

Departamento de Marketing, Operações e Gestão Geral

THE ROLE OF ATTENTION AND EMOTIONAL RESPONSES ON ONLINE RETARGETING CAMPAIGNS

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Abstract

Retargeting consists of communicating towards consumers that have already been in contact with a brand – because they visited the website or clicked on an advert, for example. Although nowadays people tend to avoid advertising, retargeting has proven to be a very successful method for bringing back consumers that did not conclude a purchase or simply people that showed previous interest in a brand.

Also, it is known that attention and emotions play a big role in how people react to advertising and how they perceive the brands that communicate with them. Bearing this in mind, this study hypothesizes that retargeted advertising gets higher levels of attention than either generic or targeted advertising. In the same way, it is proposed that retargeted advertising induces higher levels of positive emotions than the other types of advertising.

In order to study such topic, a two-day experiment was created to simulate a decision-making process. Participants were exposed to products but did not finish a purchase of their choice on day one, only to see it advertised on a blog a few days later, among other types of advertising. This way, it was possible to study participant's reactions to different types of advertising – retargeted, targeted and generic – on a longitudinal study and how retargeted adverts impact their intention to revisit the website, purchase and recommend. This study shows that retargeted advertising gets higher levels of attention than the other two types of ads. Also, it was possible to understand that retargeted advertising has a positive direct relationship with intention to revisit, and a positive indirect relationship with intention to purchase and intention to revisit.

Keywords: Attention, Emotions, Retargeting, Intention to Purchase, Intention to Revisit, Intention to Recommend, PLS-SEM.

JEL CLASSIFICATION: JEL: M30 – General JEL: M31 – Marketing JEL: M37 – Advertising

Resumo

O retargeting consiste em comunicar directamente com consumidores que já tenham estado em contacto com a marca – porque visitaram o *website* anteriormente ou porque clicaram num anúncio da marca. Apesar de se saber que as pessoas tendem a evitar os anúncios, o retargeting tem provado ser um método muito bem-sucedido para trazer de volta consumidores que não chegaram a finalizar uma compra, ou que simplesmente mostraram interesse na marca anteriormente. É também sabido que a atenção e as emoções têm um papel muito importante na definição da maneira como as pessoas reagem à publicidade e do modo como percepcionam as marcas que comunicam consigo. Tendo isto em consideração, o presente estudo lança a hipótese de que anúncios retargeted recebem níveis mais elevados de atenção que anúncios targeted ou genéricos. Da mesma forma, é proposta a hipótese de que os anúncios retargeted induzem níveis mais positivos de emoções, quando comparados com os restantes tipos.

Uma experiência de dois dias foi criada de modo a simular um processo de decisão de compra incompleto. Os participantes não finalizavam a compra de um produto que escolhiam como o seu desejo, de modo a que alguns dias depois esse mesmo produto aparecesse num anúncio num blog, entre os outros tipos de anúncios. Desta forma, foi possível estudar as reações dos participantes aos diferentes tipos de publicidade – retargeted, targeted e genérico – mas também estudar o modo como os anúncios retargeted influenciam a intenção de compra, intenção de revisita e intenção de recomendação. Este estudo permitiu concluir que os anúncios retargeted têm genericamente melhores níveis de atenção que os restantes tipos de anúncio. Também foi possível perceber que a publicidade retargeted tem uma relação direta positiva com a intenção de revisita, e uma relação indirecta positiva com a intenção de compra e de recomendação – ambas mediadas pela intenção de revisita.

Palavras-chave: Atenção, Emoções, Retargeting, Intenção de Compra, Intenção de Revisita, Intenção de Recomendação, PLS-SEM.

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1. Introduction

Digital advertising expenditure has been a great concern for brands lately, especially considering its impact. Only in 2016 more than \$194 billion (around \in 156 billion) were spent in digital advertising (Statista, 2018a). By the end of 2020, this number is expected to grow until \$335 billion (around \in 269 billion), which can be converted in an expected growth of almost 73% in less than five years (Statista, 2018a). This reality is largely relevant for brands, considering the fact that they are the big spenders on advertising.

According to the American Marketing Association (2017), nearly 90% of the 2017 expenditure was used in only two types of digital advertising: 47% in display advertising and 43% in search advertising. From this 43% stake of search advertising, Google is undeniably the most powerful company, having an 86% market share (Statista, 2018b). In 2016, around 87% of Google's worldwide revenue was from digital advertising, representing more than \$79 billion (around €63.5 billion) (Statista, 2018c).

It is also known that about 34.5% of this expenditure is used in Social Media advertising, amounting to a total of \$32.3 billion (around €25.9 billion) (Statista, 2018d).

As digital advertising is rising to be one of the most relevant communication channels for Marketing, it becomes incredibly pertinent to study its effectiveness in order to find ways to improve brands' investments.

Resulting from the growth of digital advertising, it is possible to understand the evolution of online marketing techniques. Considering the need to find the most suitable audiences online (Evans, 2008), most digital advertising companies provide thorough targeting methods that brands can use (Trattner and Kappe, 2013).

Retargeting (or remarketing) consists on advertising directly to consumers that already visited the brands' website or e-store (Bleier and Eisenbeiss, 2015a). It is an advertising method that was intensified because of people's disbelief in advertising messages, making them avoid advertisements (Cho and Cheon, 2004).

These types of campaigns are considered to have a positive effect in website visits (Sahni et al., 2016) because they target consumers with messages from brands that they are more likely to be interested in (Lambrecht and Tucker, 2013). Likewise, retargeting campaigns can be

very useful through e-mail, in order to bring back customers that did not finish a purchase (Moriguchi et al., 2016).

Also, retargeting has a great potential to help companies impute their resources into more effective campaigns (Bleier and Eisenbeiss, 2015a), by targeting a more suitable audience using less money (Lambrecht and Tucker, 2013).

Retargeting has been profoundly studied about its effectiveness (Lambrecht and Tucker, 2013; Bleier and Eisenbeiss, 2015a; Johnson et *al.*, 2016). However, that has been mostly done using interviews and inquiries. Variables such as attention and emotions were not considered as deeply as they could, undermining their potential in this type of studies: such as understanding how advertising can be more effective by capturing attention and positive emotions.

Attention is known to be connected with purchase behaviour (Pieters and Warlop, 1999), decision-making (Guerreiro et al., 2015) and has a positive influence on memory (Lee and Ahn, 2012). On the other hand, emotions and pleasure are identified as drivers for understanding positive and negative responses (Koshkaki and Solhi, 2016).

Bearing this is mind it is undeniable that these variables are useful tools to study advertising effectiveness. By putting into practice neuromarketing techniques such as eye-tracking (visual attention measurement) and using methods to measure emotions (Self-assessment manikin) it is possible to create an experiment that answers the question of if retargeting campaigns are more capable of capturing attention and positive emotions than targeted and generic campaigns.

In order to achieve such understanding it is highly important that the main variables to consider are attention, arousal and pleasure – always comparing them between generic, targeted and retargeted campaigns. It is also relevant to comprehend how each type of campaign influences secondary variables such as intention to buy, intention to revisit the website and intention to recommend – by crossing it with the neuromarketing data collected.

It is expected that this research can help marketers make better decisions when creating and implementing digital communication campaigns. From the results of the study, it is possible to collect some guidelines on how to take the best advantages by using retargeting campaigns to capture consumer's attention and emotions.

This research is structured as follows: Introduction has the purpose of introducing the theme and presenting the main objectives of the research. Also, it includes a brief presentation of the literature gap that this investigation proposes to fill in. The Literature review gathers the studies that were already conducted on similar subjects. It is also important to set the theoretical base for the experimental phase of the investigation – by understanding what other scholars already investigated. In this case, it allows to learn more deeply about Marketing communication, how retargeting influenced Marketing and how variables such as attention and emotions can predict behaviour. Research problem and main objectives has the purpose of linking the literature review with the proposed methodology for the investigation. It is where the research objectives are stated, as well as the hypotheses to be tested. In the Methodology all the relevant variables are presented, as well as the theory that explains why they are being considered. Knowing the fact that this investigation has an experimental component, it becomes even more relevant to explain in detail which were the steps of the procedure and the preparation needed to ensure that all worked as predicted. Results and discussion. After the experiment is conducted, the collected data is analysed and then presented as results. It is where it is possible to find if the previously proposed hypotheses were validated or rejected, but also where some assumptions start to be made about the conclusions of the study. In the Limitations, conclusions and managerial implications the most relevant conclusions from the study are presented in a way that is easily connected with the corporative reality. That said, some managerial implications are also stated in this chapter, in order to help marketers to obtain better results, based on this study. Finally, the investigation limitations are stated, so that future researchers can use this study as a starting point to improve these results and get new information for Marketing evolution.

2. Literature Review

2.1. Marketing Communication

2.1.1. What is Marketing Communication

Marketing consists on a process that determines the products and services in which customers might be interested, as well as the strategies of sales and communication used to deliver such material (Kotler et *al.*, 1999). Marketing communications perform the role of informing, persuading and reminding consumers about what brands have to offer them (Kotler and Keller, 2009). According to Peter Drucker (Kotler et *al.*, 1999), Marketing is supposed to make selling superfluous by knowing the customer so well that the product sells almost by itself.

Marketing management is therefore the work of targeting audiences to build strong relationships with them (Kotler et *al.*, 2005). One of the most relevant components of Marketing management is the marketing-mix, which is composed mainly by product, price, place and promotion (Kotler et *al.*, 2005). Promotion is the tool that includes all Marketing communication (Kotler et *al.*, 2005).

As stated by Mihaela (2015), Marketing communication represents a source of information that customers can use to evaluate their own potential interest in a product. It is because of this that communication messages have to be well thought. When transmitted in the right way, to the correct audience, Marketing communications have the power to influence not only consumer attitude, but also to develop constant interest in the products (Fill and Jamieson, 2006).

An effective Marketing communication strategy depends on a large number of factors that must be weighed by the company (Fill and Jamieson, 2006). Things like target audience (Fill and Jamieson, 2006), image, brand and text-size (Pieters and Wedel, 2004), timing, cost (Weilbacher, 2001) communication message (Mihaela, 2015) and objectives (Kotler and Keller, 2009), must be carefully considered in order to create successful campaigns.

Kotler and Keller (2009) mention that communication should be integrated to ensure coherency and consistency – therefore making it easier to achieve the expected positioning.

Also, Marketing communication is to be integrated for the purpose of creating a visual representation of a brand (Fill and Jamieson, 2006).

Although Marketing communication fulfils a large variety of purposes, lately it has been more complicated for brands to create and maintain and effective communication. Technology by itself has had a profound impact in how consumers receive, perceive and process information (Kotler and Keller, 2009), particularly corporative communication.

2.1.2. Marketing Communication Mix

With the purpose of delivering a specific message, there are different ways of communication – also known as the Marketing communication mix. Considering the type of information to be delivered, marketers can use: advertising, direct marketing, sales promotion, public relations, events and experiences, interactive marketing, personal selling and word-of-mouth (Belch and Belch, 2004; Kotler and Keller, 2009). And within each of these major categories, there are many platforms that can be used (Kotler and Keller, 2009). Choosing the objective and designing the campaign should take into consideration the brands' current Marketing situation, but especially the step of the consumer decision-making process in which its targeted audience is in (Kotler and Keller, 2009).

2.2. Customer journey

2.2.1. Consumer Decision-Making Process

Depending on the type of product or service, consumers have specific behaviours during the shopping process. Motivation, perception, attitude and learning are some of the variables that marketers have to take into consideration when preparing advertising campaigns, because the process includes all of these (Belch and Belch, 2004).

Although not always conscious for customers, the decision-making process can be very timeconsuming because of all the stages that it includes. Marketing communication is supposed to be present in every stage with the experiences that are most likely to induce positive reactions and impressions (Kotler and Keller, 2009).

In order to map this process, several models of consumer responses were created based on consumer experience (Kotler and Keller, 2009). The thing that all models agree on is the

assumption that the buyer has to pass through three stages before decision making: cognitive, affective and behavioural, or conative (Wilkie, 1994; Koshkaki and Solhi, 2016).

These three main stages are composed by smaller stages that are approached differently by each model. For the purpose of this study, the hierarchy-of-effects model will be the one considered.

2.2.2. Hierarchy-of-Effects Model

Firstly proposed by Lavidge and Steiner (1961), this model attempts to develop on the idea that advertising has purposes other than the final selling. As initially presented, this model describes advertising as a force that moves people through seven steps – from unawareness to purchase (Lavidge and Steiner, 1961).

Kotler and Keller (2009) explain the same model but only with six steps, not considering unawareness as a step. It is stated that advertising starts influencing awareness and, therefore, that is where the process begins. Based on this view on the subject, the steps are (Lavidge and Steiner, 1961; Kotler and Keller. 2009):

- 1. Cognitive
 - a. Awareness: making people aware of the existence of such product, service or brand;
 - b. Knowledge: increasing brand knowledge to allow understanding about the selling proposition;
- 2. Affective
 - a. Liking: creating positive feelings about the brand increases the odds of consideration;
 - b. Preference: making the brand become a preferential choice;
 - c. Conviction: developing a conscious certainty that the purchase would be the right move;
- 3. Behavioural
 - a. Purchase: guaranteeing the final act of purchase.

It is relevant to know these steps because of the consumer decision-making process that was talked about previously. In order to succeed, marketers have to make sure that Marketing communications are used appropriately in each phase of the process – especially because not all customers go through all stages, or in the same order (Belch and Belch, 2004).

Marketers know that there are non-controllable factors that heavily influence consumer decision-making process, particularly in frequently purchased items (Belch and Belch, 2004). For instance, customers shopping routine can represent difficulties in communicating this type of products because people do not take time searching about them – they buy what they are used to (Belch and Belch, 2004).

It is also said that this process is easily corrupted if brands do not have the ability of maintaining a solid relationship with their customers (Weilbacher, 2001). Because of the large amount of brands communicating daily, advertising has become a clutter of information (Pieters and Wedel, 2006) that puts the objectives of each company fighting a numerous of others in the same business (Weilbacher, 2001).

2.3. Recent Evolution of Advertising

2.3.1. Purposes of Advertising

Advertising is still one of the most used tools in Marketing communication. It consists in communicating a brand (its products, services or ideas) through paid channels (Kotler and Keller, 2009). This payment can be for space or time (Belch and Belch, 2004).

This communication method depends a lot on the correct identification of the target market and customer motivations (Kotler and Keller, 2009). Only with these information marketers can decide on the best message to deliver, as well as when, where and how to deliver it (Kotler and Keller, 2009). Adding on this, Fill (1995) states that any type of Marketing communication needs to set a strategy and specific objectives to succeed.

Advertising is considered to be one of the best ways to develop customer brand-related attitudes and influence purchase behaviour (Cobb and Hoyer, 1985). Also, Belch and Belch (2004) argue that one of the greatest pros towards advertising is its pervasiveness. According to the same authors, advertising is capable of creating a symbolic brand meaning in customers' minds, therefore easing the process of building a strong positioning (Belch and Belch, 2004).

Another interesting aspect of Marketing communication – advertising in particular – is the emotional power that it can have. People are highly influenced by their emotions when it

comes to buying decisions and marketers can take advantage of this while designing their communications (Koshkaki and Solhi, 2016).

There are various types of advertising depending on the objectives of the campaign: informative, persuasive, reminder and reinforcement (Kotler and Keller, 2009).

2.3.2. Channels of Advertising

It is important to choose wisely in which media channels the brand is to be present. It is the media channel that will carry the message to customers (Kotler et *at.*, 2005). This media planning is supposed to find the optimal way to deliver brand communication: most effective, to the largest number of potential customers, at the lowest cost (Belch and Belch, 2004). To each type of advertising the various channels should be considered to find the most adequate one (Kotler and Keller, 2009).

In order to find the optimal solution, some steps should be followed (Kotler and Keller, 2005):

- 1. Reach
 - a. Reach: percentage of people exposed to an ad during a certain period;
 - b. Frequency: number of times each person is exposed to the message during a certain period;
 - c. Impact: qualitative value of an exposure in a certain channel;
- 2. Media types
 - a. Television;
 - b. Radio;
 - c. Magazines;
 - d. Newspapers;
 - e. Outdoors;
 - f. Direct mail;
 - g. Internet.
- 3. Media vehicles
 - a. Platforms: in each media type there are many options of platforms to communicate in (e.g.: television has many channels and shows);
- 4. Plan
 - a. Timing: decision of when to deliver the message throughout a year.

The Internet has become one of the most powerful tools of communication in the last few years. That said, it is possible to argue that digital Marketing is unquestionably one the most relevant components of a company's marketing strategy nowadays (Smith, 2012).

2.3.3. Introduction of the Internet

With the emergence of the Internet and new technologies, an innovative reality stepped in advertising and Marketing communications (Pavlou and Stewart, 2000), nearly obliging brands to be present online. It is suggested that the most fundamental difference between online and offline marketing communications is economic (Goldfarb, 2013). However, many other studies state that digital advertising has benefits that go beyond an economic one. Benefits as customizable content (Harms et *al.*, 2017), customizable space (Evans, 2008), customizable and interactive adverts (Lambrecht and Tucker, 2013; Pavlou and Stewart, 2000) or customizable design (Ansari and Mela, 2005) can help advertisers reducing consumer ad avoidance (Cho and Cheo, 2004).

Digital Marketing is a reality that most brands are embracing nowadays (Smith, 2012), mostly motivated by the extensive presence of consumers in this environment (Bleier and Eisenbeiss, 2015a). The usage of the Internet as a Marketing tool is not new. Throughout the years it has been considered an effective way to reduce costs in advertising (Goldfarb, 2013), because it reaches many consumers with a lower investment.

On the Internet, it is possible to study consumers' positive and negative reactions, which helps companies creating customer-brand relationships (Bleier and Eisenbeiss, 2015a). Using social media and other interactive tools (*e.g.*: websites for reviews) customers can influence each other in a way that did not exist a few years ago (Smith, 2012). Considering these two evidences, it is possible to state that word-of-mouth has become again one of the most relevant ways of transmitting corporative information (Smith, 2012), only this time through digital tools.

2.4. Online Advertising

2.4.1. How it started

The Internet demonstrated a very quick growth throughout the first years. In 1995, there were around 14.9 million users, while in 2002 the number estimated was 150 million people (Belch

and Belch, 2004). In 2017, it was estimated that this value has grown to 3.5 billion people, which is almost half of the worlds' entire population (Statista, 2017a). Only Facebook has now more than 1.5 billion daily users (Social Bakers, 2017).

It is then natural that companies feel the need to pursuit their customers to where they are. Also, companies could tell that consumers were paying less attention to traditional advertising, therefore motivating its migration to digital platforms (Cho and Cheon, 2004).

As it started, digital advertising was considered a more interactive and goal-oriented way of communicating (Cho and Cheon, 2004), especially because it allowed marketers to measure effectiveness more accurately (Harms et *al.*, 2017).

Nowadays, the Internet is so wide that offers new possibilities for companies to spread their advertising campaigns and achieve their communication goals (Harms et *al.*, 2017). The Internet has also improved this relationship from the consumer's perspective. Not only it is sometimes possible to block unwanted adverts, but also companies started creating other types of content other than traditional advertising (*e.g.*: Content Marketing) (Harms et *al.*, 2017). It was also noticeable that many advertisers bet their strategy on co-creating digital advertising with customers (Truong and Simmons, 2010), by making advertising more emotional. The digital environment also allows brands to communicate in more interactive and animated ways. Using on-time content (Smith, 2012) and creative formats is known to be more engaging (Bruce et *al.*, 2016).

Even more than computers, mobile phones have become an elite communication tool, exactly because companies are starting to understand how people communicate and relate on the Internet (Okazaki et *al.*, 2007). It is expected that 4.77 billion people have a mobile phone (Statista, 2017^b), from which 2.1 billion were smartphones two years ago (Statista, 2016).

When considering the younger generations, digital Marketing becomes even more relevant because "Millennials are going online for shopping, source of news, entertainment, and social networking" (Smith, 2012: 86). Since the Internet is where consumers are spending more time, it was only natural that brands would want to be there too (Bleier and Eisenbeiss, 2015a). Generation Z is even more connected to each other and brands than Millenials (McCrindle, 2012), which makes this migration even more relevant. Especially considering the fact that Generation Z is expected to represent 40% of all buyers by 2020 (Finch, 2015).

Digital channels are promising means to communicate with this generations because of the increasingly dynamic relationship between adverting and technology (Harms et *al.*, 2017).

It is true that digital advertising has a lot of advantages. Being able to communicate with a lot of people for a low price is definitely one of the most relevant (Kotler and Keller, 2009). Also, as stated before, the possibility of using interactive platforms (Okazaki et *al.*, 2007) in real time (Smith, 2012) is very appealing for the audience. On the other side, letting people have control on exposure is harmful to campaigns (Kotler and Keller, 2009), as is the lack of attention that people demonstrate towards digital advertising (Bleier and Eisenbeiss, 2015b; Cho and Cheon, 2004).

2.4.2. Digital Objectives

Developing online campaigns can have very distinctive motivations. Creating awareness and generating interest seem to be the most relevant (Blech and Belch, 2004). It is not a coincidence that these two are on the top of the hierarchy-of-effects model (Lavidge and Steiner, 1961), therefore being the beginning of the customer decision-making process (Kotler and Keller, 2009).

As most forms of advertising, digital Marketing finds its focus on getting the audiences' attention in order to generate interest. However, one of the main advantages of digital Marketing is the possibility of easily communicating with people in each step of the customer decision-making process (Seiler and Yao, 2017).

2.4.3. Customization and Targeting

Ansari and Mela (2003) comment on how the Internet can serve companies and customers by providing access to new tools of customization. Being able to customize products according to what consumers want, without losing the capacity of working in a mass scale, represents a great opportunity for multinational companies. This way, it is possible to leverage their businesses by engaging with customers, getting their attention and hopefully their long-term loyalty (Ansari and Mela, 2003).

In the same article, the authors also briefly state the importance of online platforms on targeting audiences in a more objective way, providing tailored information (Ansari and Mela, 2003).

Targeting is very important because it provides the opportunity for companies to apply their resources more accurately to customers, without losing money by communicating with people that are not interested (Iyer, et *al.*, 2005). If companies are aware of their target audiences, digital advertising can be a great way to get their attention.

2.5. Targeting

2.5.1. What it is and its benefits

According to Kotler et *al.* (2005), targeting can be defined as the process of evaluating different market segments' attractiveness and choosing in which of those to enter. Specifically in Marketing communications, targeting concerns about the target audience of the campaign (Belch and Belch, 2004). This is supposed to be the group of people that is more likely interested in the message that is being shared (Belch and Belch, 2004).

Regarding Marketing communications, targeting consists on understanding which is the company's' audience in order to allocate resources and set the strategy accordingly to the needs of each target (Bleier and Eisenbeiss, 2015b). By doing this, firms can avoid wasting valuable resources on advertising for people that are simply not interested in what they have to offer (Iyer *et al.*, 2005). Also in their study, Iyer *et al.* (2005) concluded that targeted advertising can be more effective than some other marketing strategies because it has a very particular capability of creating a customized relationship between consumers and brands. In fact, it "improves the quality of the match between the consumer and the advertisement message" (Bergemann and Bonatti, 2011: 418).

Tailoring advertising messages can improve communications performance because it forces companies to better understand to whom they should speak, but also how, where and when they should do it (Lambrecht and Tucker, 2013). When Millennials are considered, this reality becomes even more important for brands because this generation is known to be highly averse to push advertising (Smith, 2012). In a study that aimed to find out which were the best strategies to gather Millennials' attention, Smith (2012) showed that there was a natural migration of brands from offline to online channels to follow this generation.

2.5.2. How it works

As in any other form of targeting, attention to detail and studies about consumer behaviour are critical in digital advertising. It is essential to understand which is the target audience and to characterize carefully all its aspects (Belch and Belch, 2004).

"The online advertising industry concerns buying and selling advertising space that is accessed by viewers through the Internet" (Evans, 2008: 363). Although there are many similarities between digital advertising and traditional advertising, there are some fundamental differences. One of the most relevant is the fact that the Internet allows delivering adverts to specific individual users, while collecting information about them at the same time (Evans, 2008).

Athey and Gans (2010) comment on how targeting improves efficiency of the advertising message while increasing demand. In the same study, the authors state that targeting allows a better allocation of advertising space by tailoring the content to each type of user that will be in contact with it (Athey and Gans, 2010).

Currently, companies are demonstrating a strong focus on improving online campaigns. Targeting has become much more sophisticated thanks to technological evolution (Evans, 2008). Companies like Google and Facebook turned into advertising agencies, selling and buying online advertising space in a business worth millions (Trattner and Kappe, 2013). People share a lot of information online (*e.g.*: social media profiles) which is then used to create segments of users that companies can target (Trattner and Kappe, 2013). Many of these companies like Google have advertising platforms in which other brands can make all sorts of segmentation – geographical, behavioural, demographic and psychographic – only with the information provided by their users' profiles.

2.5.3. Challenges

The issue around brands migrating online to follow their customers is that the digital world has become cluttered with advertising (Pieters and Wedel, 2006), and with this amount of advertising, people started avoiding it (Cho and Cheon, 2004).

It is believed that online users perceive digital advertising as irritating and excessive, developing negative thoughts about it (Cho and Cheon, 2004). In a different study, digital

advertising is considered intrusive and ineffective (Smith, 2012). This is very problematic for advertisers because when advertising is perceived negatively, it can transmit the same feeling towards the brand (Truong and Simmons, 2010).

Smith (2012) refers the concept of "Banner blindness" to illustrate the conscious avoidance that people started developing towards digital advertising. Cho and Cheon (2004) also mention the same tendency on Internet users. This happens mostly with intrusive advertising (*e.g.*: pop-up advertisements) because it takes users' ability to control the information that they receive (Truong and Simmons, 2010) and blocks their task accomplishment flow (Smith, 2012). And by using targeting techniques this clutter has the potential to increase a lot for each individual.

2.6. Retargeting

2.6.1. What it is and its benefits

In order to work around this issue, many companies are now using a technique that allows targeting consumers that are known to have at least a slight pre-disposition to buy (Bleier and Eisenbeiss, 2015a; Sahni et *al.*, 2016). This method is known as retargeting and consists on using consumers' browsing behaviour to determine in which brands they might be interested (Bleier and Eisenbeiss, 2015a), in order to show them online advertising about those very same brands (Sahni et *al.*, 2016).

Retargeting is usually conducted by an online network that gathers advertising spaces from independent platforms (Lambrecht and Tucker, 2013). That space is then used by ads agencies that apply algorithms based on consumers' online behaviour, to show them banners about a products or websites that they previously visited (Bleier and Eisenbeiss, 2015a).

When considered the online customer decision-making process, it is not very common to see a first visitor complete an immediate purchase (Hubspot, 2017). By analysing peoples' browsing history and cookies, marketing agencies specialized in this field are capable of communicating directly to an audience that shows larger disposition to become consumers (Lambrecht and Tucker, 2013). As an example, Sahni et *al.* (2016) argue that retargeting campaigns have a positive effect in website visits. Moriguchi et *al.* (2016) also show that remarketing can be very effective to bring back customers that abandoned shopping carts.

Another positive aspect about retargeting is that it allows creating different banner ads accordingly to what the consumer searched (Lambrecht and Tucker, 2013; Bleier and Eisenbeiss, 2015a). For instance, if a consumer only visited the website it is possible to show him a targeted advertisement. On the other hand, if a consumer searched for specific products the advertisements might include those products and sometimes promotions (Lambrecht and Tucker, 2013).

2.6.2. How it works

There are several types of retargeting, firstly divided by desktop and mobile (Hubspot, 2017). For the purpose of this study, desktop retargeting will be studied more profoundly. It is simpler and more efficient to use retargeting on desktop because by using Internet browsers (*e.g.*: Google Chrome), it is less likely to have mixed information (Hubspot, 2017).

Retargeting using desktop can work in two different ways: lists and tags. Lists consist on using previously acquired data (*e.g.*: e-mail addresses) to find people on social media. This can be either highly effective or almost ineffective, because people might not use the same contacts for retailers than they use for social media (Hubspot, 2017).

On the other hand, tags work through *cookies* – small text files that are downloaded to the browser (Hubspot, 2017). Once a consumer visits a website, a *cookie* is downloaded to its browser, allowing the network to recognize that such consumer visited that specific website (Bleier and Eisenbeiss, 2015b). When considered all the browsing history, it is possible to infer almost all searches, visits and purchases that were made through every downloaded *cookie*, as well as predict future browsing behaviour (Bleier and Eisenbeiss, 2015b).

Retargeting can have a very positive effect on sales (Johnson et al., 2017) because it tries to get the attention of consumers that, for some reason, started the customer decision-making process but did not finish it (Sahni et al., 2016). This was a hard task to accomplish years ago, however, with the usage of analytics and retargeting techniques, brands can uncover which were the customers that visited their page and try to convince them to go back (Sahni et al., 2016).

As stated before, not all customers follow all the customer journey's steps (Blech and Belch, 2004). Retargeting can also be an interesting way to communicate with those people along every step of the way, using different approaches in each step (Harms et *al.*, 2017), preventing them to quit.

This tool is known to have a positive effect but only when it is carefully implemented. For example, it is believed that timing and placement are the most impactful variables of these banners influence in customers' behaviour (Bleier and Eisenbeiss, 2015b). However, intrinsic characteristics of the banner – being generic or dynamic – are also proved to be largely relevant to increase efficiency (Lambrecht and Tucker, 2013).

2.6.3. Challenges

On a less positive perspective, retargeting has also been pointed out as potentially reactive towards some consumers (Johnson et *al.*, 2017). Considering that retargeting uses browsing history to create customized campaigns, there is always the risk that some people feel manipulated or spied on (Bleier and Eisenbeiss, 2015a). This can be risky because a negative feeling towards an advert can develop negative feelings towards the advertiser (Truong and Simmons, 2010).

It is known that retargeting campaigns can have a positive influence on sales (Johnson et *al.*, 2017) because it consists on a customized form of advertising (Lambrecht and Tucker, 2013; Bleier and Eisenbeiss, 2015a). However, as stated before, consumers are becoming less interested in advertising (Cho and Cheon, 2004), which forces brands to fight harder and smarter to get consumers attention.

2.7. Attention to online Advertising

2.7.1. What is attention

Attention is conceptualized as a mental operation that prioritizes information by speeding the cognitive process (Rosbergen et *al.*, 1997). Also, Pieters and Warlop (1999) define visual attention as a process that decreases the time that takes to process a certain event.

More recently, attention has also been defined as "the mechanism responsible for selecting the information that gains preferential status above other available information" (Plassmann et *al.*, 2012: 21). In other words, studying attention is a central way of gathering information about consumers' purchase behaviour (Pieters and Warlop, 1999).

Pieters and Wedel (2004) state that visual attention is determined by two variables: bottomup and top-down factors. Bottom-up factors are advertising intrinsic characteristics, such as shape, size or contrast. These are supposed to help consumers collect information, even if they are not consciously looking for it. Top-down factors consist on personal experience and emotional attributes that influence how adverts are perceived and information is collected (Pieters and Wedel, 2004).

Since consumers tend to become less tolerate to advertising (Cho and Cheon, 2004), exposure can no longer be considered a primary variable to estimate advertising effectiveness (Lee and Ahn, 2012). Instead, attention is proposed as one of the most relevant variables to study when it comes to advertising efficiency (Lee and Ahn, 2012). Being common knowledge that attention is crucial in decision-making (Guerreiro et *al.*, 2015), makes all sense to study how advertising is being able to pick up customers' focus, especially online.

2.7.2. Implications for Marketing studies

It is known that every brand that advertises is automatically competing with all the others advertisers to get consumers' attention (Guerreiro et *al.*, 2015; Johnson et *al.*, 2017), which implicates searching for new ways of communicating.

According to Yaveroglu and Donthu (2008), placement strategies are helpful to increase efficiency of digital advertising. In the same study, the authors argue that repetition provides higher chances of brand recall and intention to visit the advertisers' website (Yaveroglu and Donthu, 2008). This happens because repetition increases attention and the opportunity to store information, which leads to the conclusion that attention has a positive influence on memory (Lee and Ahn, 2012).

Guerreiro et *al.* (2015) argue that "attention is a crucial element in decision-making, given the limited processing resources of the brain" (Guerreiro et *al.*, 2015: 1731). Building on this, it is possible to assume that advertising implicates a similar process. Since adverts are built with complex textual and pictorial information, "the visual system and knowledge operate jointly to guide attention" (Pieters and Wedel, 2004: 38) by trying to persuade a purchase.

Attention not always means a successful purchase but it is known that more attention tends to increase a products' chance to be considered – and bought (Pieters and Warlop, 1999).

2.7.3. How it can be measured

Retaining information is difficult, but it is connected to visual attention (Wedel and Pieters, 2006). Also, Russo (1978) explains that while visual cognitive process only requires fixation to an object, visual attention requires eye-movements. It is also known that visual attention can be studied through eye-movements (Wedel and Pieters, 2006) because they reflect cognitive processes (Rizzolatti et *al.*, 1994) linked to advertisement reactions and purchase decision (Bettman et *al.*, 1991).

When measuring visual attention, the eye follows a path over the stimulus involving fixations and jumps between fixations (Pieters and Warlop, 1999). These two factors are the ones studied in visual attention (Pieters and Warlop, 1999), which can be measured with eye-tracking equipment (Wedel and Pieters, 2006).

As previously stated, attention can be influenced by various elements (Pieters and Wedel, 2004). While bottom-up factors can be very important to spread the message, top-down factors are responsible for developing a relationship with the brand (Pieters and Wedel, 2004). This is probably why Marketing campaigns are getting more and more emotional – people are highly influenced by emotions when making decisions (Koshkaki and Solhi, 2016).

2.8. Emotions towards online Advertising

2.8.1. What are emotions

Emotions are defined as complex reactions to stimuli (Dormann, 2003) that can be divided into positive or negative (Koshkaki and Solhi, 2016). It is very common to see emotional motivated purchases, especially when time is limited (Shiv and Fedhorikhin, 1999). Also, Damasio (1994) mentions that emotions work as a simplifying role when prioritizing is needed.

The amount of stimuli that a person has to cope with during the customer decision-making process can influence both its cognitive and emotional state (Guerreiro et *al.*, 2015), generating approach or avoidance towards a brand (Mehrabian and Russel, 1974). Past

experiences are also relevant considering that "emotional experiences influence the affective responses to the environment" (Vieira, 2013: 1420).

This approach/avoidance influence that emotions have on behaviour is translated in a model (Vieira, 2013) known as stimulus-organism-response (SOR) (Mehrabian and Russel, 1974). Analysing the model firstly proposed by Mehrabian and Russel (1974), it is stipulated that there are stimuli (S) in the environment that can cause modifications in peoples' organism (O), thereby causing a positive or negative response (R).

The relevance of this theory stands on the fact that it is said that brands can use different stimuli to manipulate customers' emotional responses on their behalf (Vieira, 2013).

2.8.2. Implications for Marketing studies

Emotions play a very important role in decision-making because of the positive or negative feelings they can cause (Koshkaki and Solhi, 2016). A person can be motivated to buy from positive or negative feelings, depending on previous experiences (Koshkaki and Solhi, 2016). For example, pride of owning a product (positive feeling) and shame of not owning such product (negative feeling) are both purchase inducers. They illustrate a similar behaviour driven by opposite emotions (Koshkaki and Solhi, 2016).

Another relevant topic to address is the possibility to understand and predict emotional reactions of customers (Bolls et *al.*, 2001). Although the same Marketing messages might cause different responses for different people, it is important to understand which is the tendency (Lajante et *al.*, 2012). Marketing communications are in constant evolution, making it important to study how "emotions and cognition are expected to guide responses" (Guerreiro et *al.*, 2015: 1730), in order to trace a strategy that is aligned with consumer's needs.

Emotions are also correlated with attention in advertising since many campaigns try to get consumers attention by showing highly emotional messages (Bolls et *al.*, 2001).

2.8.3. How it can be measured

Emotional responses might occur conducted by two different brain structures capable of arising somatic states: the amygdala and the ventromedial prefrontal cortex. While the amygdala induces responses from basic affective reactions (primary inducers), the

ventromedial prefrontal cortex uses past experiences or memories (secondary inducers) (Guerreiro et *al.*, 2015; Bechara and Damasio, 2005).

According to S-O-R theory every stimuli generates an emotional response from the organism (Mehrabian and Russel, 1974). Further into the same study, it is said that every emotional response to a stimulus falls into three independent states (Vieira, 2013):

- 1. Pleasure-Displeasure (P): enjoyment and gratification;
- 2. Arousal-Nonarousal (A): physical activity and mental alertness;
- 3. Dominance-Submissiveness (D): feeling of control versus lack of control.

Arousal is a response to an actual or recalled stimuli (Damasio, 1994) that can be translated in an external evidence or an unconscious feeling (Berridge and Winkielman, 2003; Guerreiro et *al.*, 2015). Although arousal indicates the valence of the state, it is by measuring pleasure that is possible to understand if the emotion was positive or negative (Guerreiro et *al.*, 2015). Dominance is related to submissiveness, however, it has been proven to "have a low correlation with approach-avoidance behaviour (Guerreiro et *al.*, 2015: 1735; Mehrabian, 1995; Vieira, 2013) – and therefore it will not be considered for this investigation.

These emotional responses can develop positive or negative somatic states (Guerreiro et al., 2015). Positive or negative feelings might clash during decision-making and it is the resolve of this conflict that generates a positive or negative action (*e.g.*: purchase or do not purchase) (Reimann and Bechara, 2010).

Emotions can be measured through three types of experience (Lang, 1979): behavioural, self-reported and physiological. The first consists on observing facial responses. The second concerns on asking the person experiencing the stimulus how it feels (*e.g.* Self-assessment manikin) (Lang, 1985). The last one consists on collecting physiological data during the experiment (*e.g.*: skin conductance) (Lang, 1979).

2.9. Neuromarketing

2.9.1. Techniques applied to marketing research

Information on both emotion and attention can be inferred from the study of Mehrabian and Russel (1974), in which the Stimulus-Organism-Response (S-O-R) theory was presented. In that study it is proposed that personal emotional experience has a direct influence in

emotional responses, considering that each organism has its own understanding of reality (Mehrabian and Russel, 1974; Vieira, 2013).

As previously stated, visual attention is known to be an important variable when it comes to retaining information (Wedel and Pieters, 2006). That said, it becomes extremely relevant studying visual attention, which can be made using eye-tracking techniques (Wedel and Pieters, 2006). Emotions, on the other hand, were proved to be successfully studied by using SAM (Lang, 1979; Guerreiro et *al.*, 2015).

2.9.2. Eye-tracking

Attention can be measured through eye movements, which are composed of fixations and saccades (Pieters and Warlop, 1999). An eye-tracking device captures eye movements, also allowing that fixations are measured (Huang and Kuo, 2011). This is useful because there is evidence confirming that eye movement patterns are a strong indicator to predict decisions (Glockner and Herbold, 2010). Considering this, it is possible to assume that decisions can be predicted through visual attention patterns.

Basically, eye-tracking devices can keep track of where people are looking, as well as the time they looked, number of glances and pupil dilation (Zurawicki, 2010). It also measures the movement between fixations (Santos et *al.*, 2015).

Eye-tracking helps to understand the role of attention in perception and behaviour (Guerreiro et *al.*, 2015). This method allows collecting information on eye movements in a natural manner, providing ways to understand decision processing (Huang and Kuo, 2011). Usually, eye-tracking records eye fixations while an experimental task is used to make participants behave closely to a real situation (Wedel and Pieters, 2000).

The most common experiments using eye-tracking consist on observing where participants "fixed points in videos, photos, and user's interaction with a computer screen" (Santos et *al.*, 2015: 34). In this case, measuring attention towards digital advertising consists on interaction with a computer screen.

In order to achieve a successful experiment, Wedel and Pieters (2006) state that eye-tracking data should focus on specific aspects: time, space and individuals. Time is the duration of each eye movement or fixation. Space is the location to where the participant looked, and

individuals is the sample of participants that were in contact with a specific stimulus (Wedel and Pieters, 2006).

Considering the work of Pieters and Wedel (2004) it can be said that studying visual attention provides information about both customer experience and advertising efficiency. This research has one of the main focuses on comprehending if retargeting is effective on capturing attention and if it has a positive correlation with the consumer decision-making process.

2.9.3. Self-Assessment Manikin

Understanding the link between emotions and visual attention assists on the comprehension of what drives reactions to stimuli (Hill, 2011). And this is why it is also important to study emotional responses.

Although it is possible to recognize a period of emotional arousal during an experiment, it is almost impossible to determine directly the intensity and if it is due to a positive or a negative feeling (Guerreiro et *al.*, 2015). In order to overcome this issue, self-assessment manikin has been proven to be a reliable tool to assess emotional responses (Guerreiro et *al.*, 2015).

3. Theoretical Framework

The Internet is becoming cluttered with advertising, which makes people avoid it (Cho and Cheon, 2004). According to Lambrecht and Tucker (2013), retargeting has proved to be a strong way of increasing efficiency of digital advertising, however, nothing is stated about attention.

There are many studies related to retargeting, mainly focusing on the efficiency of this strategy. Lambrecht and Tucker (2013) focused their study on understanding which type of banner would be more effective on people – dynamic or generic. With a similar purpose, Bleier and Eisenbeiss (2015a) investigated on retargeting personalization and how it affects consumers' online behaviour. Johnson (2017) compared how consumers behave while confronted with retargeting campaigns.

Nevertheless, much research has been made on digital advertising using eye-tracking and emotional responses. Lee and Ahn (2012) focus their study on the way attention influences digital advertising effectiveness. Huang and Kuo (2011) use eye-tracking to study deliberateness process depending on how information is presented online. Koshkaki and Solhi (2016) investigate the role of negative emotion in consumer decision making process. Guerreiro et *al.* (2015) study the way how emotional responses influence decision to buy cause-related products.

As stated before, there is literature on the effectiveness of retargeting but not how attention or emotional responses influence the outcome of these campaigns. Considering the possibilities provided by the measurement of attention, emotions and pleasure, especially with the purpose of predicting behaviour, it is of great interest applying these techniques to study retargeting campaigns.

In order to study the relation between the consumer decision-making process and attention and emotions, three variables were considered based on the hierarchy-of-effects model. Intention to purchase, as proposed by Dodds et *al.* (1991) representing purchase; intention to revisit, as proposed by Anderson and Srinivasan (2003), representing conviction; and intention to recommend, as proposed by Keiningham et *al.*, (2007). From now on, attention, arousal and pleasure will be mentioned as the neurological variables, and intention to purchase, intention to revisit and intention to recommend will be mentioned as behavioural variables.

Therefore, the main purpose is to comprehend how the neurological variables are correlated with the behavioural variables.

The objectives of this study are:

- 1. To understand if different types of digital advertising banners (generic, targeted and retargeted) get significantly different levels of attention from participants;
- 2. To understand if different types of digital advertising banners (generic, targeted and retargeted) get significantly different levels of arousal from participants;
- 3. To understand if different types of digital advertising banners (generic, targeted and retargeted) get significantly different levels of pleasure from participants;
- 4. To understand if there is a significant relationship between the neurological variables and the behavioural variables, when mediated by retargeted advertising banners.

By accomplishing these objectives, it is expected that an answer to the research problem can be formulated: "Are retargeting campaigns more capable of capturing attention and positive emotions than generic and targeted campaigns?".

3.1. Hypotheses

Retargeted campaigns are now a great part of the investment in Marketing strategies because they allow to get back some potential customers that abandoned the process (Sahni et *al.*, 2016). Attention is crucial in decision-making (Guerreiro et *al.*, 2015), and considered as a strong factor for analysing advertising efficiency. Adding on this, Pieters and Warlop (2004) state that attention is influenced by each person's personal experiences (top down factors). That said, it can hypothesized that retargeted campaigns – because they include information related to previous experiences – tend to have higher levels of attention than the other types.

H1: Retarget campaigns get more attention than other types of campaigns

H1^a: Retargeted campaigns get more attention than targeted campaigns.

H1^b: Retargeted campaigns get more attention than general campaigns.

Emotions are known to have the ability to generate approach or avoidance behaviour (Mehrabian and Russel, 1974), which can be important to analyse from a corporate perspective. Considering the fact that emotional attributes are another major influence on attention and on how adverts are perceived (Pieters and Wedel, 2004), the hypothesis is that retargeting campaigns induce higher levels of arousal and pleasure than other types of campaigns, as it is stated in H2 and H3.

H2: Retargeted campaigns induce higher levels of arousal than other types of campaigns

H2^a: Retargeted campaigns induce higher levels of arousal than targeted campaigns.

H2^b: Retargeted campaigns induce higher levels of arousal than general campaigns.

H3: Retargeted campaigns induce higher levels of positive pleasure than other types of campaigns

H3^a: Retargeted campaigns induce higher levels of pleasure than targeted campaigns.

H3^c: Retargeted campaigns induce higher levels of pleasure than generic campaigns.

Even though many factors can contribute to make a person wish, or not, to revisit a web site, there some reasons that are stipulated as almost essentials. A good experience inside the website is tremendously important, as is the relevance of the content provided (Kabadayi and Gupta, 2011). Also the intention to revisit caused by communication or reinforced intention to purchase a product (Lambrecht and Tucker, 2013). Since attention is a major factor in digital communication information reception, it can be hypothesized that attention positively influences intention to revisit and purchase.

H4: Attention to retargeted campaigns positively influences intention to revisit.

H5: Attention to retargeted campaigns positively influences intention to purchase.

The relationship between pleasure and shopping behaviour is known to depend on several factors (Vieira, 2013). There are studies that report a correlation between pleasure and product quality perceptiveness (Babin et *al.*, 1994), pleasure and buying satisfaction (Mattila and Wirtz, 2001), and pleasure and average spend (Chebat and Michon, 2003). In this specific case, the purpose is to confirm that pleasure levels in retargeting campaigns also positively influence the behavioural variables (intention to purchase, revisit and recommend).

H6: Pleasure positively influences intention to revisit in retargeted campaigns.

H7: Pleasure positively influences intention to purchase in retargeted campaigns.

H8: Pleasure positively influences intention to recommend in retargeted campaigns.

Finally, it is important to understand if there is a correlation between the behavioural variables. As concluded by Kabadayi and Gupta (2011) intention to purchase and intention to revisit have a significant positive relationship. Intention to revisit was also proven to be positively related to intention to recommend (Keiningham et *al.*, 2007). These are the relationships that are going to be considered in H9 and H10, in this case related to retargeted campaigns.

H9: Intention to recommend is positively influenced by intention to revisit website when influenced by a retargeting campaign.

H10: Intention to purchase is positively influenced by intention to revisit website when influenced by a retargeting campaign.

Considering the purpose of this study and the previously mentioned hypotheses, the proposed conceptual model is the following (Figure 1).



Figure 1: Complete conceptual model

The participants were confronted with three types of digital advertising banners as stimuli. The intention is to understand if there is a significant difference in the neurological variables, when compared over the three types of digital campaigns. After this, the values for the neurological variables are studied compared to the behavioural variables, in order to investigate if there is a significant relationship between them. This analysis will only be conducted on the retargeted campaigns values because those are the ones that might be related with intention to purchase, intention to revisit and intention to recommend.

4. Methodology

According to Bradley's (2010) research on advertising, it is important to know if brand messages are working as expected. To do that, several methods can be used however it is not possible to consider any experimental approach as optimal – mostly because every study has its own characteristics (Park and Park, 2016). In this case specifically, primary data is a relevant method for gathering information about attention and emotions. Primary data is information collected directly from the source (Bradley, 2010), which in this case are the participants.

The current investigation involved confronting the participants with three different types of digital advertising banners:

- 1. Generic: consisting on a banner from a brand that was unknown to the participant;
- 2. Targeted: consisting on a banner from a brand that was known to the participant;
- 3. Retargeted: consisting on a banner from a brand that was known but also including a product towards which the participant showed previous interest.

In order to achieve the most reliable results, all participants were put in a simulated purchase process, in which they were supposed to choose a product according to their preferences. As it is going to be explained deeply further ahead, participants were then exposed to each type of digital advertising banner while wearing an eye-tracking device that could trace their gaze path. In order to better understand emotions and explain the participants' behaviour, surveys were applied.

4.1. Experimental Design

When conducting an investigation, it is of great importance that the data collection happens in a controlled or natural environment (Bolls et *al.*, 2001), especially when considering a neurological study. The experiment was conducted in a controlled environment, with a room specially designed for conducting experiments. It also had access to the eye-tracking device needed to measure attention.

The experiment was designed to simulate an incomplete online purchase, followed by confrontation with digital advertising. Considering the way retargeting usually works – targeting people that showed some interest in a particular product or service – the experiment was divided in two days. On the first day, participants were asked to explore an online store and choose a product that they like and would consider buying. On the second day they were asked to read three articles, which one in a different blog – each including a different type of advertising.

The product chosen for the purchase simulation were smartphones. The idea was to use a product that most people were interested in, so that participants' interests were not entirely questionable. Smartphones are also a good product because it has been shown to be both hedonic – symbolic product that enhances status in a social group – and utilitarian – useful product that includes several social and professional tasks (Chun et *al.*, 2012). In order to avoid any interference from personal preferences towards brands, all brands and models (8 models were available) used were unknown to participants. The website in which the smartphones are present was specifically created for the purpose, in order to guarantee full control of what the participants would see (it is called "Smart Phoning"). Also, the blogs used in the second day of the experiment were designed and created for this purpose, therefore neither of them being familiar to any of the participants.

4.2. Pre-test

In order to make sure that all devices were working properly, a pre-test was conducted on a participant – male, with 18 years old – that it is not included in the final 33 valid participants.

The room was set in a way that the participant felt complete privacy during the procedure, while the researcher could see what it was being done by the participant – through the camera from the eye-tracking device. The researcher was briefed about the materials that were needed and how to work with them.

Before each participant started their experiment, a consent form was signed. This form explained briefly the procedure and indicated that the data collected would only be used for this purpose. After agreeing with the procedure, the participants were briefed about what they
were expected to do along the first day experiment. Only on the second day, participants were told what they had to do on that day.

4.3. Procedure

4.3.1. Day 1

On the first day, participants arrived and filled the consent form. Participants were then seated on a chair, in front of the computer in which the experiment was supposed to occur. After this, it was explained that they had up to 30 minutes to travel through the website "Smart Phoning" (Appendix 1), in order to know about the company and what they offered, and with the final purpose of choosing the smartphone they were most likely to purchase (considering that they had financial resources to buy any of them). The first day experiment was concluded when the chosen smartphone was put in the website cart.

Before leaving, participants had to answer to a survey with questions concerning satisfaction, intention to purchase the product that they chose, intention to revisit the website and intention to recommend the brand. This survey was not relevant to this study. It was only used to set the terms for the second day experiment, therefore, this data will not be analysed.

After each participant leaves, the researcher took note of which was the smartphone chosen.

4.3.2. Day 2

The second day of the experiment always happened at least one day apart from the first experiment. The room configuration was slightly different, considering that the eye-tracking device had to be connected to the researcher's computer while being on each participant's head. After entering the room, participants were sat down in front of the computer in which the experiment was supposed to occur – not the researcher's computer. The process of how would the second day of the experiment be was then briefly explained, and any concerns from the participants were addressed.

The eye-tracking device was put on the participant's head and calibrated on the researcher's computer, using D-lab software. In order to calibrate the device, four steps were needed:

- 1. Point each camera towards each eye;
- 2. Pin point the eye area on the researcher's computer software;

- 3. Ask the participant to look at each corner of the experiment computer screen and pin point each corner on the researcher's computer software while the participant is looking towards it;
- 4. Verify if it is correctly calibrated by asking the participant to look at a specific direction and confirming if the software shows the same direction.

If the device was not correctly calibrated, the four steps had to be repeated until correct calibration was ensured.

After calibration was ensured, every participant had to follow the same seven steps – read 3 blog articles (Appendix 2), each blog was followed by one survey, and in the end a final survey had to be filled. The three blog articles were created for the purpose of the experiment, based on real contemporary news or opinion articles. In the middle of each blog article, there was a different digital banner (Appendix 6). In the middle of the first article there was a generic banner (Appendix 3) – from a brand that was unknown to participants (also created for this purpose). In the middle of the second article there was a targeted banner (Appendix 4) – from the brand of the website they visited on the first day experiment. In the middle of the third article there was a retargeted banner (Appendix 5) – from the brand of the website they visited on the first day experiment, but also with the smartphone they chose as the one they were more likely to purchase (here each participant saw the smartphone they chose).

After reading a blog article, participants had to answer to a survey that included four questions about the article they read before and questions about their arousal and pleasure levels during that reading (one for each variable – as showed previously) (Appendix 7, 8 and 9). The questions about the article have no interest for this study. They were only used to ensure participants read the article with some level of care.

In the end, after reading the article that included the retargeted banner, participants had to answer a survey with questions about intention to purchase the smartphone they chose, intention to revisit the website and intention to recommend the brand (as showed previously) (Appendix 10). This data was therefore only analysed concerning retargeting data (last blog article).

During the whole experiment, the eye-tracking device was recording gaze path. This is important because, after the recording was finished, it was possible to use the D-lab software to create areas of interest over the advertising banners. This way, the software calculated the time each participant spent looking towards each type of banner, but also how many times participants looked to the area of interest.

4.4. Neurological and behavioural variables

4.4.1. Attention

Nowadays, attention can be measured using high technology that collects data using video based infrared oculagraphy (Wedel and Pieters, 2006). These same authors stated that an "infrared light is emitted from a light source and reflected of various layers in the eye, thereby creating a series of (...) reflections on the eye" (Wedel and Pieters, 2006: 245). It is the difference between reflections on each layer of the eye that allows the eye-tracking device to read the direction of the eye movements (Wedel and Pieters, 2006).

While studying attention, many metrics can be considered – such as time, space, pupil diameter, visual stimuli and other – depending on the purpose of the investigation and the experimental design (Wedel and Pieters, 2006). Time and space are both strong indicators of attention levels, considering the fact the first allows studying variables, such as duration of glances, and the second allows studying variables like areas that were glanced at.

In this case, the metrics used to measure attention were the number of glances at the area of interest and total glance time. In this study, these two different metrics were considered because they can measure distinctive purposes. While glance time duration showed significant statistical difference when compared between types of advertising, it made the structural model fit values of standardized root mean square residual (SRMR) to be higher than 0,08, which makes the model not fit (Hu and Bentler, 1998). Therefore, for the structural model, only the metric of number of glances was considered – but this subject will be addressed further ahead.

Using an eye-tracking device and the D-lab software, it was possible to create areas of interest and then measure the number of eye fixations from each participant. This is a relevant metric to study attention because, as mentioned by Wedel and Pieters (2006), a larger number of glances over the area of interest means that the participant has some kind of interest in the area – therefore, paying more attention to it. Glance time is also relevant because a larger period spent looking at a specific are relates to bigger interest (Wedel and Pieters, 2006) – therefore, to larger levels of attention.

4.4.2. Self-Assessment Manikin

Emotions are considered some of the hardest variables to measure through traditional surveys, which is the reason why Lang (1980) proposed the idea for self-assessment manikin (SAM). It has been defined as a "non-verbal pictorial assessment technique that directly measures the pleasure, arousal, and dominance associated with a person's affective reaction to a wide variety of stimuli" (Bradley and Lang, 1994: 49). This set of scales has been used in several studies, with different purposes. It has been used in psychological research (Cook et *al.*, 1998) and proven to be a reliable method for measuring emotions (Bolls et *al.*, 2001). It has also been successfully tested in advertising studies (Morris, 1995). The three scales are used to measure pleasure, arousal and dominance (Bradley and Lang, 1994). Each scale is composed by a single question that is represented by an illustration. Pleasure goes from a smiling figure to an unhappy figure (1-9 scale). Arousal is illustrated by and excited figure to a relaxed figure (1-9 scale). And dominance is represented by changes in situation control, going from a very small figure, showing no control over a situation, to a large figure, that shows total control over a situation (Bradley and Lang, 1994).

Although it is a three dimensional method, dominance has been considered, by many authors, as having low correlation with approach-avoidance behaviour (Guerreiro et *al.*, 2015; Mehrabian, 1995; Vieira, 2013). Therefore, this study only considers a two dimensional method, using only arousal and pleasure dimensions from SAM.



Figure 2: SAM scale dimensions – pleasure (top) and arousal (bottom)

4.4.3. Intention to Purchase, Intention to Revisit and Intention to Recommend

Intention to purchase, or willingness to buy - as it is known in many other studies – can be defined as the probability that a person intends to purchase a certain product or service

(Dodds et *al.*, 1991; Grewal et *al.*, 1998). Dodds et *al.* (1991) proposed a three-item scale to measure intention to purchase that was based on the following questions:

- 1. If I was going to buy a (product), the probability of buying this model is...
- 2. The probability that I would consider buying this (product) is...
- 3. The likelihood that I would purchase this (product) is...

In the study conducted by Grewal et al. (1998), this scale was used with the product being a bicycle. In this case, the product that was used was a smartphone. All three items were scaled from "Very low" (1) to "Very high" (7).

Intention to revisit a website is a "major component of loyalty to that website" (Kabadayi and Gupta, 2011: 154; Park and Kim, 2003). It is also known to be highly connected to website satisfaction (Kadabayi and Gupta, 2011), which means that the more satisfied people are with their experience, higher the probability of returning (Flores, 2004). Many studies include intention to purchase but do not include intention to revisit. Considering the relation between intention to revisit, satisfaction and consumer loyalty, it is important to study the relation between intention to revisit and intention to purchase (Kabadayi and Gupta, 2011).

The scale that was used to measure intention to revisit was firstly proposed by Anderson and Srinivasan (2003). It is a three-item scale that includes the following questions:

- 1. I am willing to revisit this website in the near future.
- 2. I am willing to return to this website in the near future.
- 3. I have an intention to come back to this website in the near future.

All three items were scaled from "Strongly disagree" (1) to "Strongly agree" (5).

Intention to recommend has always been a reality in Marketing studies. Originally was highly related to studies about word-of-mouth (Keiningham et *al.*; 2007), and nowadays also "recommendations and customer advocacy" (Keiningham et *al.*; 2007:364; Brown et *al.*, 2005). Intention to recommend has also been associated to intention to purchase in several studies (for example, Reichheld, 2003) because it helps predict consumer behaviour (Keiningham et *al.*; 2007). In this study, it will be investigated if there is also a significant relation between intention to recommend and intention to revisit the website.

The scale used to measure intention to recommend was part of investigations by Reichheld (2003) and Satmetrix (2004), and used by Keiningham et *al.* (2007). It is an one-item scale that includes the following question:

1. How likely would you be to recommend (company) to friend and colleagues?

It was scaled from "Definitely would not recommend" (1) to "Definitely would recommend" (5). Only other one-item scales were found to measure intention to recommend. This was chosen because of its already studied correlation with intention to purchase.

4.5. Sample design

A total of 35 people participated in the experiment, however, there were 2 participants with which it was not possible to measure the eye movements using the eye-tracking device, because of the type of glasses they used.

Participants were gathered using social media and showed up voluntarily in the two moments of the experiment. From the 33 valid participants, there were 19 males and 14 females, all aged between 18 and 28 years old. They all resided in the Lisbon metropolitan area, with 15 participants having studied or completed bachelor degree, and 18 having studied or completed a master's degree.

5. **Results**

5.1. Preliminary control

After the data collection was finished, the results on attention were calculated using D-lab – as previously mentioned. They were then extracted from D-lab and gathered with the data from all the surveys, creating the database for the results analysis. As previously stated, the metrics from eye-tracking that were chosen were the number of glances – number of times participants looked at an area of interest – and total glance time – duration of total glances. As stated by Wedel and Pieters (2006), these are strong metrics because they are highly related to interest and attention levels. Considering the fact that all 33 valid participants experienced the same tasks, all participants were used in the results analysis and treated the same way.

This research studies arousal, pleasure, attention (neurological variables) and intention to purchase, intention to revisit and intention to recommend (behavioural variables) – the last three only concerning retargeting banners, as previously stated. That said, the results analysis was divided in two steps:

Phase 1: Analysing if there is a significant difference in neurological variables depending on the advertising type;

Phrase 2: Analysis on how neurological variables are related to behavioural variables, concerning retargeting advertising.

5.2. Phase 1 – Non-parametric Friedman's test

In order to study if there was a significant difference between each neurological variable, depending on the advertising type, three Friedman were conducted. Friedman test in a non-parametric test used to study differences between groups.

Pleasure was tested accounting Pleasure_GEN, Pleasure_TARG and Pleasure_RET, corresponding to generic advertising, targeted advertising and retargeted advertising, respectively. It was proved that there is a statistically significant difference in pleasure depending on the type of advertising, $\chi^2(2) = 6,585 \ p = 0,037$.

Test Stati	istics ^a	Ranks	5
N	33		Mean Rank
1.4		PLEASURE_GEN	2,05
Chi-Square	6,585	PLEASURE TARG	1 70
df	2	PLEASURE_RET	2,26
Asymp. Sig.	,037		

a. Friedman Test

Table 1 and 2: Friedman's test concerning pleasu
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It was then possible to understand that the difference in pleasure levels between retargeted advertising (mean rank of 2,26) and targeted advertising (mean rank of 1,70), is close to being significant p = 0,068. Between the generic advertising (mean rank of 2,05) and the other types there is no significant difference. Therefore, H3^a cannot be validated but it can be

considered that there is a marginal difference in pleasure levels between targeted and retargeted advertising. On the other hand, H3^b has to be rejected.

Pairwise Comparisons



Each node shows the sample average rank

Sample1-Sample2	Test Statistic⊜	Std. Error ⊜	Std. Test⊜ Statistic	Sig. 🔶	Adj.Sig.
PLEASURE_TARG- PLEASURE_RET	-,561	,246	-2,277	,023	,068
PLEASURE_TARG- PLEASURE_GEN	,348	,246	1,416	,157	,471
PLEASURE_GEN-PLEASURE_RET	-,212	,246	-,862	,389	1,000

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the Asymptotic significances (2-sided tests) are displayed. The significance level is .05. Significance values have been adjusted by the Bonferroni correction for multiple tests.

Table 3: Pairwise comparisons concerning pleasure

Arousal was tested accounting Arousal_GEN, Arousal_TARG and Arousal_RET, corresponding to generic advertising, targeted advertising and retargeted advertising, respectively. It was proved that there is no statistically significant difference in arousal depending on the type of advertising, $\chi^2(2) = 3,763 p = 0,152$. This concludes that H2^a and H2^b have to be rejected.

Test Statistics^a

N	33	Ran	(S
Chi-Square	3,763		Mean Rank
df	ว	AROUSAL_GEN	1,85
ui	2	AROUSAL_TARG	1,92
Asymp. Sig.	,152	AROUSAL_RET	2,23
a. Friedma	n Test		

Table 4 and 5: Friedman's test concerning arousal

As previously presented, attention was tested accounting two different metrics, and both metrics were considered in this analysis because they could present drive different conclusions.

Regarding total glance time, the variables were Total_Glance_Time_s_GEN, Total_Glance_Time_s_TARG and Total_Glance_Time_s_RET, corresponding to generic advertising, targeted advertising and retargeted advertising, respectively. It was proved that, when total glance time is considered, there is a statistically significant difference in attention depending on the type of advertising, $\chi^2(2) = 19,710 \ p = 0,000$.

Test Stat	istics ^a	Ranks	
			Mean Rank
N	33	Total_Glance_time_[s]	1,77
Chi-Square	19,710	_GEN	
df	2	Total_Glance_time_[s] _TARG	1,61
Asymp. Sig.	,000	Total_Glance_time_[s]	2,62
a. Friedman Test		_NET	

Table 6 and 7: Friedman's test concerning attention measured by total glance time

It was then possible to understand that there is a significant difference in attention levels regarding total glance time between retargeted advertising (mean rank of 2,62) and targeted advertising (mean rank of 1,61), p = 0,000, but also retargeted advertising and generic advertising (mean rank of 1,77), p = 0,002. Between the other comparisons there is no significant difference. According to this, H1^a and H1^b can be validated.

Pairwise Comparisons



Each node shows the sample average rank.

Sample1-Sample2	Test Statistic [⊜]	Std. Error ⊜	Std. Test⊜ Statistic	Sig. \Leftrightarrow	Adj.Sig.≑
Total_Glance_time_[s]_TARG- Total_Glance_time_[s]_GEN	,167	,246	,677	,498	1,000
Total_Glance_time_[s]_TARG- Total_Glance_time_[s]_RET	-1,015	,246	-4,124	,000	,000
Total_Glance_time_[s]_GEN- Total_Glance_time_[s]_RET	-,848	,246	-3,447	,001	,002

Each row tests the null hypothesis that the Sample 1 and Sample 2 distributions are the same. Asymptotic significances (2-sided tests) are displayed. The significance level is ,05. Significance values have been adjusted by the Bonferroni correction for multiple tests.

Table 8: Pairwise comparisons concerning total glance time

However, when number of glances is considered, the conclusion is different. The variables considered Number of Glances GEN, Number of Glances TARG were and Number_of_Glances_RET, corresponding to generic advertising, targeted advertising and retargeted advertising, respectively. It was proved that, when number of glances is considered, there is no statistically significant difference in attention depending on the type of advertising, $\chi 2(2) = 2,882 p = 0,237$.

Test Statistics ^a		Ranks	
			Mean Rank
N	33	Number_of_Glances_GE	2,00
Chi-Square	2,882	Number of Glances TA	1 89
df	2	RG	.,
Asymp. Sig.	,237	Number_of_Glances_RE T	2,11
a Friedman	n Toot		

a. Friedman Test

Table 9 and 10: Friedman's test concerning attention measured by number of glances

This means that H1^a and H1^b would have to be rejected because there is not a straight tendency with the measurement of attention. Nevertheless, it can be inferred from this analysis that participants tend to look at advertising approximately the same number of times, regardless of the advertising type. However, they spend a significantly higher amount of time in retargeted advertising banners than in other type of banner.

5.3. Phase 2 – Partial Least Squares (PLS) Structural Equation Model (SEM) Analysis

Now regarding the second part of the analysis - how neurological variables are related to behavioural variables, concerning retargeting advertising. Since the previous tests cannot explain how the relationships inside the model vary, PLS-SEM analysis was used to get some more conclusions. Hair et *al.* (2012) argues that structural equation modelling (SEM) helps researchers on testing their theories. In the same study it is explained that SEM used multiple regressions, logistic regressions and variance analysis to get conclusions (Hair et *al.*, 2012). In another words, SEM is a "second-generation multivariate data analysis method that is often used in marketing research because (...) marketers can visually examine the relationships that exist among variables of interest" (Wong, 2013: 1). The two most common SEM methods are: covariance-based method (CB-SEM) and variance-based partial least squares method (PLS-SEM).

For this study in particular, PLS-SEM was chosen because it was shown to have higher levels of statistical significance, even with samples that have few participants (Reinartz et *al.*, 2009). It is also known for being a non-parametric method – which is useful for studying variables that are observed in experiments – that includes regression-based approaches. In order to put into practice PLS-SEM, software called SmartPLS was used. In order to use SmartPLS it is necessary to build an inner model, including the variables of interest for the study. The model is represented by part of the conceptual model that was previously presented.



Figure 3: PLS-SEM model used to analyse correlation between neurological and behavioural variables concerning retargeting campaigns

This analysis only concerns retargeting advertising because all the behavioural variables are only related to the experience lived in the website that participants visited on the first day. Also, the intention to purchase specifically concerns the smartphone that was chosen on that moment.

Pleasure and arousal were measured by the scales presented in the methodology, as well as intention to purchase, intention to revisit and intention to recommend. Once the model was created and the variables of interest linked according to the research hypotheses, it was necessary to study model fit, reliability and validity values (Wong, 2013).

5.3.1. Model fit

In PLS-SEM, model fit can be tested through standardized root mean square residual (SRMR) for the saturated and estimated models. The saturated model tests the model fit if all constructs were connected to each other, while the estimated model considers only the actual model connections (Henseler et *al.*, 2016). For Hu and Bentler (1998), a good model fit value is lower than 0,08. The presented model has a SRMR value of 0,079 for the estimated model and 0,067 for the saturated model, which allows considering that this model has a good fit.

It is also important that the sample size is according to the 1:10 ratio rule for PLS path analysis (Hair et *al.*, 2016). This means that one construct cannot have more than one path relationship for each ten participants. This study in particular has a maximum of three relationships for each construct and a total of 33 participants, which validates the rule.

5.3.2. Outer model

The next step in PLS-SEM analysis is to study the outer model. The outer model provides information on how well the items that compose the constructs are related to the construct itself (*e.g.*: questions in a survey). Hair et *al.* (2011) states that the outer model allows to analyse the relationship between these indicators and each construct.

According to Hulland (1999), outer loadings with values lower that 0,7 should be considered for removal. In this case, it was not needed to remove any of the indicators because they were all above 0,7. Concerning reliability and validity, there are four main measures that might be considered in PLS-SEM: convergent validity, composite reliability, consistency reliability and discriminant validity.

Although Chronbach's alpha was conventionally used to measure model internal consistent reliability, composite reliability has proven to be a less conservative approach when using PLS-SEM (Bagozzi and Yi, 1988). Anyway, as it can be seen in Table 11, all constructs are higher than the minimum required for Chronbach's alpha (0,7) (Nunally, 1978) and composite reliability (0,7) (Bagozzi and Yi, 1988).

	Cronbach's Alpha	Composite Reliability	AVE
Arousal	_*	_*	_*
Attention	_*	_*	_*
Intention to Purchase	0,909	0,943	0,845
Intention to Recommend	_*	_*	-
Intention to Revisit	0,838	0,902	0,757
Pleasure	_*	_*	_*

*single-item measurement

Table 11: Construct Reliability and Validity from PLS-SEM

Regarding the convergent validity, Bagozzin and Yi (1988) state that the average variance extracted (AVE) has to be higher than 0,5 for all constructs, which is verified as it can be seen in the Table 11.

Finally, about discriminant validity there are three steps to be considered. The first is to ensure that the AVE's square root for each latent variable is larger than any other correlation among the other latent variables (Fornell and Larcker, 1981) – meaning that the square root should be higher than any value on the same column or line (Table 12).

	Arousal	Attention	Intention Purchase	Intention Recommend	Intention Revisit	Pleasure
Arousal	1,000					
Attention	-0,007	1,000				
Intention Purchase	-0,048	0,041	0,919			
Intention Recommend	0,005	0,281	0,558	1,000		
Intention Revisit	0,180	0,296	0,677	0,634	0,870	
Pleasure	0,409	0,133	0,003	0,063	0,213	1,000

Table 12: Fornell-Larcker Criterion for Discriminant Validity from PLS-SEM

The second step consists on analysing if the indicator's loadings are higher than its cross loading among other constructs. Table 14 validates these criterions.

	Arousal	Attention	Intention Purchase	Intention to Recommend	Intention Revisit	Pleasure
AROUSAL	_*	-0,007	-0,048	0,005	0,180	0,409
PLEASURE	0,409	0,133	0,003	0,063	0,213	_*
PUR_1	-0,067	-0,018	0,916	0,528	0,687	-0,024
PUR_2	0,011	0,056	0,923	0,509	0,625	0,135
PUR_3	-0,077	0,089	0,920	0,497	0,535	-0,107
RECOM	0,005	0,281	0,558	_*	0,634	0,063
RET_Number_ of_Glances	-0,007	_*	0,041	0,281	0,296	0,133
REVISIT_1	0,198	0,202	0,690	0,549	0,933	0,231
REVISIT_2	0,185	0,334	0,671	0,663	0,947	0,232
REVISIT_3	0,052	0,235	0,330	0,408	0,711	0,042

*single-item measurement

Table 13: Cross Loadings for Discriminant Validity from PLS-SEM

The last step for analysing discriminant validity is the heterotrait-monotrait (HTMT) ratio of correlation. According to Gold et *al.*, (2001), the threshold for considering that there is discriminant validity is 0.9 – meaning that values between 0.9 and 1 are considered as lacking discriminant validity. According to this, it can be stated that there is no lack of correlation.

	Arousal	Attention	Intention Purchase	Intention to Recommend	Intention Revisit	Pleasure
Arousal						
Attention	0,007					
Intention Purchase	0,059	0,062				
Intention Recommend	0,005	0,281	0,583			
Intention Revisit	0,182	0,323	0,734	0,679		
Pleasure	0,409	0,133	0,101	0,063	0,212	

Table 14: Heterotrait-Monotrait Ratio (HTMT) for Discriminant Validity from PLS-SEM

The variance inflation factor (VIF) is normally used to study collinearity in the indicators and that was also evaluated. There is some discussion about which is the VIF value that indicates absence of collinearity. Rigle et *al.* (2015) state that there are collinearity issues when VIF is higher than 5. In this particular study, all indicators are lower than 5 (the highest is 3,802), which allows to assume that there are no collinearity issues.

5.3.3. Inner model

For the inner model, there are also no collinearity issues, considering the fact that all VIF values for the inner model are below 5 (the highest is 1,134). After checking model fit and collinearity, the software then analyses the structural model considering five important factors: effect size (f^2), p-values (p), determination coefficients (R^2), predictive relevance (Q^2) and path coefficients (β) (Hair et *al.*, 2014). The overall model obtained is illustrated in Figure 4.



Figure 4: Bootstrapping analysis from PLS-SEM

A bootstrapping analysis with 1000 subsamples was conducted. The level of significance used to test the hypotheses was of 5%. From the results it is possible to observe that 11,8% of participants intention to revisit the website is explained by attention and pleasure ($\mathbb{R}^2 = 0,118$). Attention has a significant impact on intention to revisit ($\beta = 0,273$, p = 0,005), which means that H4 is validated. However, the impact of pleasure in intention to revisit is not significant ($\beta = 0,177$, p = 0,264), meaning that H6 is rejected.

Intention to purchase is explained in 50,4% by attention, pleasure, and intention to revisit ($\mathbb{R}^2 = 0,504$). Attention has a negative impact on intention to purchase, but it is not significant ($\beta = -0,165, p = 0,210$) – which leads to rejecting H5. However, intention to revisit has a positive significant impact on intention to purchase ($\beta = 0,755, p = 0,000$). This means that H10 is validated. Also, although the impact of attention in intention to purchase is not significant, it can be inferred that there is an indirect positive impact of attention and intention to purchase, mediated by intention to revisit. Considering pleasure, it is possible to observe that it does not have a significant impact on intention to purchase ($\beta = -0,135, p = 0,385$) – which means that H7 is rejected.

Intention to revisit also has a positive significant impact on intention to recommend ($\beta = 0,651, p = 0,000$). Together with pleasure, these variables explain around 40,8% of intention to recommend. However, pleasure does not have a significant impact on intention to

recommend ($\beta = -0,076$, p = 0,590). These results mean that H9 can be validated but H8 is to be rejected.

Arousal explains only 16,8% of pleasure ($R^2 = 0,168$), however it has a positive significant impact on it ($\beta = 0,409$, p = 0,008). Considering that pleasure appears to have no impact on any of the behavioural variables, it can also be assumed that arousal does not have a significant impact on any of the behavioural variables.

Hypothesis	Results
H1	H1 ^a – validated; H1 ^b - validated
H2	$H2^{a} - rejected; H2^{b} - rejected$
Н3	H3 ^a – validated; H3 ^b – rejected
H4	Validated
Н5	Rejected
H6	Rejected
H7	Rejected
H8	Rejected
H9	Validated
H10	Validated

Table 15: Hypotheses results

6. Discussion

This study has the purpose of investigating the role of attention and emotions on advertising – more specifically, retargeted advertising. The experiment was designed in a way that could get representative results for both the behavioural variables and the neurological variables. It is now possible to cross the collected data with the conceptual framework previously presented, in order to draw considerations on can be concluded or further researched.

When taking a look towards attention alone it is possible to observe two distinctive conclusions. When measured by number of glances, attention has no significant difference depending on the type of banner. However, when total glance time is considered, there is a significant difference between types of banners – being retargeting the one that achieves better performance. This can lead to the conclusion that, although people looked

approximately the same number of times to a banner – regardless of the type – they spend a lot more time looking at a message that contained information about a brand/product that they were interested in (retargeted advertising).

Attention is one of the core variables for this study, mainly because it is known to be a strong indicator to predict consumer behaviour (Pieters and Warlop, 1999), by selecting which information has more relevance and, therefore, be stored in memory (Plassmann et *al.*, 2012). That said, although the two attention metrics that were measured show distinct behaviours, when total glance time is considered, it is possible to confirm that participants tend to give more attention to retargeted advertising – rather than generic or targeted advertising. At least they spend more time looking at retargeted advertising than the other types. This also supports the beliefs of Lambrecht and Tucker (2013), who stated that retargeting gets better results than other types of ads because it provides information about products that people already contacted with.

It can be argued that attention is a strong predictor of intention to revisit a website. As mentioned in the previous chapter, attention has a significant positive impact on intention to revisit. This supports the information provided by Sahni et *al.* (2016) who mentions that retargeting campaigns has a positive effect on website visits. Also, Moriguchi et *al.* (2016) argues that remarketing can be effective about bringing back customers that did not finish a purchase.

Johnson et *al.* (2017) suggests that retargeting can have a positive impact on sales. When considering participants' attention towards retargeting advertising there was not a significant direct relationship between attention and intention to purchase. However, as previously mentioned, there can be considered an indirect relationship between attention and intention to purchase, mediated by intention to revisit. Although Johnson et *al.* (2017) proposes a direct correlation, this study indicates that this is a mediated relationship. From this, might be inferred that attention plays a big role on convincing customers to revisit a website they already visited before (Moriguchi et *al.*, 2016) – therefore indirectly increasing the intention to end up purchasing the product that caught their eye in the first place.

A similar assumption can be made regarding the relationship between attention and intention to recommend. Truong and Simmons (2010) suggest that retargeting advertising gets less negative impact on people's perception than other types of advertising. The fact that a positive indirect relationship can be assumed between attention and intention to recommend supports Truong and Simmons' (2010) theory. Not only participants gave more attention to retargeted advertising, but also they showed positive pre-disposition to revisit, purchase and recommend.

Concerning arousal and pleasure, this study found no clear evidence that there is a significant relationship between them and the behavioural variables. However, there are several of studies indicating otherwise. Pieters and Wedel (2004) speak about emotions as part of the top-down factors for attention – personal experience and emotional attributes towards brands, products or adverts. Emotions are also considered a major influence on decision-making (Koshkaki and Solhi, 2016), especially when time is limited (Shiv and Fedhorikhin, 1999) and prioritizing is needed (Damasio, 1994). On the other hand, it is also possible that the avoidance behaviour towards advertising that has grown among customers (Cho and Cheon, 2004) – making them more unaware of advertising around them – has influenced the results so that emotions have no impact on the current case.

7. Conclusions and Managerial implications

It is possible to take positive conclusions from this research. Attention is a very strong measurement for advertising effectiveness, as it was stated by Lee and Ahn (2012). During this investigation, this was also validated. The positive correlation between attention and the behavioural variables indicates a great potential for future Marketing studies on attention.

It also gives some clues to Marketing managers on what to consider when creating new campaigns. Although some neurological variables have been proven to be unrelated with the behavioural variables, there are definitely some points of interest when considering different types of advertising. As suggested by Lambrecht and Tucker (2013) and Johnson et *al.*, (2017), retargeting seems to have less negative impact in customers than generic advertising. People seem to spend a significantly higher amount of time looking at retargeting banners than targeted or generic banners. As a Marketing manager, this can mean that using retargeting campaigns can be translated in a significant increase in the number of people that consider returning to the website or even finalising a purchase. Regarding pleasure, a similar conclusion can be considered. Although people tend to demonstrate negative responses towards advertising (Cho and Cheon, 2004), apparently retargeting advertising reduces the level of the negative impact – which can reduce the negative impact on brand perception, based on a relation proposed by Truong and Simmons (2010).

There is an unquestionable relation between attention and intention to revisit a website. This can mean that retargeting advertising should be focused on bringing customers back to the website instead of trying to force a purchase right away. It is possible that higher levels of attention bring more customers back to the website, however, the intention to purchase will only grow or decrease depending on the experience on the website.

Since this study only considered the relationships attention-intention to purchase, and attention-intention to revisit, it is not possible to draw conclusions on how website satisfaction truly influences the relationship between attention, intention to revisit and intention to purchase. This can be very relevant, especially considering that a relationship between website satisfaction and intention to revisit has already been established (Kabadayi and Gupta, 2011). So it is suggested that a study including attention, intention to revisit, website experience and intention to purchase is made to understand the role of this variable in this model.

This research also makes important contributions to literature about marketing. It has been demonstrated how retargeted advertising can indeed have a relevant role in the future of Marketing practice. It has also been put into practice a use of eye-tracking and attention measurement on studying effectiveness of retargeted advertising.

8. Research Limitations

In this experiment, there were some limitations that should be taken into consideration when analysing the results. The low number of people that were able to participate (less than 50 participants) might represent some problems of validity, because it makes harder to assume with certainty that the same values would stand when generalized.

Although the product chosen for the experiment was of interest for all participants, the fact that they had to simulate their intention to purchase could make the results perish if compared with a real purchasing situation. Still on this subject, the fact that the experiment took place in a controlled environment allows to better control the variables of the study. However, it also distances the participants from a completely real buying process.

It is also important to consider that this study only includes participants aged from 18 to 28, which prevents it from making any assumptions about the same study on elder participants.

Taking all this into consideration, some further research can be considered. It would make sense to test the same model on a bigger sample to check the validity of these results on a larger scale. Also, studying online behaviour with several group ages can be of great interest for companies, considering the fact that would report information on how to reach different generations of potential customers.

The ideal study would be conducted in a real decision-making process. In other words, conduct a similar investigation with people that are actively looking for a product – to study if the results are supported. Also, as previously mentioned, adding website experience (considering variables such as satisfaction, customization and convenience) (Kabadayi and Gupta, 2011) would represent a more faithful representation of behaviour drivers.

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10. Appendix

Appendix 1 – Website created for the experiment





Appendix 2 – Blogs created for the experiment



Appendix 3 – Generic advertising



Links patrocinados D

Appendix 4 – Targeted advertising



Links patrocinados D

Appendix 5 – Example of retargeted advertising



Links patrocinados D

Appendix 6 – Example of advertising in blog



Appendix 7 – Survey showed after generic advertising

O mercado dos smartphones tem crescido sem parar ao longo dos últimos * anos.

Verdadeiro

🔵 Falso

É preferível comprar um smartphone usado numa loja do que a uma pessoa, * tendo em conta que a loja oferece garantia.

O Verdadeiro

🔵 Falso

Os danos causados por líquidos pode constituir um problema porque é impossível de confirmar se aconteceu.

O Verdadeiro

🔵 Falso

A velocidade, navegação e acesso à internet são indicadores importantes do * tempo de vida de um smartphone.

O Verdadeiro

🔵 Falso

Qual o seu grau de prazer em relação à experiência no blog Teleconversas, sendc 1 (prazer) e 9 (desprazer)?



Question



Qual o seu grau de excitação em relação à experiência no blog Teleconversas, sendo 1 (excitado) e 9 (calmo)?



Question

1 2 3 4 5 6 7 8 9

Qual o seu grau de dominância em relação à experiência no blog Teleconversas, sendo 1 (dominado pela situação) e 9 (domínio da situação)?



Appendix 8 – Survey showed after targeted advertising

De acordo com o estudo, o investimento feito em publicidade nos canais digitais foi superior ao investimento em publicidade na televisão.

Verdadeiro

🔵 Falso

O investimento em publicidade na televisão tem vindo a decrescer.*

Verdadeiro

◯ Falso

Em Portugal, a publicidade em canais digitais ultrapassou a publicidade em * televisão.

O Verdadeiro

🔵 Falso

Em Portugal já não se usam outdoors.*

O Verdadeiro

🔵 Falso

Qual o seu grau de prazer em relação à experiência no blog Tecnologias, sendo 1 (prazer) e 9 (desprazer)?



Question



Qual o seu grau de excitação em relação à experiência no blog Tecnologias, sendo 1 (excitado) e 9 (calmo)?



Question



Qual o seu grau de dominância em relação à experiência no blog Tecnologias, sendo 1 (dominado pela situação) e 9 (domínio da situação)?



Appendix 9 – Survey showed after retargeted advertising

Muitas empresas têm lucro com a produção e venda de smartphones.*

O Verdadeiro

🔵 Falso

A Samsung e a Apple são as duas empresas principais do mercado. *

O Verdadeiro

🔘 Falso

Os fabricantes chineses não devem ser considerados porque ainda não produzem smartphones em grande quantidade.

O Verdadeiro

🔵 Falso

Muitas empresas tecnológicas não entram no mercado de smartphones porque é difícil fazer dinheiro.

O Verdadeiro

🔘 Falso

Qual o seu grau de prazer em relação à experiência no blog Teleconversas, sendo 1 (prazer) e 9 (desprazer)?



Question



Qual o seu grau de excitação em relação à experiência no blog Teleconversas, sendo 1 (excitado) e 9 (calmo)?



Question

	1	2	3	4	5	6	7	8	9	
Excitado	0	0	0	0	0	0	0	0	0	Calmo
Qual o seu grau de dominância em relação à experiência no blog Teleconversas, sendo 1 (dominado pela situação) e 9 (domínio da situação)?



Question

	1	2	3	4	5	6	7	8	9	
Dominado pela situação	0	0	0	0	0	0	0	0	\bigcirc	Domínio da situação

Appendix 10 – Final survey

Idade*

- 0 17-20
- 21-24
- 25-28
- 🔿 Mais de 28

Género*

- O Feminino
- O Masculino

O Other...

Escolaridade atual *

- 🔘 Ensino Secundário
- C Licenciatura
- 🔘 Pós-graduação
- O Mestrado
- O Other...

A probabilidade de considerar comprar um dos smartphones da SMART * PHONING seria:

	1	2	3	4	5	6	7		
Muito baixa	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\circ	Muito alta	
Se fosse comprar um smartphone, a probabilidade de comprar da SMART									
FIONING Sena.									
	1	2	3	4	5	6	7		
Muito baixa	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	\bigcirc	0	Muito alta	
A probabilidade de comprar o telemóvel da SMART PHONING que identifiquei é:									

*

*



Estou disposto a voltar a visitar o website da SMART PHONING num futuro * próximo.

*

*

*

	1	2	3	4	5			
Nada de acordo	0	0	0	0	0	Muito de acordo		
Estou disposto a próximo.	regressa	ar ao webs	site da SM	IART PHC)NING nu	m futuro *		
	1	2	3	4	5			
Nada de acordo	0	\bigcirc	\bigcirc	\bigcirc	\bigcirc	Muito de acordo		
Tenho a intenção de regressar ao website da SMART PHONING num futuro próximo.								
	1	2	3	4	5			
Nada de acordo	0	0	0	0	\circ	Muito de acordo		
Qual a probabilidade de recomendar a SMART PHONING a amigos e colegas?								

	1	2	3	4	5	
Muito baixa	0	\bigcirc	0	0	0	Muito alta