if there exists a higher prior awareness.

4.3.1 The effect on attitudes does not differ depending on product involvement

Table 9: Two-way ANOVA for attitude as affected by product involvement and exposure

Effect variables	df	F	Significance	Partial η^2
Exposure	1	138.40	< 0.001	0.01
Product involvement	1	404.64	< 0.001	0.028
Exposure * Product involvement	1	0.16	0.69	< 0.001
Error	13820			

Using a two-way ANOVA, no significant interaction was found between product involvement and exposure for attitude, $F(1, 13820) = 0.16, p = 0.69$ and partial $\eta^2 < 0.001$, therefore H2a is rejected.

Hypothesis		
H2a	Mobile display advertising of higher involvement products has a larger positive effect on attitudes than mobile display advertising of lower involvement products	Not supported

4.3.2 A higher prior awareness gives a larger positive effect on attitudes for higher involvement products

Table 10: Two-way ANOVA for attitude as affected by prior awareness and exposure for higher involvement products

Effect variables	df	F	Significance	Partial η^2
Exposure	1	168.91	< 0.001	0.018
Awareness	1	536.60	< 0.001	0.054
Exposure * Awareness	1	14.43	< 0.001	0.002
Error	9320			

Table 11: Simple means comparison of attitude for higher involvement products for higher and lower prior awareness

Effect variables	Unexposed mean (SD)	Exposed mean (SD)	Difference	Significance
Higher awareness	3.80 (1.94)	4.44 (1.67)	0.64	<0.001
Lower awareness	3.06 (1.79)	3.41 (1.70)	0.35	<0.001

Splitting the data, to only look at higher involvement products, we then used a two-way ANOVA for the differing effects of exposure between higher and lower prior awareness, where a significant ($p < 0.001$) interaction effect was found $F(1, 9320) = 14.43$, $p < 0.001$, and a partial $\eta^2 = 0.002$. To further investigate which of the two groups of awareness had the largest change in attitude, a simple main effect test was conducted, showing the largest effect in the higher awareness group, 0.64 compared to 0.35 ($p < 0.001$). Albeit with a low explanatory value of the partial η^2 , this brings support for H2b.

Hypothesis		
H2b	Mobile display advertising of higher involvement products with a higher prior awareness has a larger positive effect on attitudes than mobile display advertising of higher involvement products with lower prior awareness	Supported

4.4 Different effects on purchase intentions in the mobile phone

Due to the nature of lower involvement products, where the process from being reminded of a need to action is shorter, the mechanisms for lower involvement products are hypothesized to give a relatively larger effect on purchase intentions. Furthermore, this effect is expected to increase in cases of higher prior awareness.

4.4.1 Mobile display advertising of lower involvement products has a larger positive effect on purchase intentions

Table 12: Two-way ANOVA for purchase intention as affected by product involvement and exposure

Effect variables	df	F	Significance	Partial η^2
Exposure	1	105.14	< 0.001	0.008
Product involvement	1	1325.36	< 0.001	0.088
Exposure * Product involvement	1	80.93	< 0.001	0.006
Error	13820			

For purchase intention, we here find a significant interaction between product involvement and exposure, $F(1, 13820) = 80.93$, $p < 0.001$, and a partial $\eta^2 = 0.006$. Interpreting this, an exposure of an advertisement in the mobile media has a different effect on the consumer depending on the product involvement. Combining this finding with the mean differences from section 4.2.1, seeing that lower involvement products have a mean difference of 0.39 whereas higher involvement products have a mean difference of 0.05, we conclude that lower involvement products has a more positive effect on purchase intention than higher involvement products have. Again, one has to note the very small partial η^2 , meaning that the difference only to a small extent can be attributed to the differing product types, which is to be expected as many other things have influence on advertising outcomes.

Hypothesis		
H3a	Mobile display advertising of lower involvement products has a larger positive effect on purchase intentions than mobile display advertising of higher involvement products	Supported

4.4.2 A higher prior awareness gives a larger positive effect on purchase intentions for lower involvement products

Table 13: Two-way ANOVA for purchase intention as affected by prior awareness and exposure for lower involvement products

Effect variables	df	F	Significance	Partial η^2
Exposure	1	113.94	<0.001	0.025
Awareness	1	77.29	<0.001	0.017
Exposure * Awareness	1	8.00	0.005	0.002
Error	4496			

Table 14: Simple means comparison of purchase intention for lower involvement products for higher and lower prior awareness

Effect variables	Unexposed mean (SE)	Exposed (SE)	Difference	Significance
Higher awareness	3.01 (0.06)	3.96 (0.07)	0.94	<0.001
Lower awareness	2.60 (0.08)	3.14 (0.07)	0.55	<0.001

Using a two-way ANOVA, a significant interaction effect for lower involvement products were found for purchase intention, $F(1, 4496) = 8.00$, $p = 0.005$, and a partial $\eta^2 = 0.002$. To further investigate which of the two groups of prior awareness had the largest change in purchase intentions, a simple main effect test was conducted, showing the largest effect in the higher awareness group, 0.94 compared to 0.55 for the lower awareness group ($p < 0.001$).

Hypothesis		
H3b	Mobile display advertising of lower involvement products with a higher prior awareness has a larger positive effect on purchase intentions than mobile display advertising of lower involvement products with lower prior awareness	Supported

4.5 Creativity in the mobile phone context

As argued in 2.3, creativity has been shown to, under certain conditions, increase the elaboration of an advertisement that in turn should lead to improved attitudes after exposure, given positive attitudes to begin with. Higher creativity in advertisement should therefore have a positive effect on attitudes, especially higher involvement products. Before we proceed, there are two things worth noting. First, due to methodological difficulties, the following results are only for static banners. Secondly, as the advertisements were not manipulated for higher or lower creativity, the results should be interpreted with much care and only as initial indications for this research area.

4.5.1 Perceived higher advertising creativity can not be shown to have a positive effect on attitudes for higher involvement products

Table 15: Two-way ANOVA for attitude as affected by exposure and creativity for higher involvement products

Effect variables	df	F	Significance	Partial η^2
Exposure	1	31.26	< 0.001	0.017
Creativity	1	534.95	< 0.001	0.228
Exposure * Creativity	1	0.02	0.887	< 0.001
Error	1811			

Using a two-way ANOVA for attitude with the file split on higher involvement products, no significant two-way interaction was found, meaning that we could not find empirical support for the hypothesis that perceived higher creativity has a more positive impact on attitude changes from exposure for higher involvement products than in the case of lower perceived creativity.

Hypothesis		
H4a	Perceived higher advertising creativity has a larger positive effect on attitudes than perceived lower creativity for higher involvement products	Not supported

4.5.2 For high perceived creativity, effects are more positive on attitudes for higher involvement products than for lower involvement products

As reasoned in 2.3, higher involvement products are more suited for the central route than lower involvement products. This has to do with that while higher involvement products requires more rational arguments, lower involvement products do better without elaborate reflection. In many cases, lower involvement products are about solving a minor problem or appealing to the consumer's sensory gratification. Therefore, giving further thinking to the

offered solution to these problems might not be the optimal alternative for the consumer long-term. If higher perceived creativity leads to increased elaboration the effect will differ depending on product type.

Table 16: Two-way ANOVA for attitude as affected by exposure and creativity for higher involvement products

Effect variables	df	F	Significance	Partial η^2
Exposure	1	2.28	0.132	0.006
Product involvement	1	20.30	< 0.001	0.048
Exposure * Product involvement	1	7.31	0.007	0.018
Error	399			

Table 17: Simple means comparison of attitude for higher creativity advertisement for higher and lower involvement

Effect variables	Unexposed mean (SE)	Exposed (SE)	Difference	Significance
Higher involvement	5.03 (0.13)	5.69 (0.14)	0.66	< 0.001
Lower involvement	6.16 (0.17)	5.97 (0.18)	-0.19	0.449

Selecting only higher creativity cases, and then using a two-way ANOVA for attitude, a significant interaction effect was seen, indicating that higher creativity has different effects depending on product type, $F(1, 399) = 7.31, p = 0.007$ and a partial $\eta^2 = 0.018$. To understand the difference between product involvement, a simple mean comparison was made. Higher creativity effects different product types differently, with a more positive effect for higher involvement products. More interestingly, we see no significant difference from an exposure for lower involvement products. Rather than seeing attitude improve for higher involvement products, which we did not see in H4a, the differing effect is more about the decreasing advertising effectiveness for lower involvement products when higher creativity is perceived. Thus, the hypothesis is accepted, but rather because of the less favorable impact on low involvement than a more positive impact on high involvement.

Hypothesis		
H4b	When creativity is perceived as high, mobile display advertising has a larger positive effect on attitudes for higher involvement products than for lower involvement products.	Supported

4.6 Summary of hypotheses

Hypotheses	Support
H1a: Mobile display advertising of lower involvement products has a positive effect on attitudes	Supported
H1b: Mobile display advertising of lower involvement products has a positive effect on purchase intentions	Supported
H1c: Mobile display advertising of higher involvement products has a positive effect on attitudes	Supported
H1d: Mobile display advertising of higher involvement products has a positive effect on purchase intentions	Not supported
H2a: Mobile display advertising of higher involvement products has a larger positive effect on attitudes than mobile display advertising of lower involvement products	Not supported
H2b: Mobile display advertising of higher involvement products with a higher prior awareness has a larger positive effect on attitudes than mobile display advertising of higher involvement products with lower prior awareness	Supported
H3a: Mobile display advertising of lower involvement products has a larger positive effect on purchase intentions than mobile display advertising of higher involvement products	Supported
H3b: Mobile display advertising of lower involvement products with a higher prior awareness has a larger positive effect on purchase intentions than mobile display advertising of lower involvement products with lower prior awareness	Supported
H4a: Perceived higher advertising creativity has a positive effect on attitudes for higher involvement products.	Not supported
H4b: Perceived higher advertising creativity has a positive effect on purchase intentions for higher involvement products.	Supported

5 Discussion and conclusions

In the following section, our results will be interpreted, explained and discussed based on the research questions posed.

5.1 Can both lower and higher involvement products be successfully advertised in the mobile phone?

The results of the initial tests give a general answer to the research question, in terms of that positive effects were found for both lower and higher involvement products. However, the subsequent tests shed more light on the differences between the products.

5.1.1 Lower involvement products

It was especially interesting to see that lower involvement products in general could be advertised and that both attitudes and purchase intentions could be affected. Even though it has been hypothesized that lower involvement products should work in the mobile media, it has, to the best of our knowledge, never found empirical support before.

Bart et al. (2014), in their analysis of field data, found no support for lower involvement products working in the mobile phone. One explanation to why this effect could be achieved in this study can be the different content types used in the campaigns, especially in terms of size. Bart et al. (2014) only looked at much smaller banner ads which, according to the theory presented above, are neither likely to be able to communicate peripheral cues, nor remind the consumer through showing pictorial elements used in previous advertising from the brand. Since the likelihood of elaboration in the mobile phone is low due to distractions, these small differences in advertisement size can explain this phenomenon.

One has to note here that it is the relative size of the advertisement to the screen that may give an effect, as it effectively also reduces the amount of surrounding clutter. One should however also note the methodology used in Bart et al. (2014), where the questionnaire responses were collected directly after exposure and where the respondent was given the opportunity to opt in, rather than to opt out. This may have required a higher level of cognition, which possibly introduced a bias towards higher involvement products. We should therefore not too hastily conclude that the content size and type had a large impact in this study, and as noted in the results, we did not see a significant difference of effects between the content types for one exposure.

Lastly, especially notable for lower involvement products was the quite substantial effect on purchase intentions. As hypothesized, this effect was larger for lower than higher involvement products. This may not have come as a surprise, given the more direct nature of lower involvement buying processes. The larger increase when prior awareness was higher is an indication of the reminding effect in the mobile phone. We saw a quite small explanatory power in prior awareness as a moderator and issue familiarity can in itself simply help to increase the ability to process information, which is another explanation. With that said, we show the perhaps not so revolutionary finding that it is easier to advertise more familiar brands in the mobile phone, but the quite substantial effect for such brands from only a single exposure has practical implications for marketers, which is further discussed in 5.5.

5.1.2 Higher involvement products

For higher involvement products, we see that it is in general hard to induce central route processing, even though we found a positive effect on attitudes. The difficulties may very well be due to the characteristics of the medium, which simply reduces your ability and motivation to process and evaluate the more factual information related to higher involvement products to a larger extent. One also has to note the idea of that you are occupied with a primary task, in this case looking for interesting news articles, which may reduce cognitive resources available for other tasks, further reducing your ability to process more factual information (Wang and Lin 2011, p.421). If this would have been the case in all occasions, it would mean that only peripheral route processing occurred, favoring lower involvement products. Now, this difference could not be found for attitudes. A possible explanation is that this instead varies from case to case, meaning that central route processing is induced in some cases, but not all, for higher involvement products - leading to more ambiguous results.

Even though at a first glance it may look like lower involvement products work better in the mobile phone, this is not necessarily the case. Since the attitude shift from advertising is, according to Petty and Cacioppo (1984), thought to have a more persistent effect on higher involvement products, the increase in effect measures may be smaller, but remain for a longer period of time and be robust against counter-arguments or advertising from competing brands. Lower involvement products on the other hand, will be more exposed to advertising from other firms.

As in the case of lower involvement products, higher prior awareness increased the effectiveness of advertising on attitudes, which can be interpreted as central route processing was used to a larger extent. The increased ability to process the information presented could be increased simply due to higher issue familiarity, increasing your ability to process the information. Furthermore, higher prior awareness of a higher involvement product also means that you are more motivated to process the information, due to that the product is more relevant to you. Again, one has to note the very modest explanatory values given for the interaction, meaning that there are several other factors influencing this effect. The point here is that processing of the actual advertisement may occur, beyond the reminding of previously encoded information.

Lastly, in terms of purchase intentions, the campaigns in general did not manage to create an effect for higher involvement products. This was in line with that the theorizing that the purchasing process is longer and is driven by firstly creating attitudes. One also has to keep in mind that it is more difficult to predict if you intend to purchase a higher than a lower involvement product, a methodological limitation which may explain the lack of significance in the increase of purchase intentions for higher involvement products.

5.2 Does the effectiveness of advertising for higher and lower involvement products differ depending on perceived advertising creativity?

In the case of higher or lower perceived creativity, the main finding here is not how positively higher involvement products were affected, but rather the negative results for lower involvement.

This can be explained by that not all lower involvement products benefit from being more elaborately processed, if this leads to scrutiny of the brand, product and need. With this said, one should not interpret this as that creativity in general is negative for lower involvement products. If the increased processing, and primarily attention, goes towards further noticing creative elements which are only positively related to your needs - it could prove to be effective. In this case, we believe that as we were not able to manipulate for creativity, the measure is rather something closer to how much you have paid attention to and processed an advertisement. In this sense, it may also be that as lower involvement products are less relevant for most consumers, being interrupted by them while conducting a primary other activity may cause annoyance and negative feelings as a consequence, which in turn leads to more negative attitudes towards the advertisement and the brand.

With this said, it seems as if there is much more to research in this area and we only intended to provide an indication for further research, as well as to relate creativity to the differing product involvement concepts, to further increase the understanding of the mechanisms at work. Because of the lack of manipulation, these results shall only be seen as initial indicators of possible causal relationships.

5.3 Conclusion

To summarize, the results indicate that higher as well as lower involvement products can be successfully advertised in the mobile phone. Especially lower involvement products were seen to have substantial effects, which has not been proven before. Our results support the reasoning of both Bart et al. (2014) and Shankar and Balasubramanian (2009), in the sense that mobile advertising both works through the central and peripheral route, with indications that this is a reminding effect of either previously encoded information or needs.

We can conclude that given the delimitations, the answer to our main research question is yes, even though the effect differs:

- *Yes, both lower and higher involvement products can be successfully advertised in the mobile phone.*

Furthermore, the answer to the sub-question of if the effect differs depending on perceived advertising creativity, the answer is yes - but not in the way expected.

- *Yes, the effectiveness of advertising for higher and lower involvement products differs depending on perceived advertising creativity.*

5.4 Implications

Studying the phenomenon of mobile marketing in Sweden should be of high interest, as the country has shown historically to be in the forefront of technological adoption (Dutta and Mia, 2011, p.11), with the implication being that trends and results may give a hint in which way other national markets evolve in the coming years.

The results from the study shows that the mobile feed can be used as a marketing channel for lower as well as higher involvement products. The reminding mechanism that is suggested to be at work, implies that marketing directors best benefit from the mobile feed through utilizing it as an important supporting channel to maintain a brand that has been built through other channels. Communicating a clear message through other channels to raise awareness and attitudes, and later pushing the essence of the same message, using similar language and pictorial content to remind the consumer of what they already have processed, may be a fruitful strategy.

An unexpected indication from the tests is that expending resources on creating more creative content types seems to be less beneficial, as no differences in effect could be detected on a general level between static banners, rich media and video. Rather, these resources could be focused on reminding the consumer periodically of previous messages, needs and solution. The purchase intentions for lower involvement products, especially those with a higher prior awareness, can effectively be stimulated through the mobile phone. With the right targeting, using the right place and time for the exposure, these exposures could prove very lucrative for such brands.

It seems that in general, it is fairly more difficult to advertise higher involvement products in the mobile phone, but the effect on these products was still positive and significant. Higher involvement products for brands with higher previous awareness can find the channel even more effective. If the Elaboration Likelihood Model holds true within mobile advertising, exposures here should lead to sustained attitude changes. Efforts should be made to find ways to make the consumer actively process more of the advertisement presented, which in turn will lead to further increases in purchase intention.

An additional finding from this study is that creative advertising forms should be used with care, especially for low involvement products. This can be interpreted as that consumers are annoyed when advertisements interrupt them, but this finding should rather be interpreted as an indication for further research.

5.5 Critique and limitations

Even though the study was conducted in an as authentic setting as possible, with a large number of respondents in a generic context, the method has had limitations. The division of products into higher or lower involvement was based on the opinions of several people, with us and the industry professionals making independent judgments. However, the degree of involvement differs between individuals and the separate judging groups may be subject to biases. Based on this, it would have been more optimal to let a larger set of individuals judge the different products advertised, but this was not possible given the methodological limitations and the scope of this thesis. Furthermore, even though cookie technology controlled for the possibility of that a respondent saw two different content types of the same advertisement or was exposed several times, we were not able to control for if the respondent could have been exposed through another mobile phone or web browser.

One should also be cautious when interpreting the results of our sub-research question regarding creativity, as we were unable to manipulate for the variable with higher and lower creativity advertisements due to practical limitations. This means that the results should be seen as indications, rather than strong evidence, as a non-experimental test such as this give less room for claiming causality.

Even though all advertising brands designed new advertising material for this study, we could not control for if other campaigns for the brands ran in other channels separately. To the best of our knowledge, this was not largely occurring, but we were unable to eliminate that possibility. One should also note that the campaigns only lasted for a shorter period of time, which should not be a large problem as we only studied the difference between an unexposed and exposed state. However, we could not capture even longer term memory effects and additionally in relation to the period, seasonal differences and weather conditions may affect mobile advertising response (Grewal et al. 2016).

Lastly, measuring advertisement response through questionnaires may provide difficulties, as answering a questionnaire is more cognitive, which in turn may fail to capture subtler and more unconscious effects of advertising. Even though questionnaires are generally used and believed to serve as a fair proxy (Shapiro and Krishnan, 2001), the response rates are low and in this study, it could have created a bias in the results. Studies in mobile advertising would benefit from other research methods, such as eye tracking or functional magnetic resonance imaging (fMRI), to capture subtler effects.

5.6 Future research

As the findings presented are derived from only one mobile news feed, further testing needs to be done on other news feeds as well as other feeds in general, as the context in which the advertisements are presented are likely to have an impact. The study further supports prior research findings that the reminder effect is prevalent in the mobile, which would make it interesting to examine optimal frequencies and intervals of advertising exposures for the reminder effect to be optimized. When doing this we suggest using a similar division as the one used here since the empirical findings support the notion that, depending on product type, different processing occurs.

Combining the fact that we see indications of a reminder mechanism in the mobile media with the notion that prior awareness had a moderating effect on the effectiveness of the advertisement at hand, we suggest that further research should look at extended synergy-effects of mobile advertising with other marketing channels. The possibility of using the mobile media for maintaining the brand rather and using other platforms to build it might be a lucrative one.

Further research should investigate the mechanisms of creativity in the mobile phone for both higher and lower involvement products through manipulating creativity. The effectiveness of advertising for lower involvement products decreased with higher creativity, suggesting that creativity might even have a negative effect on advertising under certain conditions, which is another field that should be investigated further.

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7 Appendix

Några snabba till dig! ×

Har du sett någon reklam från [varumärke] under den senaste veckan?

Nej, inte alls Ja, många gånger

Hur väl känner du till [varumärke]?

Aldrig hört talas om Mycket väl

Hur skulle du beskriva din generella uppfattning om [varumärke]?

Väldigt negativ Väldigt positiv

Jag kommer sannolikt att köpa från [varumärke] inom [tidsperiod]?

Inte alls sannolikt Mycket sannolikt

Jag tycker att [varumärke] brukar göra mobilreklam som är värd att uppmärksammas?

Stämmer inte alls Stämmer mycket bra

När det gäller Aftonbladet.se under de senaste 14 dagarna, vad stämmer för dig?

Besökt den sällan/aldrig Besökt den flera gånger dagligen

Bästa besökare.
Vi genomför denna undersökningen för att lära oss mer och säkerställa att Aftonbladet förblir Sveriges största tidning, för både besökare och annonsörer. Du är givetvis anonym, och vi är mycket tacksamma för dina svar!

AFTONBLADET
i samarbete med
INIZIO

Page one of the mobile phone questionnaire.

Några snabba till dig!



Har du läst eller sett någon eller några av dessa annonser på Aftonbladet?



Ja Nej

Oavsett om du har sett reklamen eller inte vad, är din uppfattning om den:

Ogillar



Gillar

Inte alls kreativ



Mycket kreativ

Inte alls relevant



Mycket relevant

Inte alls annorlunda



Mycket annorlunda

Av låg kvalitet



Av hög kvalitet

Hur ofta köper du [produktkategorin]?

Mycket sällan



Mycket ofta

Bästa besökare,

Vi genomför denna undersökningen för att lära oss mer och säkerställa att Aftonbladet förblir Sveriges största tidning, för både besökare och annonsörer. Du är givetvis anonym, och vi är mycket tacksamma för dina svar!

AFTONBLADET

i samarbete med

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Page two of the mobile phone questionnaire.