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TÍTULO DEL TRABAJO
Neuromarketing and Sensory Marketing:
Are we owners of our purchasing decisions?

Módulo:
Marketing

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ABSTRACT.

We are not a hundred percent owners of our purchasing decisions; package brightness, shapes, colors, ambient sound while shopping... influence our decisions. These insights, reached through Neuroscience studies, aim to understand consumer behavior studying individual's brain reaction to stimuli. The importance for firms? Neuroscience findings can be adopted to design the stimuli-combination that could lead to consumer engagement; what aims Sensory Marketing with sensory stimuli. This thesis aims to synthesize the emerging literature on Neuromarketing and Sensory Marketing. As well as to understand the real impact and effectiveness of Sensory Marketing in one of the fastest growing sectors, the technology sector, through an experimental-design-survey. The main takeaway: consumers are no longer settling for product functionality, rather looking for full brand-experiences, what makes multisensory brand experiences needed for companies' success; serving the technology sector as an example, where targeting consumers' senses demonstrated to increase their engagement.

KEY WORDS: Neuromarketing, Sensory Marketing, Sensory Marketing in the technology sector, Multisensory brand experiences.

RESUMEN.

No somos dueños al cien por cien de nuestras decisiones de compra; el brillo de los envases, las formas, los colores, el sonido ambiente mientras compramos... influye en nuestras decisiones. Estos conocimientos, alcanzados a través de estudios de neurociencia, pretenden comprender el comportamiento del consumidor estudiando la reacción cerebral de este ante los estímulos. ¿Importancia para las empresas? Los hallazgos de la neurociencia pueden adoptarse para diseñar la combinación de estímulos que podría conducir al compromiso del consumidor; lo que busca el marketing sensorial con estímulos sensoriales. Esta tesis pretende sintetizar la literatura emergente sobre Neuromarketing y Marketing Sensorial. Así como comprender el impacto real y la eficacia del Marketing Sensorial en uno de los sectores de mayor crecimiento, el tecnológico, a través de una encuesta de diseño experimental. La principal conclusión: los consumidores ya no se conforman con la funcionalidad del producto, sino que buscan experiencias de marca completas, lo que hace que las experiencias de marca multisensoriales sean necesarias para el éxito de las empresas; sirviendo el sector tecnológico como ejemplo, donde dirigirse a los sentidos de los consumidores demostró aumentar su compromiso.

PALABRAS CLAVE: Neuromarketing, Marketing Sensorial, Marketing Sensorial en el sector tecnológico, experiencia de marca multisensorial.

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1. INTRODUCTION.

Do we make decisions after deliberately thinking everything, collecting information, and making up our minds before we actually execute the decision? Why do us, consumers, take so different purchase decision? These questions led me to the research question that make the base of this thesis: are we owners of our purchasing decisions? The research of the formers' question answer led me to the preceding question: are brands targeting and impacting our senses as a way to enhance our engagement? Because, how is possible that we all identify McDonalds' just by hearing their commercial jingle, or go back to our childhood when smelling that specific smell of Crayone, or how can we recall the smell of new cars. The reason? This is not coincidence, but rather, deliberately thought.

The objective of this thesis is to analyze the impact that sensory stimuli, exploited by most companies, have on consumers. Getting to it through the comprehension of Sensory Marketing and the linked Neuromarketing techniques. Precisely, the purpose is to recognize the attitudes of consumers towards emotions and sensory stimuli and the importance of the subconscious mind on brand election. Reaching the understanding of what is what underlies consumer behavior, decision-making and preference formation. Subsequently, this thesis aspires to analyze, research and acknowledge the application of sensory marketing into the technological sector.

For this, it will be considered firstly the evolution from traditional to sensory marketing, getting then deeply into: Neuromarketing, considering the concept, importance and techniques, and Sensory Marketing, including its definition and the marketing related to the different senses, reaching the understanding of how consumers react to those stimuli. Subsequently, it will be exposed the results of a developed experimental-designed-survey that led to conclusions on the effectiveness and importance of Sensory Marketing use in the tech sector.

2. ANTECEDENTS: From traditional marketing to sensory marketing.

Marketing is defined as the “activities a company undertakes to promote the buying or selling of a product or service” (Twin, 2020, p.1). It has been considered since the 1950s as a process that companies need in order to present their products and services and engage potential consumers (Rodrigues, Hultén and Brito, 2011; Todor, 2016).

The model that has largely been used is the called transactional marketing (TM) model, that, based on the microeconomic theory and the behavioral theory of the firm, argues that each individual is an average-need consumer in a mass-market context, and that general advertisement is what is needed to get to that market (Rodrigues, Hultén and Brito, 2011). In this model, the seller is active while the buyer is passive, just a viewer, and through unidirectional messages, firms achieve short-term exchanges and single transactions with consumers (Rodrigues, Hultén and Brito, 2011; Todor, 2016). Ads in newspapers or magazines, billboards, commercials on TV or radio or brochures are all forms of traditional marketing (Todor, 2016). The transactional model, maybe because of its simplicity, has been the most used model for a long time (Rodrigues, Hultén and Brito, 2011), and it was sufficient in an environment where competition was almost inexistent and consumers were understood as having a secondary role in firms’ decision-making, however, it may be no longer sufficient (Erenkol and Merve, 2015). We now live in an increasing globalized world, in an increasing competitive environment where consumers are exposed to millions of daily stimuli, and that abundance of information and options, makes consumers’ decision-making processes more complex (Erenkol and Merve, 2015; Aydınoğlu, and Sayın, 2016). As a result, traditional mass markets are being shifted to fragmented, segment-based markets, where individualization seem to be key, and, due to this, the efficiency to engage consumers through the traditional method, which is said to be “too restrictive, overly scientific and based solely on short-term economic transactions” (Rodrigues, Hultén and Brito, 2011, p.1) is doubted by scholars and marketers (Hultén, Broweus and Van Dijk, 2009).

Resulting from this, marketers started determining that it may no longer be enough to have the focus on the products or services when doing marketing, but rather, shifting to a customer-centric view based on relationship formation (Hultén, Broweus and Van Dijk, 2009). The former triggered that companies started switching towards a relational strategy, considering the relationship marketing (RM) model a way to end with the idea of passive

buyers, and letting, not only being the aforesaid active parties, but encouraging them to be so, what triggers buyer and seller interactions, networks and relationships, and leads to two-way communication, personal interactions and long-term relationships (Rodrigues, Hultén and Brito, 2011). However, doubts about this model also started to arise; researchers and marketers started to wonder whether it was always suitable or beneficial for companies to develop relationship marketing; whether transactional and relationship marketing models should be combined instead (Brodie, Coviello, Brookes, and Little, 1997; Egan, 2008; Rodrigues, Hultén and Brito, 2011); or whether any of those options is yet enough.

The turning point is in the fact that although being the marketplace full of brand parity, that is, full of many brands and products that provide the same or similar functional benefits (Muncy, 1996), and being consumers exposed to millions of stimuli each day (Erenkol and Merve, 2015), not all individuals make the same decisions in the purchasing process; some of us prefer Coca-Cola over Pepsi-Cola, or Apple over Samsung, while others prefer just the opposite. But where do that purchasing decisions differences come from? The matter is that today's exchange is no longer of goods but rather of intangibles, in other words, consumers no longer purchase products considering only their functional and monetary value but are also influenced by those products' experiential aspects (Schmitt, 1999; Vargo and Lusch, 2004); an evaluation that is subjective and can then be dissimilar in each individual. As a way to avoid brand parity and enhance consumer engagement, firms try to enhance positive customer experiences by integrating not only the functional, but also, the affective, sensory, symbolic, and experiential attributes of their products (Haeckel, Carbone, and Berry, 2003). Further, brands are becoming experiences and, so, consumers are taking the role of co-creators of brand's value, having a central perspective (Rodrigues, Hultén and Brito, 2011).

Hultén (2011), among others, propose sensory marketing as a tool to the aforementioned framework. Which is a marketing technique that locates human mind and human senses in the center of the picture, at the same time as looks forward the creation of a multi-sensory brand-experience (Rodrigues, Hultén and Brito, 2011). How can be its use favorable for brands? Sensory cues are essential components of perceptual processes, and they are directly linked to consumers' cognitions and emotions, therefore, making use of sensory stimuli in order to enhance customer engagement could be a helpful way for brands to increase attention and arousal, enlarge and offer pleasurable, enriched, and unique experiences, and, consequently, upgrade the global customer experience (Aydinoğlu, and Sayın, 2016).

Moreover, sensory stimuli can actually affect customers' decision processes, both, consciously or unconsciously, by prompting certain emotions or brain associations; what affirms that targeting consumers' senses have a huge importance in enhancing their purchasing experiences (Aydınöğlü, and Sayın, 2016). As noted by Babu and Vidyasagar (2012) the ability to watch inside the mind, as well as being able to observe how the brain processes sensory inputs, which later affect decision-making processing, gives marketers an opportunity to, among others, improve advertisements and marketing campaigns, strengthen or extend brands or improve products design.

The capacity of sensory marketing to impact consumers can be understood through various research perspectives and techniques, being one of those Neuroscience, which is in part used to uncover the unconscious decision-making processes of customers (Aydınöğlü, and Sayın, 2016). Conclusions coming from neuroscience have already been significant for marketing improvement, among others, for advertising effectiveness, product appeal, logo selection or celebrity endorsement (Fugate, 2007). For instance, marketers were aware that celebrity endorsements were effective as a marketing technique to increase sales, however, they were unaware of what auditory or visual stimuli associated with it was what was positively impacting consumer perception and decision processes; neuroscience has showed that, when individuals see a familiar face, as a celebrity, there is a change in the dopamine and phenylethylamine flood in consumers' brains that is what influences their behavior (Fugate, 2007). Concluding, we could say that neuroscience is what gives light and responses to the facts showed to be successful in marketing.

Figure 1.

From transaction and relationship marketing to sensory marketing.

	Transaction marketing	Relationship marketing	Sensory marketing
Marketing	Goods logic Exchange perspective Transaction marketing	Service logic Relationship perspective Relationship marketing	Experiential logic Brand perspective Sensory marketing
Strategic marketing	Product focus Customer acquisition Transactional strategies	Customer focus Customer retention Relational strategies	Multisensory focus Customer treatment Sensorial strategies
Tactical marketing	Persuasion and promotion One-way communication Production technology	Interaction and interplay Two-way communication Information technology	Dialogue and on-line interactivity Multi-sensory communication Digital technology
Reprinted from <i>Sensorial brand strategies for value co-creation</i> , by Rodrigues, C., Hultén, B., & Brito, C., 2011.			

The following sections will explore, firstly, if we, as consumers, are hundred percent owners of our purchasing decision and how marketing techniques affect our choices, and secondly, how insights provided by neuroscience research are and could be applied in the form of sensory marketing by companies to enrich their customers' purchasing experiences.

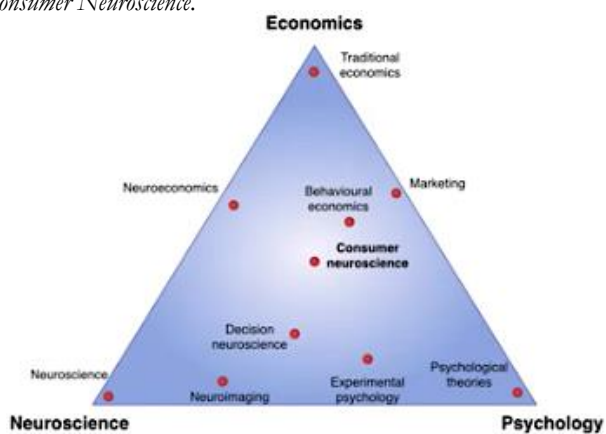
3. NEUROMARKETING: Marketing based in Consumer Neuroscience.

3.1 Concept

Neuroscience is the “study of the nervous system that seeks to understand the biological basis of behavior” (Plassmann, Ramsøy, & Milosavljevic, 2012, paragraph 3), the concept entails from the study of single cells to the study of different brain areas or complex brain systems interactions (Plassmann, Ramsøy, & Milosavljevic, 2012). Neuroscience aspires, by examining behavior from a brain perspective, to develop neuropsychologically theories that give insights to understand consumer behavior, adapting “methods and theories from neuroscience –combined with behavioral theories, models, and tested experimental designs from consumer psychology and related disciplines-” (Morin, 2011; Plassmann, Ramsøy, & Milosavljevic, 2012, paragraph 2; Ramsøy, 2020).

Figure 2.

Consumer Neuroscience.



Reprinted from *An Introduction to Consumer Neuroscience & Neuromarketing*, by T.Z. Ramsøy, 2020, Coursera [MOOC] <https://www.coursera.org/learn/neuromarketing?=&page=1>

Neuromarketing, differently, is based on the commercial interest and use of neuroscience and neurophysiological tools in order to improve consumer insights and marketing effects (Plassmann, Ramsøy, & Milosavljevic, 2012; Ramsøy, 2020). In other words, neuromarketing studies how marketing tools can influence consumers’ brains and, as a result, drive their choices, having as an aim the understanding of consumer’s psychology and behavior for the benefit of specific brands (Morin, 2011; Ramsøy, 2020).

3.2 Importance

In marketing, it is common to ask for self-reports; ask consumers directly for their thoughts, memories and decision-making tools (Plassmann, Ramsøy, & Milosavljevic, 2012), through surveys, interviews, or focus groups, among others. But there are two problems when using the aforementioned. Firstly, consumers do not always know or are not aware of why they choose a specific brand; indeed, most of the times, their unconscious mind play a key role in

decision making (Plassmann, Ramsøy, & Milosavljevic, 2012), since our brain is responsible for all our behaviors as consumers, but we only use around 20% of it in a conscious way; meaning that most of the functions in our daily life are operated being us unconscious (Morin, 2011). However, traditional methods unmeasured that unconscious side of consumer behavior (Ramsøy, 2020). Secondly, consumers do not always want to expose the truth (Plassmann, Ramsøy, & Milosavljevic, 2012), and this is neither taken into account by traditional methods.

The previous information may seem unreal, but let's consider an example: are we 100% owners of our purchasing behavior inside stores? A study exposed by Ramsøy (2020) showed that we are not. The study considered two groups: before entering the store, the members of one group were exposed to an ad of a particular brand, while the members in the second group were not (Ramsøy, 2020). The result was, firstly, that those exposed to the ad had higher inclination towards purchasing that particular brand, which sales increased from a 78% to a 91% and a 100%, for consumers that watched the ad for 15 or 30 seconds, respectively (Ramsøy, 2020). Secondly, mobile eye-tracking while subjects were inside the store, demonstrated that those exposed to the ad were more prone to explore the shelves and look at the ones where the products of the viewed ad were (Ramsøy, 2020).

Figure 3.

Ad effects on in-store attention and choice, results and eye-tracking picture.



Reprinted from *An Introduction to Consumer Neuroscience & Neuromarketing*, by T.Z. Ramsøy, 2020, Coursera [MOOC] <https://www.coursera.org/learn/neuromarketing?=&page=1>

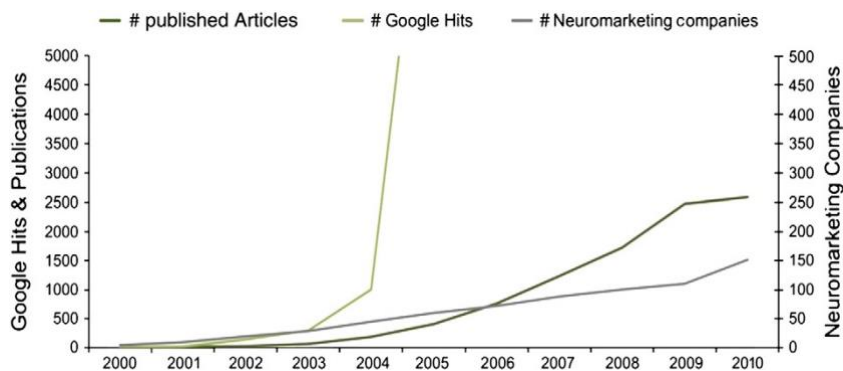
This study shows that traditional marketing methods may no longer be enough; marketing actions can actually impact consumers' choices, being the formers unconscious of that effect, then, it could be advantageous for marketers to acknowledge the subconscious biases of consumers that cannot be figured out by self-report studies, as those can be powerful insights to enhance consumers' experience (Aydınöğlü, and Sayın, 2016).

Can neuroscience be the key to understand consumer behavior? And, therefore, can neuromarketing develop predictive models that explain consumer purchasing behavior? Neuromarketing, based on the study of brain-behavior relationships, rather than on consumers' self-reports, prompts the understanding of the psychology that underlies consumer behavior, decision-making and preference formation (Plassmann, Ramsøy, & Milosavljevic, 2012). This makes it a successful technique, as, on the one hand, it can give insights into both, that unconscious side of the consumers' mind, crucial for understanding behavior, and the real brain reaction of consumers when experiencing a product or during the decision-making process (Plassmann, Ramsøy, & Milosavljevic, 2012). On the other hand, it is a technique that, combined with advanced statistical models, can predict behavior more accurately than traditional methods (Plassmann, Ramsøy, & Milosavljevic, 2012).

Following, the interest that Neuromarketing has from a company's perspective is that understanding how consumers' brain react to different stimuli can led to a better comprehension of what is, for instance, what captures the attention or enhance the loyalty of consumers, and, consequently, to a crucial understanding on how they can correctly stimulate consumers' brain on their own benefit. This conclusive view of Neuromarketing is reflected in the fact that over the past decades, the application of neuroscience to consumer psychology, and, more concretely, to branding has become more popular, not only in academic research, but also in business practice (Plassmann, Ramsøy, & Milosavljevic, 2012). As a proof of the former, not only the number of Google hits and academic papers, but also, the number of companies under the heading of neuromarketing, have been steadily rising in the recent years (Ramsøy, 2020).

Figure 4.

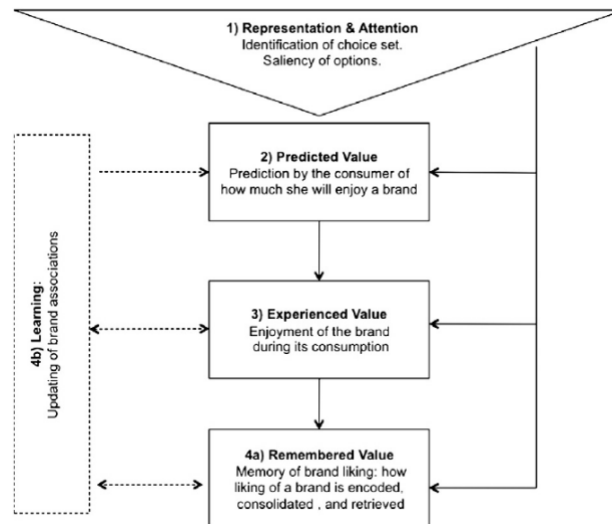
Stead rise of google hits, publications and neuromarketing companies



Reprinted from *Branding the brain: A critical review and outlook*, by H. Plassmann, T.Z. Ramsøy, & M. Milosavljevic, 2012, *Journal of consumer psychology*, 22(1), 18-36.

A model that can be used in order to understand how consumers, react to different stimuli, what is what triggers their decisions, and consequently, how brands can understand those insights in order to positively affect consumers' decisions on their own benefit, is the one proposed by Plassmann, Ramsøy, & Milosavljevic (2012):

Figure 5.
Neuromarketing structure model.






Reprinted from *Branding the brain: A critical review and outlook*, by H. Plassmann, T.Z. Ramsøy, & M. Milosavljevic, 2012, *Journal of consumer psychology*, 22(1), 18-36.

This model exposes that there are different stages that all consumers go through over time before brand preference formation: (1) representation and attention, (2) predicted value, (3) experienced value, and (4) remembered value and learning (Plassmann, Ramsøy, & Milosavljevic, 2012). These are connected to activity in different brain areas and can give insights into what happens biologically that drives behavior, providing, as aforementioned, useful information for marketers to increase consumer's engagement or loyalty to their brand, among others (Plassmann, Ramsøy, & Milosavljevic, 2012).

(1) Representation and attention

Each second, we are, as consumers, exposed to around 11 million bits of information, however, our processing capacity is limited, and we can just process an estimated 50 bits of information (Plassmann, Ramsøy, & Milosavljevic, 2012). As a result, most of the information go by unnoticed, and that is why it could be interesting to analyze, among

Figure 6.
Visual attention and representation - Stimuli

Input	Implicit processing (Bits per second)	Explicit processing (Bits per second)
Eyes 	10,000,000	40
Ears 	100,000	30
Skin 	1,000,000	5
Total (5 Senses)	>11,000,000 Bits	40-50 Bits

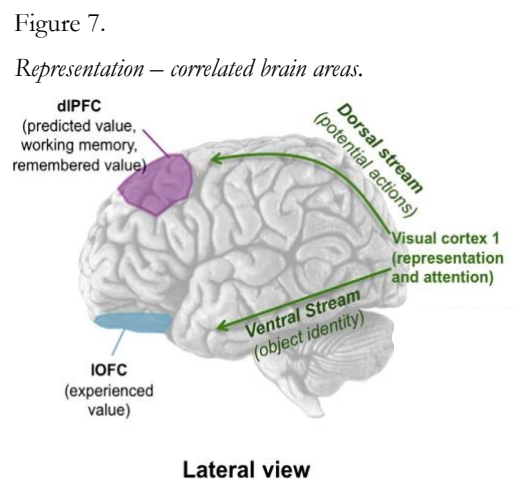
Reprinted from *Consumer Neuroscience/Neuromarketing – Visual Attention and Representation*, by M.Hubert, 25th September 2019.

others, what has been done by the specific brand that has managed to reach consumers' attention, and what have each consumer process or attend to that has impacted his/her behavior (Plassmann, Ramsøy, & Milosavljevic, 2012). Consumer Neuroscience studies, in this stage, consumer's bodily states, external states, goals, saliency of options and motivations that drives their initial approach towards brands, products or services (Ramsøy, 2020).

Representation

Representation can be explained in two steps (Plassmann, Ramsøy, & Milosavljevic, 2012; M. Hubert, Consumer Neuroscience/Neuromarketing, 25th September 2019): Consumers first form a representation of the choice alternatives; they process the incoming information so that they identify the different brands or available options, and then, they integrate that information on their specific internal and external states, that will drive attention, for instance, hunger level and social context respectively.

What happens in the brain? Our visual system allows fast brand and product identification (Plassmann, Ramsøy, & Milosavljevic, 2012). There exist two cortical routes that make up our visual processing (Plassmann, Ramsøy, & Milosavljevic, 2012; M. Hubert, Consumer Neuroscience/Neuromarketing, 25th September 2019): (1) Dorsal Stream: responsible for the spatial formation of attention; object recognition *-the where and how-*, (2) Ventral Stream: involved in object recognition, *-the what-*.



Adapted from *Branding the brain: A critical review and outlook*, by H. Plassmann, T.Z. Ramsøy, & M. Milosavljevic, 2012, *Journal of consumer psychology*, 22(1), 18-36.

How is this important for marketing? Subjects can identify two food brands and make a decision in as little as 313 milliseconds, as an example, according to a study carried out by Milosavljevic, Koch and Rangel (2011), participants were able to decide which food item they prefer in 404 milliseconds in the 70% of trials. What demonstrates that human beings make decisions in a faster speed than what is commonly believed; something crucial to be taken into account by marketers: they need to work on being the brand able to quickly and successfully be selected by consumers.

Attention

As consumers cannot process all the information they receive, they need to select to what information are they going to pay attention to, in other words, what information is going to be preferential above other available information (Plassmann, Ramsøy, & Milosavljevic, 2012). Attention is the mechanism responsible of the former, and it includes different components that help consumers select the information they will process, the most studied ones are bottom-up or saliency filters, top-down control and competitive visual selection (Plassmann, Ramsøy, & Milosavljevic, 2012).

- Bottom-up factors or saliency filters –

Bottom-up saliency filters refers to an automatic consumers' selection mechanism that drives their attention toward the stimulus that are considered *salient*; to things that automatically grab consumers' attention, such as on colors, luminance, contrast, size, shape, brightness or movement, among others (Plassmann, Ramsøy, & Milosavljevic, 2012; M. Hubert, Consumer Neuroscience/Neuromarketing, 25th September 2019; Ramsøy, 2020). As an example, when observing Figure 8, there are things, like colors or shapes, that attract our eyes automatically (Ramsøy, 2020).



Figure 8.

Experimental example of bottom-up factors.

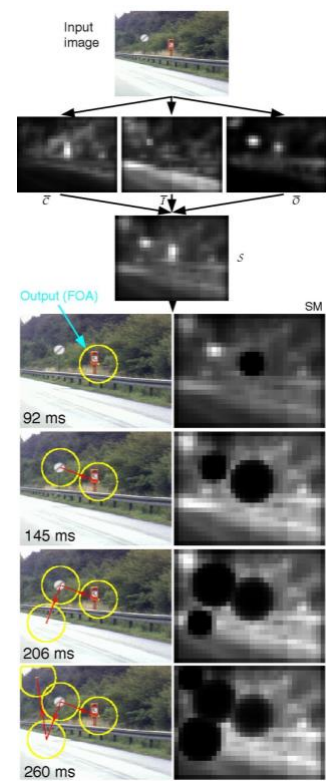
Reprinted from *An Introduction to Consumer Neuroscience & Neuromarketing*, by T.Z. Ramsøy, 2020, Coursera [MOOC]
<https://www.coursera.org/learn/neuromarketing?=&page=1>

What happens in the brain? Our eyes' receptors detect changes or movements, among others, and they signal the thalamus of the brain, engaging visual attention and projecting it back to the primary visual cortex, and at this stage is where the bottom of attention occurs, also called visual saliency (Ramsøy, 2020). Saliency maps refer to maps we create in our brain of what we considered to be the most important of all the information we are viewing in our visual field, and that information will be the one more likely to be further proceed (Plassmann, Ramsøy, & Milosavljevic, 2012). These maps have different drivers: on the one hand person-based factors, each person preferences, and, on the other hand, stimulus-based factors: through bottom-up factors, our brain identifies the most important information from all the information we are being exposed to (M. Hubert, Consumer

Neuroscience/Neuromarketing, 25th September 2019). An input visual image has three conspicuity maps: one for color contrasts (C), other for intensity contrasts (I), and other for orientation contrasts (O) being the combination of the three what forms the saliency map (SM) (M. Hubert, Consumer Neuroscience/Neuromarketing, 25th September 2019; Itti, Koch, & Niebur, 1998). An example of the former is represented in Figure 9, where three conspicuity maps are combined to form input S to the saliency map (SM), in which the most salient location is the orange telephone box (appearing very strongly in C), being what consumers attend at first (Itti, Koch, & Niebur, 1998).

Figure 9.

Experimental example of Saliency maps.



Adapted from *A model of saliency-based visual attention for rapid scene analysis*, by Itti, Koch, & Niebur, 1998, *IEEE Transactions on pattern analysis and machine intelligence*. 20(11). 1254-1259.

How is this important for marketing? Visual stimuli, such as brightness or color, affect visual saliency, possibly influencing location and duration of individuals' fixations (Milosavljevic, Navalpakkam, Koch, & Rangel, 2012). As an example, when consumers have to make a decision looking at a supermarket shelf, salient features such as food package brightness, significantly influence their food choices: subjects are prone to choose the one with the brighter package, even if they preferred other option's taste, being the effect larger when individuals do not have strong preferences among options (Milosavljevic, Navalpakkam, Koch, & Rangel, 2012). Other useful insights coming from related studies are that higher-level factors such as faces, texts, or one's own name, gain preferential access to attention (M. Hubert, Consumer Neuroscience/Neuromarketing, 3rd September 2019), that consumers tend to look at the upper and right visual field (Plassmann et al., 2012), or that consumers attend differently at same items located at different regions: Reutskaja, Nagel, Camerer, & Rangel (2011), demonstrated that in online purchasing, an item located at the center of the screen was almost 60% more likely to be chosen than similar items located elsewhere.

According to the aforementioned, consumer preferences do not make up a 100% of the decision, rather, visual stimuli may be crucial for gaining consumers' attention (Plassmann,

Ramsøy, & Milosavljevic, 2012; Milosavljevic, Navalpakkam, Koch, & Rangel, 2012). A more asserted affirmation considering the fact that consumers' first four eye-movements are made in the initial 2.5 seconds of exposure (Plassmann, Ramsøy, & Milosavljevic, 2012): since, if brands understand what are the stimuli that attract those initial eye movements, what is what people pay attention to, they can apply that knowledge to modify a product visual attractiveness to influence consumers' attention and behavior on their own benefit.

- Top-down control -

Top-down control refers to the attentional control that is driven by the internal and external states, goals and expectations of the consumer (Plassmann, Ramsøy, & Milosavljevic, 2012; M. Hubert, Consumer Neuroscience/Neuromarketing, 3rd September 2019). In other words, what a consumer is expecting or the goal he/she is pursuing will affect the information they pay attention to, as they will attend the information relevant for their specific goal (Plassmann, Ramsøy, & Milosavljevic, 2012). Top-down attention process, contrary to bottom-up, is not automatic, but rather requires mental energy (Ramsøy, 2020). As an example, if you try to solve the task in Figure 10, identify the missing puzzle piece, you can perform well or not, but notice that while you are solving it, you cannot think about what you are doing tomorrow (Ramsøy, 2020).

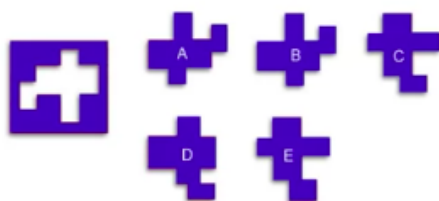


Figure 10.

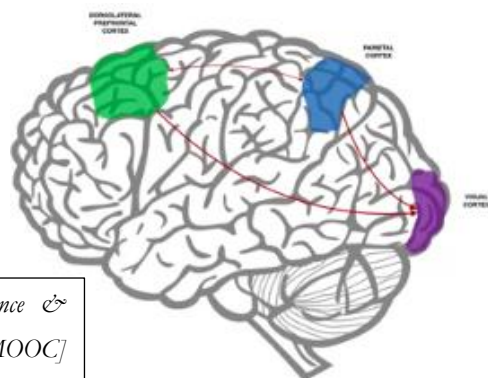
Experimental example of top-down control.

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<https://www.coursera.org/learn/neuromarketing?=&page=1>

What happens in the brain? The frontal and parietal part of the brain are engaged. Concretely, they modulate the activation of the primary visual cortex and other region of the brain (Ramsøy, 2020).

Figure 11.

Top-down control – correlated brain areas.



Reprinted from *An Introduction to Consumer Neuroscience & Neuromarketing*, by T.Z. Ramsøy, 2020, Coursera [MOOC]
<https://www.coursera.org/learn/neuromarketing?=&page=1>

How is this important for marketing? As an example, when a subject is thirsty, he/she will increase the attention placed on drinks, contrary to the one paid to other products (Aarts, Dijksterhuis, & De Vries, 2001). Or, if an individual is looking for a can of Coke, the neuronal sensitivity for red color will increase, enhancing the processing of that color areas in visual inputs (Theeuwes, 2010; Treisman & Gelade, 1980; Van der Lans, Pieters, & Wedel, 2008). Insights that can be useful for marketing purposes and to understand better the relationship between attention and its effect on branding-related behavior.

- *Visual Selection* -

According to some studies, consumer spent much more time visualizing the ads of the products or business they end up choosing, a 54% more time (Lohse, 1997). This confirms, for instance, the importance for brands of investing on advertisement.

(2) Predicted value

Refers to the prediction consumer's do on how much enjoyment he/she will derive from experiencing a specific product or service (Plassmann, Ramsøy, & Milosavljevic, 2012). In this evaluation, two values come into place: rational value and subjective value, being the former related to emotions, internal state, or the context, among others (M. Hubert, Consumer Neuroscience/Neuromarketing, 2nd October 2019). For instance, if a subject has to choose between eating an apple or a chocolate bar, even if, the rational value of the chocolate was higher, not everyone will choose it, since it also depends on each consumer's personal state; for example, a person doing a diet may choose the apple, although desiring the chocolate, having the apple a higher subjective value.

How is this important for marketing? Neuroscience can give insights to firms on how they can enhance consumers' prediction of their products enjoyment. Some studied facts include that favorableness of brand associations or loyalty to a specific brand affects predicted value, as driving a favored-brand-car, or purchasing clothes at a loyal store respectively, having the same effect being exposed to strong versus weak brands or to branded products associated with high social status (Plassmann, Ramsøy, & Milosavljevic, 2012). Therefore, brands must use this for their own benefit: they could try to increase their brand favorableness through positioning themselves as unique in some aspects, comparing themselves to weaker brands, or trying to enhance consumers' loyalty, among others.

(3) Experienced value

In this stage, consumers have direct conscious experiences with the brand or product (Ramsøy, 2020). Experienced value is defined as the enjoyment or pleasure coming from the consumption of a specific product, service or brand and is created by two components: valence, which is the positiveness of the experience, and the intensity of the former (Plassmann, Ramsøy, & Milosavljevic, 2012).

What happens in the brain?

- *Valence* - According to fMRI studies, pleasantness or valence of the experience is correlated with activity in the orbitofrontal cortex (OFC), specifically, its medial parts (Plassmann, Ramsøy, & Milosavljevic, 2012). When experiencing positive emotional experiences, a larger activation in the left frontal region is found (Harmon-Jones, 2003), while negative experiences are correlated with activation of lateral OFC and left dorsal anterior insula (Small, Zatorre, Dagher, Evans, and Jones-Gotman, 2001; Small et al., 2003).

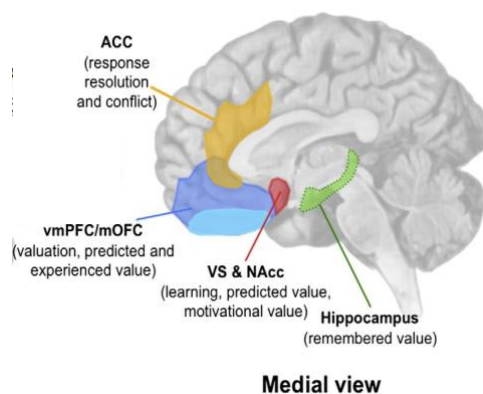
-*Intensity*- Intensity of negative and positive sensory stimuli correlate with activation in the amygdala (Anderson et al., 2003; Small et al., 2003), and, more specifically, pain intensity is correlated with insula and ACC activation (Davis, Taylor, Crawley, Wood, & Mikulis, 1997; Peyron et al., 1999). Moreover, intensity of objects such as sound, flavor, and money are related with activity in the dorsal and ventral striatum (Zink, Pagnoni, Chappelow, Martin-Skurski, & Berns, 2006; Zink, Pagnoni, Martin, Dhamala, & Berns, 2003; Zink, Pagnoni, Martin-Skurski, Chappelow, & Berns, 2004).

How is this important for marketing?

- *Valence* - Marketing actions can alter experienced value signal through actions such as branding (Plassmann, Ramsøy, & Milosavljevic, 2012). Interesting is the fact that individuals' experiences and beliefs have an effect on their cognitive processes, and consequently, on their valuation of experiences, what is called expectation bias or placebo effects of marketing actions (Shiv, Carmon, & Ariely, 2005; Waber, Shiv, Carmon, & Ariely, 2008; Plassmann &

Figure 12.

Experienced value – correlated brain areas.



Adapted from *Branding the brain: A critical review and outlook*, by H. Plassmann, T.Z. Ramsøy, & M. Milosavljevic, 2012, *Journal of consumer psychology*, 22(1), 18-36.

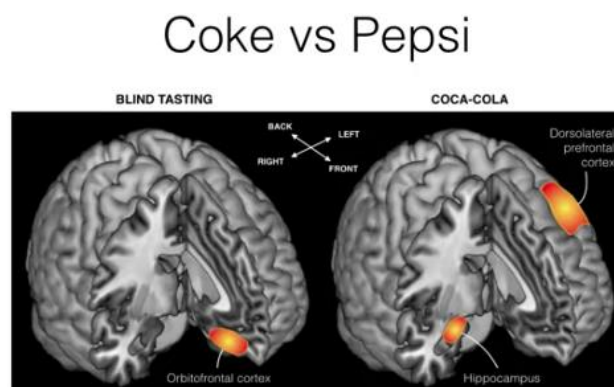
Niessing, 2010; Plassmann, Ramsøy, & Milosavljevic, 2012) As examples, a study made by de Araujo, Rolls, Velazco, Margot, & Cayeux (2005), concluded that when smelling a specific odor, the activity in the OFC was different depending on whether consumers believed they were smelling cheddar cheese or body odor. Another study (Plassmann, O'Doherty, Shiv, & Rangel, 2008) showed that depending on the subject's belief of the wines' price, activity in the medial OFC responding to wine consumption changed. And another research (Kirk et al., 2009) determined that when watching a work of art, whether viewers thought it was created by an expert or by a non-expert, had an effect on their reported experienced value. Considering this, brands must connect with consumers' positive beliefs when exposing their products, as this could prompt consumers enhancement of their experienced value, maybe strengthening the positive view of that brand.

Another important aspect is that brand memory and favorable brand associations are crucial not only for how consumers perceive brands, but also, on the way they enjoy the product, that is, on experienced value (Ramsøy, 2020). As an example, a study made by McClure et al. (2004) studied brain responses when subjects were drinking Coca-Cola or Pepsi. The findings

show that, firstly, when subjects did not know what brand they were drinking, they could not really tell the difference between Coca-Cola and Pepsi, however, when participants were aware, Coca-Cola was not only the preferred brand, but also, their brain activation was totally different; exposing a stronger activation in the hippocampus and the dorsolateral prefrontal cortex, both memory structures, an activation not found when subjects were aware they were consuming Pepsi (McClure, 2004; Ramsøy, 2020).

Figure 13.

Brain areas activation Coca-Cola vs Pepsi experiment.



Reprinted from *An Introduction to Consumer Neuroscience & Neuromarketing*, by T.Z. Ramsøy, 2020, Coursera [MOOC] <https://www.coursera.org/learn/neuromarketing?=&p age=1>

-Intensity- When it comes to intensity of emotional and sensory experiences, there are not yet any study investigating how brand associations influence the intensity of experienced value signals (Plassmann, Ramsøy, & Milosavljevic, 2012), what could be interesting for marketing purposes. Nonetheless, it is important to distinguish between wanting and liking; liking is more stable, while wanting is related with drives and urges, motivation and level of

engagement and increases with the willingness to pay, what means that you can like a product, but not want to consume it at a specific moment or situation (M. Hubert, Consumer Neuroscience/Neuromarketing, 2nd October 2019). Nevertheless, they are very related, and this is what can be interesting for marketing: the wanting system sensitizes the liking system to a coming experience, in other words, the greater is the predicted value, the greater the sensitization of the liking system and the greater the actual liking; if you urge to consume a product and you actually consume it, you will like it more (M. Hubert, Consumer Neuroscience/Neuromarketing, 2nd October 2019). However, it has not yet been studied how the liking and wanting of brands is affected by their associations, favorableness or uniqueness (Plassmann, Ramsøy, & Milosavljevic, 2012), something that could be of interest.

(4) Remembered value and learning

Remembered value refers to “how different brand associations are encoded, consolidated, and retrieved in the consumer’s memory” (Plassmann, Ramsøy, & Milosavljevic, 2012, pg. 27). Brands try to associate themselves with experiences, that can, at best, enhance their brand retrieval and recognition (Plassmann, Ramsøy, & Milosavljevic, 2012). Why? Because memories and previous experiences affect consumers’ choices. It is important to realize that while learning refers to the acquisition and containment of information, memory is each individual’s ability to contain and make use of that information (Ramsøy, 2020). In order for companies to associate themselves with positive memories, they should first acknowledge how are brand-memories created; they are formed based on each consumer predictions and experienced value; which can be personal experiences or other consumers’ experiences that, are, for instance, shown in commercials or that reach consumers through word of mouth (Ramsøy, 2020; Plassmann, Ramsøy, & Milosavljevic, 2012). The remembered value and the learning outcome from those experiences, is what forms brand associations, and what will, consequently, influence individual’s judgements and choices (M. Hubert, Consumer Neuroscience/Neuromarketing, 9th October 2019; Ramsøy, 2020). Importantly, it should be considered that memory include two systems: working memory, which retrieve information and use it to make decisions, and long-term memory, which supports future decisions and includes implicit/non-declarative memory, and explicit/declarative memory (M. Hubert, Consumer Neuroscience/Neuromarketing, 9th October 2019). Finally, important to notice is that, since parts of the brand association retrieval process in the memory happen unconsciously, both have to be taken into account, explicit and implicit memory (Plassmann, Ramsøy, & Milosavljevic, 2012).

Explicit brand memory

What happens in the brain? Explicit memories are correlated with specific brain regions, like the hippocampus, the medial temporal lobe (MTL) or the dlPFC (Squire and Zola, 1996a, 1996b, 1998).

How is this important for marketing? An actual and strong link exists between consumers' preference and their memories, based in the activation of the reward system and structures related to memory (Plassmann, Ramsøy, & Milosavljevic, 2012). This could be seen in, for instance, a study made by Schaefer, Berens, Heinze, and Rotte, (2006), where participants were asked to imagine driving a car, ones of a well-known brand and the others a not-largely-known brand. The ones that imagined driving a car of a well-known brand experienced an increase in the activity of the superior frontal gyrus of the PFC, related to memory (Schaefer, Berens, Heinze, and Rotte, 2006; Plassmann, Ramsøy, & Milosavljevic, 2012). Another example is in the study conducted by Klucharev, Smidts and Fernandez (2008), which showed that products presented with an expert person were related with improved recall on a different day, and they were associated with increased activity in the striatum, dlPFC, hippocampus and parahippocampal cortex, all brain parts correlated with memory. For most brands, associating themselves with experiences can be a successful way to influence retrieval and recognition (Plassmann, Ramsøy, & Milosavljevic, 2012).

Implicit brand memory

What happens in the brain? Brain structures and memory regions are also engaged by implicit memories (Plassmann, Ramsøy, & Milosavljevic, 2012); unconscious stimuli can affect brain processing and, consequently, affect consumers' behavior (Kouider & Dehaene, 2007). Actually, it has been showed that brain areas such as the prefrontal cortex and the ventral striatum can be engaged unconsciously (Lau & Passingham, 2007; Pessiglione et al., 2007).

How is this important for marketing? Brands can influence consumers' behavior without individuals being conscious about it (Plassmann, Ramsøy, & Milosavljevic, 2012). As an example, a study by Pessiglione et al. (2007) demonstrated that participants increased their effort on a task when exposed to both, subliminal high-value and low-value rewards, having the first ones a larger effect. Considering the aforementioned, through neuroscience tools it could be possible to track the neural processes that precede consumers choices, being brands able to predict and affect subjects' choices (Plassmann, Ramsøy, & Milosavljevic, 2012).

Concluding, all these insights and advances concluded through the use of neuroscience techniques would provide a whole new pathway for both, studying and understanding the consumer psychology of branding (Plassmann, Ramsøy, & Milosavljevic, 2012).

3.3 Techniques and tools

Much currently available neural evidence comes from animal's brain studies, commonly rats and primates, that are useful due to the fact that the human brain is a mammalian brain, having the only different that it is covered by a folded cortex responsible for humans' higher functions such as language or long-term planning (Camerer, Loewenstein, and Prelec, 2004).

What is usually imagined when talking about neuromarketing techniques is brain imagining, which consists of comparing people when performing different tasks; an experimental and a control task, in order to observe how different brain areas are activated depending on the task (Camerer, Loewenstein, and Prelec, 2004). However, there are many techniques and tools used in neuroscience to measure and map neuronal activity and understand the reaction of consumer's brain when exposed to different stimuli (The 7 most common neuromarketing research techniques and tools, 2019). What is more, as each method has their particular strengths and weaknesses, usually research findings are drawn only after they are confirmed by more than one method (Camerer, Loewenstein, and Prelec, 2004). Concretely, there are three categories of Neuroscientific techniques: (1) techniques that record brain physiological activity, of the central nervous system (CNS), (2) techniques that register other physiological activity, of the peripheral nervous system (PNS), (3) other techniques that record behavior (The 7 most common neuromarketing research techniques and tools, 2019).

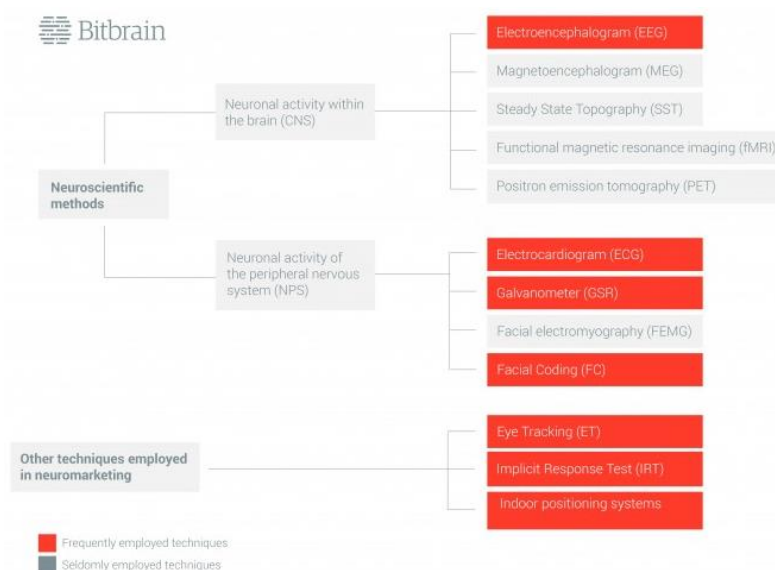


Figure 14.
Neuromarketing research techniques and tools.

Reprinted from *The 7 most common neuromarketing research techniques and tools*, by n.d, 2019
<https://www.bitbrain.com/blog/neuromarketing-research-techniques-tools>

Notably, three of them are considered being low or no-invasive methods capable of measuring and mapping brain activity, being then safe to use for market research, which are electroencephalography (EEG), magnetoencephalography (MEG) and functional magnetic resonance imaging (fMRI) (Morin, 2011).

Electroencephalogram (EGG)

EGG, although it is a considered already old technology in neurology -first used in 1979- it is still valuable for measuring brain activity (Morin, 2011) We have more than 100 billion neurons, which are the cells responsible for the biological basis of our cognitive responses, and trillions of synaptic responses that complete the neural circuitry (Morin, 2011). When we are exposed to a stimuli, neurons produce a small electrical current, which have multiple frequency patterns, called brainwaves, that are associated with different states of arousal (Morin, 2011). EEG method, normally, uses a headband or helmet which place electrodes on the subject's scalp to analyze and record brain's electrical activity, meaning changes in the electrical currents of brainwaves (Morin, 2011; The 7 most common neuromarketing research techniques and tools, 2019) It is a largely used technique in neuromarketing since, it captures information at a fast speed, in about 1 millisecond, something crucial considering the quick speed of the brain activity (Camerer, Loewenstein, and Prelec, 2004; Morin, 2011). Moreover, it evaluates deeply each marketing stimulus worth, by measuring consumer's attention, engagement, affective valence, or memorization, among others (The 7 most common neuromarketing research techniques and tools, 2019). Finally, it is portable and economical (Morin, 2011; The 7 most common neuromarketing research techniques and tools, 2019). Its limitations include that it does not have good spatial resolution; it cannot precisely locate where the neurons are in the brain, and consequently, is unable to identify the exact activity resulting from the stimuli (Morin, 2011; The 7 most common neuromarketing research techniques and tools, 2019). Further, it is not accurate to affirm that brain activation is entirely produced by a specific event or stimuli, considering brain's complexity (Morin, 2011).

Concluding, it can be applicable to determine the effectiveness of a piece of advertising, but it is insufficient to understand the cognitive process of consumers brain (Morin, 2011).

Magnetoencephalography (MEG)

MEG emerged in the mix-sixties, and, as EEG, it focusses on studying the magnetic field on subjects' brains (Morin, 2011). It normally conducted through the use of a helmet that

contains between 100 and 300 sensors which record brain's magnetic activity, detecting changes in magnetic fields induced by electrical activity of the brain (The 7 most common neuromarketing research techniques and tools, 2019). As pros, MEG include an excellent temporal resolution and better spatial resolution than EEG (Morin, 2011). Its limitations are the same as the former, it can only study activity at the surface of the brain, including in addition, that it is more expensive and not portable (Morin, 2011; The 7 most common neuromarketing research techniques and tools, 2019).

To sum up, this method can be favorable when studying activity in known or already studied brain areas rather than to direct exploratory experiments (Morin, 2011).

Functional Magnetic Resonance (fMRI)

The base of fMRI is that when neurons produce that small electrical current considered before, they need energy that its transported by blood flow and metabolized; for instance, exposed to an ad, some brain areas receive more oxygenated blood flow than if they were at rest time, creating distortions in the magnetic field (Morin, 2011). This is what is measured in fMRI method; changes in blood oxygenation, through the use of an MRI scanner that exposes the blood flow change in the brain and is able to measure and map brain activity (Morin, 2011; The 7 most common neuromarketing research techniques and tools, 2019). For its use, it is needed that the subject lie in a bed with a scanner surrounding his/her head, which will track the variation in blood oxygenation in their brain (The 7 most common neuromarketing research techniques and tools, 2019). It has a large spatial resolution, 10 times better than EEG (Morin, 2011; The 7 most common neuromarketing research techniques and tools, 2019). Furthermore, it is able to study deep brain structures, even emotional responses (The 7 most common neuromarketing research techniques and tools, 2019). As limitations, it does not directly measure electrochemical signals created by neurons, it has low temporal resolution, as there exists a delay between neurons electrical current production and change in BOLD signal, it is not portable and expensive, although more accessible than MEG needed equipment (Morin, 2011; The 7 most common neuromarketing research techniques and tools, 2019)

Others distinguished methods encompass:

Electrocardiogram (ECG): Focus on the analysis and recording of electrical activity of the heart through sectors placed on the participant's skin (The 7 most common neuromarketing research techniques and tools, 2019). Is not expensive and not intrusive, moreover, it enables

researchers to collect information in real time (The 7 most common neuromarketing research techniques and tools, 2019).

Galvanic skin response (GSR): Measures changes in skin conductance or perspiration, when the former becomes a good electricity conductor, occurring, among others, as a consequence of endocrine glands increased activity, that is, sweat after being participants exposed to a specific marketing stimulus (The 7 most common neuromarketing research techniques and tools, 2019).

Eye-tracking: By using infrared light, it measures and records eye movements identifying the position of the pupil, and consequently, understand consumers patterns and information on visual attention when consumers are exposed to a specific stimulus (The 7 most common neuromarketing research techniques and tools, 2019). It is accepted by individuals and portable (The 7 most common neuromarketing research techniques and tools, 2019). And it can be used in different forms, such as with eye-tracker glasses or through a stationary eye-tracker, placed at the lower part of a screen, as an example (The 7 most common neuromarketing research techniques and tools, 2019).

Facial coding (FC): A camera measures and records voluntary and involuntary movements of facial muscles, when consumers are exposed to specific stimuli, which are associated with emotional and cognitive states (The 7 most common neuromarketing research techniques and tools, 2019). It is not expensive, not very intrusive and portable, however, is not exactly precise (The 7 most common neuromarketing research techniques and tools, 2019).

One of the considered reasons why neuromarketing has not yet take off is the fact that many marketing academics see these needed techniques as unattainable, however, although complex tools such as MEG or fMRI could be unavailable, others less complex, like EEG or GSR technology are more likely to be feasible. Nevertheless, the low degree of knowledge of these techniques is reducing both, their potential use and the consideration of neuromarketing as an efficient marketing tool (Lee, Broderick, and Chamberlain, 2007). For the most complex techniques, a possible solution is cross-school or departmental collaboration between business or research groups (Lee, Broderick, and Chamberlain, 2007).

4. SENSORY MARKETING: The multi-sensory brand experience concept.

The advertisement and marketing impact is decreasing despite the fact that more resources are invested on it; in 1965 34% of US consumers, were capable to name the brand of a commercial disclosed during a show, while in 1995 that percentage was reduced to an 8%. (Lindstrom, 2005). Why are we using more marketing resources and the returns are being reduced? In today's world, people are overloaded with millions of options and conflicting information regarding everything (Maymand, Ahmadinejad, & Nezami, 2012). Being this proven by the fact that at the age of 65, we, as consumers, have been exposed to two million television commercials; what is equivalent to six years watching commercials for eight hours, seven days, every week, without a break (Lindstrom, 2005). Moreover, the displayed information looks the same and this is, both, increasing the difficulty for consumers to identify the best choices, and making people more confused, frustrated and more cynical than ever before (Maymand, Ahmadinejad, & Nezami, 2012). Due to all this, consumers may be tired of traditional advertisement, being the number of consumers desiring advertisement-free entertainment increasing, what is more, it has been predicted that exponentially consumers will be eliminating advertisement from their screens (Lindstrom, 2005).

So, what is the future of marketing? Due to the competitive environment we find ourselves at, we, as consumers cannot longer cope rationally with all the decisions we make, contrary, we are starting to make purchase decision based on *how they feel*, that is, the emotional aspects of products and services are the ones that are driving consumer purchases (Maymand, Ahmadinejad, & Nezami, 2012).

Consider the Dunkin' Donuts campaign in South Korea: they company created automizers that had freshly brewed coffee aroma and placed them on public buses, then, whenever the company's jingle commercial was played, the automizer was triggered to release coffee aroma, making consumers not just smell freshly brewed coffee but associate it with Dunkin' Donuts (Harvard Business Review, 2015; Manshadi, 2020; Marinkovic, 2020). And this was not all; when potential consumers exist at their bus stop, a Dunkin' Donuts shop was right in

Figure 15.

Automizer in a public bus during the Dunkin' Donuts campaign.



Reprinted from *Dunkin' Donuts Flavor Radio (2012 Cannes Lions) [Video] Youtube*, by katzmarketing, 2012
<https://www.youtube.com/watch?v=V2tP-FAn6u8>

front of them or, at least, nearby (Harvard Business Review, 2015; Manshadi, 2020; Marinkovic, 2020). The company, through this marketing campaign, appealed to potential consumers' multiple senses, sound and smell with the jingle and the immediate coffee aroma release, and sight with the location of nearby stores (Harvard Business Review, 2015; Manshadi, 2020; Marinkovic, 2020). The result? More than 350.000 people witnessed the ad during the campaign, visits to Dunkin' Donuts increased by 16% and sales at those lifted by 29% (Harvard Business Review, 2015; Manshadi, 2020; Marinkovic, 2020). This is what Sensory Marketing is all about.

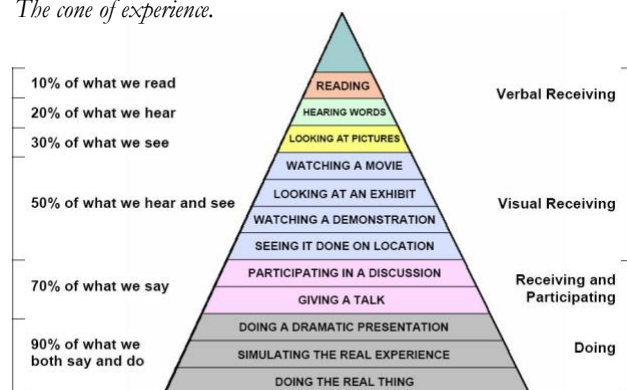
In this section, it will be analyzed the way consumers' senses have an influence on their purchasing decisions and how can brands build themselves considering the former, being this done through the review of the research that has been done in this field.

4.1 Concept

Everything that we experience through our senses have an effect on us as consumers: the color and shape of a product, the ambient sound being played while you are shopping, the possibility to touch the products or even taste them... all this will affect the time that you spend inside a store, your shopping satisfaction, or your desire and interest rates, among others. That is, targeting our senses: sight (color, shape and size), hearing (sound and music), smell (odor), touch (softness, temperature) and taste, influence our purchasing behavior, and our attitude towards products and brands (Farias, Aguiar and Melo, 2014; Shabgou, and Mirzaei Daryani, 2014), being brands aware of the former.

The information perception though our senses impact our purchasing behavior: we remember 10% of what we read, 20% of what we hear and 30% of what we see (Dale, 1969; Molenda, 2003). Having the previously exposed into consideration, the success of marketing campaigns like the one of Dunkin' Donuts are not by chance, it has been shown (Lindstrom, 2005) that brands communicating using a multi-

Figure 16.
The cone of experience.



Edgar Dale, *Audio-Visual Methods in Teaching* (3rd Edition). Holt, Rinehart, and Winston (1969).

Reprinted from *Cone of experience. Educational technology: An encyclopedia*, 161-165. by Molenda, 2003

sensory approach have greater likelihood of emotionally connect their products with consumers, what demonstrates that an effective emotional connection is made when all senses are considered.

What is the reason for the aforementioned campaign success? Nodaway's society is characterized by information overload, lack of time and aestheticization of daily life; due to that, it is no longer enough for firms to base their strategies on traditional marketing (Rodrigues, Hultén and Brito, 2011). Moreover, current consumers receive tons of explicit marketing stimuli daily, they do not have time and neither enthusiasm to spend time watching TV ads, newspaper ads or any other traditional advertising form (Shabgou, and Mirzaei Daryani, 2014). Considering all this, subconscious appeals which target the basic senses may be a more efficient way to engage consumers; even being able to cause them to self-generate desirable brand attributes rather than just accepting the ones showed in advertisement (Krishna, 2012). That is, the success of the campaign come from the use of what is called Sensory Marketing.

Sensory Marketing is a commercial technique that emerges as an answer to today's competitive world crowded of advertisement and similar brands; it is the marketing strategy trough which brands design and display interactions with consumers' senses, with the objective of, through the engagement of humans' five senses, creating powerful sensory relationships and long-lasting emotional connections between brands and consumers, triggering an increase in brand loyalty (Maymand, Ahmadinejad, & Nezami, 2012). It can be defined as "marketing that engages consumers' senses and affects their perception, judgement and behavior" (Krishna, 2012, paragraph 2). In order to understand Sensory Marketing, a basic idea is to comprehend is the difference between sensation and perception; sensation refers to the stimulus that impinges consumers while perception is the interpretation each consumer does of that sensory information (Krishna, 2012). As sensation and perception are different, marketing managers could affect consumers consumption or brand judgements, among others, through focusing on how consumers will perceive those stimuli rather than just how they will receive them, this is what Sensory Marketing is all about.

For all this, it can be seen as a technique or form of Neuromarketing that can provide a small but crucial push to consumers in the right direction (5 Neuromarketing techniques every marketer should know about, 2016), since Neuromarketing is the study of how different

variables impact consumers' information processing and their consequent reaction (M. Hubert, *Consumer Neuroscience/Neuromarketing*, 3rd September 2019), and Sensory Marketing take those insights into consideration in order to successfully engage consumers' senses to impact their perception, judgement and behavior (Krishna, 2012).

Why can be Sensory Marketing prosperous? As Maya Angelou, an American poet, memoirist and civil rights activist, said, "People will forget what you said, people will forget what you did, but they will never forget how you made them feel" (Maymand, Ahmadinejad, & Nezami, 2012, paragraph 1). An important insight is that focusing on consumers' senses means focusing on consumers' links to memory and enhancers of emotions (Lindstrom, 2005), and having the key to connect with consumers' memories or emotions could be a powerful tool for marketers. The reason is that, understanding these sensory triggers could mean, for marketers, understanding of sensation and perception that affects consumer behavior, and consequently, be used by companies to generate subconscious triggers that affect consumer's perception of their products or services, for instance, in terms of quality, innovativeness or modernity, creating in that way a beneficial brand personality (Krishna, 2012).

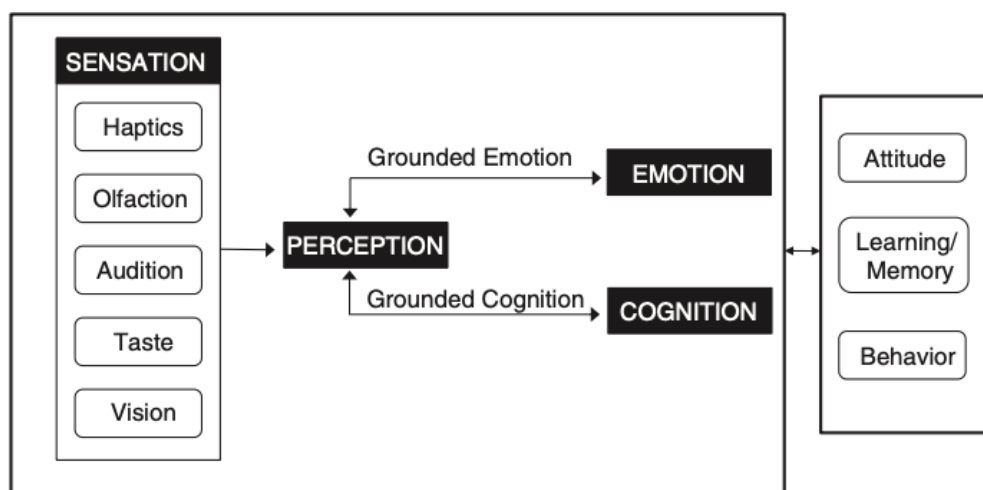
However, surprisingly, 99% of all brand communication still focus only on sight and sound, and dismiss the other senses, despite the fact, that, for instance, 75% of our emotions are generated by what we smell (Lindstrom, 2005), what means that starting using Sensory Marketing can be also a competitive advantage.

However, in the same manner as Neuromarketing, Sensory Marketing is a current growing field. According to Peck and Childers (2008), considering 81 sensory studies in consumer behavior, 28 were published in the last 5 years, what composes over one third. Some companies are already implementing them; an example is Crayone; in 2000 needed to gain advantage from their competitors, by analyzing the odor of a pen they manufactured a smell, patented it, and used it to fragrance each one of their products (Lindstrom, 2005); this caused that consumers started relating that specific scent with just and only the Crayone brand, getting to the point that, now, when a consumer smells that odor, the aforementioned is capable of stimulating the consumer's memory and take him/her back to positive memories from when they were children, as when they were drawing in school (Lindstrom, 2005). Another example is the one of Starbucks: since the 1980s they focused on creating a multisensory experience to consumers in order to strengthen consumers' engagement with

the brand; they wanted to create an in-store customer experience (Hultén, Broweus and Van Dijk, 2009; Rodrigues, Hultén and Brito, 2011). Now, going to Starbucks is much more than going to a cafeteria; Starbucks offers an inspiring environment that encourage consumers to go to spend time with friends or alone, to read, among others (Hultén, Broweus and Van Dijk, 2009; Rodrigues, Hultén and Brito, 2011). The cafeterias have a green and yellow interior, together with pleasant lighting that offer a visual experience, as well as relaxing sound of music that was created to be the *Sound of Starbucks*, along with the smell and taste of freshly ground coffee, the special shaped armchairs... all these sensory expressions form a multi-sensory atmosphere and, the aforementioned, impact on consumers' mood and state (Hultén, Broweus and Van Dijk, 2009; Rodrigues, Hultén and Brito, 2011). Further cases are found in the car industry, where car companies such as Ford or Rolls Royce created specific and unique fragrances, they now use to impregnate their cars with, with the objective that consumers identify that specific smell with just that car brand (Lindstrom, 2005), making it unmistakable, a competitive advantage hard to defeat.

For all this, in order to understand and go through the topic of Sensory Marketing the framework in figure 17 can be followed.

Figure 17.
Sensory Marketing Framework.



Reprinted from *An integrative review of sensory marketing: Engaging the senses to affect perception, judgment and behavior*, by A. Krishna, 2012, *Journal of consumer psychology*, 22(3), 332-351.

4.2 Types of Sensory Marketing

4.2.1 Touch or Haptics

Touch composes a 25% in brand building (Lindstrom and Kotler, 2005).

Think about holding some cutlery, for instance, two forks, one of them is way heavier than the other, which one would you think it has better quality? Most probably you are thinking about the heavier, as, normally, more heavy objects are associated with higher quality (Maymand, Ahmadinejad, & Nezami, 2012).

Done research have shown the power of touch: picture now the Coca-Cola glass bottle; it has a specific shape that can be easily recognized and that creates a pleasant feeling when holding it. The result? Almost 59% of consumers prefer to drink it in a glass bottle rather than a plastic one (Maymand, Ahmadinejad, & Nezami, 2012), showing the importance of touch sense. As another example, a study by Peck and Wiggins (2006) concluded that donations to the Arboretum increased when subjects could touch an element associated with it, like a tree bark or a feather located the front page of the brochure, whenever participants had a high-need-for-touch. Finally, in a study made by Peck and Childers (2003), 199 participants were asked to evaluate a cellphone and a sweater being some of them able to touch the products while the rest were just able to see it: it was concluded that people were more confident and less frustrated when evaluating different products when they could touch them, for people having a high need-for-touch.

Taking the above examples into consideration, it can be concluded that it actually exists a need of consumers to touch the products, having this an effect on the posterior product purchase, consumption, and brand evaluation. But what is the reason why touch is that powerful stimulant? Some reasons, according to Rodrigues, Hultén and Brito (2011) and Maymand, Ahmadinejad and Nezami (2012) include that touching a product firstly increase the trust that consumers have towards the quality of that product, secondly, is a way that consumers have to obtain information and create a positive view and attitude toward that product, and finally, by touching a product they experience a sense of ownership that increases that product purchase.

It is possible to identify different ideas when it comes to marketing related to touch sense: a first idea is the *touch between humans*: it has been demonstrated that physical touch enhances

generosity (Krishna, 2012). For instance, it has been shown an increase in consumers' tips to waitress when the subjects physically touch them (Crusco and Wetzel, 1984) or the fact that just holding other subject's hot coffee increases the first person's generosity and the positive judgement of a second person (Williams and Bargh, 2008).

Secondly, the *touching between products*, for example, the touching between products in the supermarket shelves or in our shopping carts, can also affect consumer's reaction towards products (Krishna, 2012). As an illustration, there are products considered moderately *disgusting*, such as trash bags, diapers, cigarettes or feminine napkins (Morales and Fitzsimons, 2007), and having any of these touching other not considered *disgusting* products can decrease the former's appeal: as an example, placing feminine tampons next to potato chips in the shopping cart decreases the appeal of the chips, but this does not happen if the two products are in the shopping cart are not touching one another (Krishna, 2012).

Finally, the sense of touch has been identified as an influencer of consumer behavior, as some studies made by Rozin, Millman, and Nemeroff (1986) demonstrated, being this affirmation based in two laws. Firstly, the *law of contagion*: through contact the properties from one object can be passed to another; for instance, a beverage briefly contacted a sterilized dead cockroach become undesirable or cleaned shirts that have been worn by disliked people are less desired (Rozin, Millman, and Nemeroff, 1986). And secondly, the *law of similarity*: which follows the idea that the object equals the image; for example, 40% of subjects refuse to eat a chocolate fudge, which is an acceptable food, if it was shaped as a dog excrement, that is considered a disgusting object (Rozin, Millman, and Nemeroff, 1986). The aforementioned explained law of contagion is also true between people and products, as an illustration, subjects looking to buy a shirt in a store were less likely to purchase it if the shirt had been touched by another customer before (Argo, Dahl, and Morales, 2006).

These insights are important for designing marketing actions: research have shown that consumers who touch a product are more prone to purchase it; touch can even encourage consumers to purchase a product previously neglected (Maymand, Ahmadinejad, & Nezami, 2012). Materials, temperature, weight and form influence consumers' touch experience, and can be used to encourage peoples' creation of a product's positive image and, consequently, enhance engagement (Maymand, Ahmadinejad, & Nezami, 2012).

4.2.2 Olfaction or Smell

Smell composes a 45% in brand building (Lindstrom and Kotler, 2005).

Have you ever come across in the street with a person that has that specific perfume of your favorite kindergarten teacher? Or, have you ever smelt Crayone color pens and picture yourself as a kid, spending hours drawing?

The research done has identified a correlation between smell and memory, meaning that if information was encoded along with smell, it may last for longer time than if that information was encoded with other senses (Krishna, 2012). The main reason supporting this affirmation is the physical and neural proximity of the systems related with scent and memory, what is more, no other sense has this direct connection to memory (Krishna, 2012): the limbic system, contains the olfactory bulb, amygdala and hippocampus (Herz and Engen, 1996), and the olfactory nerve is only two synapses from the amygdala, related with emotions and emotional memory (Cahill et al., 1995), and three synapses from the hippocampus, which is even more involved in memory (Eichenbaum, 1996): smell has a quick effect on the limbic cortex system which is the part of the brain that controls emotions and memory (Maymand, Ahmadinejad, & Nezami, 2012).

And not only do scent cues trigger more emotional memories, but also are capable of generating more detailed autobiographical memories, compared to those that are triggered by other type of cues (Chu and Downes, 2002; Herz, 2004).

How is odor a strategic component needed by companies? In general terms, a specific odor used for a precise brand or product will make consumers assess the odor with the brand or product, and, therefore, recall the former anytime they smell the odor (Shabgou, and Mirzaei Daryani, 2014), being this a powerful tool in today's competitive environment. More specifically, when it comes to ambient scent, it has been concluded that having an ambient odor increases recall and recognition of brands, and triggers memories, consequently influencing the elaboration of product choice (Mitchell, Kahn, and Knasko, 1995; (Morrin and Ratneshwar, 2003). Related to this, scent can also have an effect on product or store evaluation and time spent inside a store, since, for instance, pleasant odors boost evaluation of products and stores, as well as variety-seeking behavior (Mitchell, Kahn, and Knasko, 1995; Bosmans, 2006; Krishna, 2012).

Regarding product scent, it can affect products quality perceptions (Shabgou, and Mirzaei Daryani, 2014), and it also enhances memory for associated information and brand's attributes (Krishna, Lwin and Morrin, 2010); as an illustration, a research was made where participants were given a scented or an unscented pine branded pencil to study memory; the group given the scented pencil could recall much more attributes of the product and brand (3.67/10) than the ones with an unscented pencil (0.87/10) (Krishna, Lwin and Morrin, 2010). The same result was obtained when consumers were exposed to advertisement that had verbal information; odor enhanced the recall of that verbal information and increased the effect of the pictures on recall (Krishna, Lwin and Morrin, 2010).

Is this sense of high interest for marketing? It truly is. It has been studied and concluded that humans are able to recognize 10,000 different combinations of scent (Buck and Axel, 1991), and human's ability to distinguish among different odors that they had been previously smelled, even if that was long time in the past, is quite intense (Schab and Crowder, 1995); odor recognition decreased from 70% after exposure to 65% after one year (Engen and Ross, 1973), and dropped from 85% after exposure to 75% after one month (Lawless and Cain, 1975). However, other sensory stimuli reduce at a much faster rate (Krishna, 2012), for example, picture recognition accuracy reduced from 99% after exposure to 58% four months later (Shepard, 1967). Being this a powerful insight for companies can provide advantages to businesses or companies considering odor in their marketing focus.

4.2.3 Auction or Hearing

Hearing entails 41% of brand building (Lindstrom and Kotler, 2005).

It is inevitable hearing the characteristic *I'm Lovin' It* and not thinking about McDonalds, or listening the start-up sound of Intel and not recognizing the company. This is not because of habit or coincidence; those brands are targeting our audio sense as a marketing strategy.

A considerable part of marketing communication is based in auction sense; consumers hear advertisement continuously on the radio, television and social media, listen to jingles and songs, and also, to ambient music in different places, such as retail shops, hotels, restaurants or airplanes (Krishna, 2012). But this is not the only way auction is connected to marketing, it is interesting how there are characteristics sounds that when we, as consumers, heard, we

identify them with specific products (Krishna, 2012), an example is the Intel sound we can hear when starting a computer, or the characteristic and unique ringtone sound of an iPhone.

How can auction sense be taken into account when doing marketing?

1) *Sound symbolism*: Consumers attach meaning to the words they listen to, for instance, a smooth sound when closing a car is associated with luxury cars or a deep bark is related with a big, ferocious looking dog (Krishna, 2012). And this has been already put into practice in marketing; the sound that the food makes when being bitten affects deeply taste perceptions for some food items, as potato chips or cookies, and influence product's perceived quality, as well as freshness, as when biting celery (Zampini and Spence, 2005).

2) *Language*: Research says that when consumers heard marketing stimuli on their first language their levels of belongingness are expected to be boosted, as well as the sense of closeness and part of a group belongingness (Krishna, 2012). Also, that the use of English in ads has turned into a social stereotype, being now considered a symbol of modernity, progress, sophistication and cosmopolitan identity in some countries like Germany or Japan (Krishna and Ahluwalia, 2008). Finally, presenting a brand's or a product's name visually or audibly having the aim of consumers' recall, works better depending on the different consumers' native tongue, as an example, Chinese consumers recall better brands when those names are presented visually, because the Chinese language has a pictorial writing system, while for Americans, the recall of brands becomes easier when the names are presented audibly, as they have a sound-based writing system (Schmitt, Pan and Tavassoli, 1994).

3) *Music*: In advertising, music can have an effect on consumer's mood (Park and Young, 1986), as an example music with faster tempo enhance positive feelings (Stout and Leckenby, 1988), involvement (MacInnis and Park, 1991), and promote a meaning. For instance, a nursery rhyme can easily take us back to our childhood (Zhu and Meyers-Levy, 2005). Ambient music that consumers heard in hotels, restaurants, supermarkets or stores, can also impact consumer's mood, time they spend in the place, or monetary spending, among others (Krishna, 2012). This can have a meaningful meaning in the marketing field, to illustrate this, a study was made by North, Hargreaves and McKendrick (1999) demonstrated that the played music affected consumer's buying choice; playing French instead of German music boosted the sales of French wine, and vice versa. Moreover, slower music has been shown (Milliman, 1982) to enhance slow shopping and consequently, more purchases.

4) *Voice*: Spokespeople voices also have an effect on consumers (Krishna, 2012); the more favorable evaluated voices are the low-pitched ones (Brown, Strong and Rencher, 1973), and

consumers attribute more competence and credibility when the spokesperson speaks quickly (Stewart and Ryan, 1982), using this type of voices and characteristics related to them can be of benefits if taken into account by companies.

For marketers targeting auction is an efficient technique not only for brand building, as they can create a sound that distinguish their specific brand from the others and in that way increase their uniqueness and identifiability, but also for communicating with the unconscious minds and needs of the consumers, having the power to recall consumers' memories and emotions, and, in that way, influence their judgements and opinions of specific products or urge them to specific modes and behaviors, impacting their purchasing behaviors and habits (Maymand, Ahmadinejad, & Nezami, 2012; Shabgou, and Mirzaei Daryani, 2014).

4.2.4 Taste

Taste sense is associates with a 31% of brand building share (Lindstrom and Kotler, 2005).

The first thing that needs to be considered is that every single time we experiment a taste, what we are experimenting is not just that sense, but rather, is a combination of all our five senses: the product's smell and taste, the touch (textures, temperature...), the vision (aesthetic appeal, such as color) and the auction (sound when being eaten, such as crunchy potato chips) (Krishna, 2012). What is more, we are not capable of distinguishing products' tastes if we use just and only use the taste sense (Krishna, 2012).

The former explains why this sense can provide insights for marketing: taste is susceptible to outside influences (Krishna, 2012) and this is in the hand of marketers to make it real, trough, among others:

- (1) *Physical attributes*: as an illustration drink colors are the ones that determine the flavors consumers perceive (DuBose, Cardello and Maller, 1980). Moreover, consumers feel they have consumed more from short-fat containers than from tall-thin ones (Holmberg, 1975).
- (2) *The brand they pertain to*: for instance foreign French names affected ratings for yogurt, and beer brand name influence the perception of usual drinkers (Allison and Uhl, 1964; Leclerc, Schmitt and Dubé, 1994).
- (3) *Information such as nutrition or ingredients*: as an example, Raghunathan, Naylor and Hoyer (2006) found that perceived healthiness of a food item lowers taste. Research made by Chandon and Wansink (2007), showed that fast-food restaurants that position themselves as *healthy* prompt that consumers underestimate the calories contained in their products, even

prompting the election of higher-calorie ones. In another study (Wansink and Chandon, 2006), it was concluded that nutrition claims arguing *low-fat* affect food consumption by inciting consumers to serve larger sizes at the same time as reducing their consumption guilt.

(4) *Its packaging or its advertising*: ads that target different senses have been demonstrated to enhance the taste sensation (Elder and Krishna, 2010) or alter past experiences memories of the same product (Braun, 1999).

(5) *Other people behavior*: the quantity of food consumed by one consumer is known to be influenced by what the others around him/her consume; he/she will be more prone to consume more if the other person is obese or appear to have low self-esteem (c, Dahl, Fitzsimons and Morales, 2010a). What is more, even on the body type of the server can alter the subject consumption; non-dieters eat more if the server is thin and the contrary happens to the ones in diet (McFerran, Dahl, Fitzsimons and Morales, 2010b).

(6) *Themselves*: Subjects having low self-esteem purchase and consume more when exposed to death related stimuli (Mandel and Smeesters, 2008).

Other than the previous, taste is also targeted directly by many companies; an example is the toothpaste brand Colgate, whose specific taste has distinguished this brand from the others, making it extremely easy for consumers to find this brand even without visually seeing its emblem (Maymand, Ahmadinejad, & Nezami, 2012). Moreover, flavors can be persuasive for consumers, which can possibly form their unique identify by attaching a specific flavor with their specific brand, an example is Coca-Cola, whose taste is unmistakable (Shabgou, and Mirzaei Daryani, 2014).

Achieving brand distinction because of taste is hard for marketers, what is more, taste is said to be the most difficult sense for marketers (Maymand, Ahmadinejad, & Nezami, 2012), however, engaging this sense in consumers can be highly beneficial; for instance, food companies, by sending a sample of a product are accomplishing both, engagement of consumers' taste sense and making use of a successful product advertising method (Maymand, Ahmadinejad, & Nezami, 2012).

4.2.5 *Sight or Vision*

80% of the commercial communications are based on the sight sense (Lindstrom and Kotler, 2005).

If you think about Nike, Audi, McDonalds, Mercedes, Starbucks... aren't you able to recall their logos? Most of us do, and this have a reason: this companies are targeting our sight.

Sight is the most important sense for most humans and the sense they relied upon the most, what is more, brand experience starts with visual identification: logos, slogans, or emblems, among others (Maymand, Ahmadinejad, & Nezami, 2012). Marketers are aware that, and, as a result, sight is the sense most used in marketing; marketers spend a lot of time creating visually appealing and easily understandable images and messages that, as part of their brand strategy, attract consumers; specifically, 83% of companies' marketing budget is allocated for communication that targets the sight sense, consequently, if we receive 10.000 visual messages daily, more than 80% of brand communication is focused on sight (Maymand, Ahmadinejad, & Nezami, 2012; Shabgou, and Mirzaei Daryani, 2014).

A brand specific logo, a product shape, or a product packaging are examples visual stimuli; as an example, stimulating the sense of vision with a unique logo, conclude in people recalling their company by seeing a logo where its name is not even displayed (Maymand, Ahmadinejad, & Nezami, 2012; Shabgou, and Mirzaei Daryani, 2014). Moreover, this sense plays a significant role in consumers' perception of brands and products: it has been shown that been exposed to a product, increases the probability that the consumer prefers that product over similar choices, even in cases when the subject cannot recall or remember seeing the product (Rathee and Rajain, 2017).

Research and conclusion on the vision sense have given much more insights that could be also a way to enhance and improve marketing in companies:

(1) *The use of colors, the use of lightings, and the design of both, ads and the brand's logo*: some of the most commonly known and used visual stimuli in marketing (Rathee and Rajain, 2017). Colors can be used to highlight the attributes of a brand, trigger that consumers associate the brand with a specific color or set of colors, and cause the establishment of emotional links among the consumer and the brand or product, enhancing product differentiation, product competitive advantage, product and brand loyalty, and sales enhancement (Uddin, 2011; Sliburyte and Skeryte, 2014). A representative example is Coca-Cola, we can all recognize and recall its red and white logo (Rathee and Rajain, 2017).

(2) *Stimulus orientation*: A research done by Elder and Krishna (2012) showed that different orientation of a specific product in an advertisement can alter consumer's mental stimulation. The reason behind this affirmation is that the product's orientation will impact on the consumer stimulation of using the product and making them imagine interacting why it, therefore, being able to influence and increase consumer's willingness to purchase (Elder and Krishna, 2012). An example is the one in Figure 18, where the cup with the handle on the right resulted in higher mental stimulation and larger purchase intention for right-handed people (Elder and Krishna, 2012).

Figure 18.

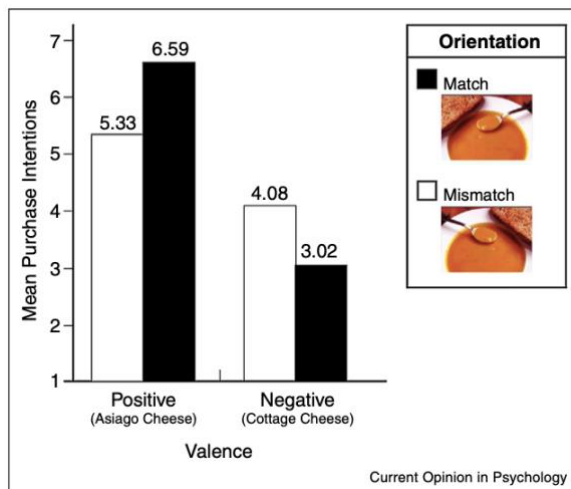
Examples of Visual depiction and mental stimulation.



First image reprinted from *An integrative review of sensory marketing: Engaging the senses to affect perception judgment and behavior*, by Krishna, 2012, *Journal of consumer psychology*, 22(3), 332-351. Second image reprinted from *The Visual Depiction Effect in advertising: Facilitating embodied mental simulation through product orientation*, by Elder and Krishna, 2012, *Journal of Consumer Research*, 38 (6)

Similarly, when the product appearing in the ad seems unappealing for the consumer, a match between the product's orientation and consumer's handedness induces the contrary, that is, enhances the simulation of a negative experience, what decreases the willingness to pay and, consequently, the purchase intention (Krishna, Cian and Sokolova, 2016).

Examples of enhancing mental stimulation on purpose using an appealing vs unappealing product.



between the product's orientation and consumer's handedness induces the contrary, that is, enhances the simulation of a negative experience, what decreases the willingness to pay and, consequently, the purchase intention (Krishna, Cian and Sokolova, 2016).

Reprinted from *The Visual Depiction Effect in advertising: Facilitating embodied mental simulation through product orientation*, by Elder and Krishna, 2012, *Journal of Consumer Research*, 38 (6), p. 997

(3) *Dynamism*: Perceived movement can also affect consumers' imagery response. A study by Cian, Krishna and Elder (2014) showed that

dynamism in images increase the engagement for the viewer, specifically, they spend more time looking at the ad, and they demonstrated higher engagement, consequently, having more favorable attitudes concerning the brand. For instance, they created two versions of an ad for watches where the only difference was the dynamism in the logo (Cian, Krishna and Elder, 2014).

Figure 20.

Examples of enhancing mental stimulation on purpose using dynamism.



Apart from the insights from the different senses, then considering sensory marketing, a concept that must be looked at is grounded cognition, which refers to the idea that our bodily states, situated actions and mental simulations affect our cognitive capacity, and consequently, the way we store our thoughts (Barsalou, 2008).

- (1) *Bodily state*: A study made by Strack, Martin and Stepper (1988), demonstrated that when rating how funny cartoons are, subject's facial activity had an effect.
- (2) *Situated action*: Research carried out by Wells and Petty (1980) showed that vertical head movements increased agreements while horizontal ones enhanced disagreements with editorial content of a radio broadcast.
- (3) *Mental stimulation*: Even mental stimulation or mental imagery can be enough to prompt cognition. A study made by González et al., (2006) showed that just reading words strong odor associated words, such as cinnamon or garlic, activates olfactory brain regions. Similarly, observing pictures of food like cookies or hamburgers activates taste regions in the brain (Simmons, Martin and Barsalou, 2005).

All this complete the previously exposed information on sensory marketing.

4.3 Conclusion.

Firms can largely benefit from engaging consumers' five senses; forgotten aspects such as products' colors, retail's atmosphere odor, music being displayed, or the possibility to let consumers touch or taste products, are crucial aspects to be taken into account by any marketer and firm. Why? In today's world consumers demand new consumption experiences, they need continuous innovation, emotion, and fun, by cause of that, engaging individuals' minds and senses can turn into a powerful tool to build a brand personality based on multi-sensory brand experiences that helps to differentiate the brand, products or services, increase brand awareness, enhance a valuable brand image that lasts in time, and what can be the most important, built relationships between the brand and the consumer (Rodrigues, Hultén and Brito, 2011; Shabgou, and Mirzaei Daryani, 2014).

Moreover, for many times, there has been a lack of knowledge on how consumers that are involved in purchase and consumption processes, actually perceive and experience a specific brand; sensory marketing can fill this gap and, consequently, contribute largely to both, brand and brand marketing management (Rodrigues, Hultén and Brito, 2011).

Considering all the aforementioned, marketers must manage their brands and products so that we, consumers, perceive their brand and products as a complete sensory experience; that we cannot just see, but also smell, hear, taste and touch that brand or product (Lindstrom, 2005). In other words, upgrading products into "artefacts around which customers have experiences" (Prahalad and Ramaswamy, 2000; Rodrigues, Hultén and Brito, 2011, p.4), rather than what they have been considered in the past. For this, it will be advantageous for companies to incorporate the former exposed sensory marketing insights into their brand positioning and build a brand communication around a range of sensory experiences (Lindstrom, 2005).

To get to this, the first thing to do is to understand what each product means to its current consumers; how and where is it used, as well as what emotional associations do that specific product evoke on consumers (Lindstrom, 2005). And, also importantly, spend time studying the marketing campaign rather than just the specific ad or frame you will use, in order to avoid sensory deprivation, which refers to campaigns that lack emotion and due to that not achieve the expected consumer response (Lindstrom, 2005).

5. SENSORY MARKETING IN THE TECHNOLOGY SECTOR.

5.1 Concept.

Taking into account the previously exposed information, we can affirm that we understand the world through the use of our senses, which are our link to memories and our enhancers of emotions (Lindstrom, 2005). Furthermore, we are, as consumers, searching for brands that offer us multisensorial experiences through their products and services.

Nevertheless, most of the research where sensory marketing is considered, has the focus on the retail and food sector. But is, or could, sensory marketing be employed by firms that pertain to other sectors?

From some years ago until now, as it is commonly known, the technology sector has been one of the fastest growing sectors, as well as one of the sectors we are more in touch with, in our daily lives. The technology sector can be defined as the set of companies that are related with the research, development, or distribution, of technologically based goods and services (Frankenfield, 2021). Why consider the tech industry as a possible sector where sensory marketing is already or could be used? Because we are experiencing the most technological moment in history: from the moment we wake up we do not separate from our smartphone; we do not want to miss anything happening around us. Considering the former findings, are we a hundred percent owners of our purchasing decisions when it comes to tech products? To what extent are companies that pertain to the technology sector targeting our senses in order to influence our technological purchases? If it is not currently being done, could this be something beneficial to be done by businesses in that sector?

All this is what would be researched in this section.

5.2 Application of Sensory marketing to the technology sector.

Even if there is not much research about the application of sensory marketing within technology companies, we can confirm, by thinking about our own experiences and our daily technological use, that our senses are certainly targeted and impacted by technology companies.

Think about Apple's iPhone ringtone, or about the Google searcher, or the sound of Netflix when started... aren't you able to recognize those? This is not by chance; those brands are targeting our senses, with the aim to create a full-sense experience in order to catch our attention and increase our engagement with their products. Something that seems to be working out, as, for instance, 35% of consumers believe that touching a mobile phone is more important than just looking at it (Maymand, Ahmadinejad, & Nezami, 2012).

Apple is a clear example of how sensory marketing can lead to the creation of relationships between a brand and its consumers: all Apple products have the ability to reach consumers' mind deeply, and what is more, individuals consume Apple not only for the utility of their products but also for the feelings, fantasies and fun related to their consumption (Rodrigues, Hultén and Brito, 2011). Due to that, importance is placed on the design of this brands' products, since they aim to create, for instance, tactile sensations, by touching the screens, materials, or shapes (Rodrigues, Hultén and Brito, 2011).

Finally, it truly could be a decisive tool for online businesses or for companies selling online, since in those, consumers are not able to, as an example, touch, smell or taste the products (Krishna, 2012). How could tech companies stimulate those important senses?

6. EMPIRICAL RESEARCH.

6.1 Research method.

Ahead of explaining how the information was gathered, it is important to remind which was the main purpose of the study. The objective of this research study was to investigate and understand how sensory marketing is, and can be further, applied in the technological sector.

There is lack of published empirical studies that connect the use of sensory marketing with companies in the tech sector. Due to that, the purpose of this research was to get to the answer the following questions: (1) What is the consumers degree of awareness of the aforementioned? On what depends on the difference among consumers' awareness? (2) What is the effect on consumers of technology companies' employment of sensory marketing techniques?

For that, an online Survey was conducted, including an experimental design. I considered the former an appropriate method for reaching the preceding conclusions since the main advantage of this approach is that, due to the fact that it is based on online data collection,

the potential to access a larger and further geographically distributed population is broad (Lefever, Dal, and Matthiasdottir, 2007), which was interesting for answering the previously exposed research questions and observing differences among participants, while being able at the same time to see the roots of those differences. Moreover, online surveys are both, time-efficient and cost-efficient (Lefever, Dal, and Matthiasdottir, 2007).

6.2 Research design.

The survey was based on one questionnaire divided in different sections.

- At the beginning, it was displayed a base question on whether participants consider that tech companies impacted consumers' senses to increase their engagement, being repeated the same question at the end of the survey with the aim of observing if being exposed to a survey where participants were directly witnesses of the use of sensory marketing by tech companies, as you will see below, changed their mind. For drawing conclusions when observing participants' responses differences, lastly, general descriptive questions about their age, sex, live area and approximate use of technology were displayed.
- The second section was aimed to present to participants different sensory stimuli in order to observe whether or not they were capable to associate the companies correctly through the use of just sensory information. The purpose was to identify the effect that the employment of sensory marketing techniques of technology companies has on consumers, depicting the second research question. This section was composed of three different options available to be displayed to participants; the formers could be either exposed to just the logo of the tech brand, just the most characteristic sound of the former, or both of them, targeting, in that way, either vision, audition or both those senses of participants. The option displayed to each participant was selected randomly, creating random groups of participants answering each of the three options in order to afterwards be able to assemble comparisons.
- Thirdly, subjects were asked the degree they considered their different senses were engaged when using specific tech platforms or specific products from tech companies. Through the use of sliders, they selected the importance they considered each sense has for each specific technology firm or platform. This section was aimed to visualize how different senses are used by products or brands and how consumers are experiencing them.

The Survey also included introductory information of the topic at the beginning, for participants to picture the objective of the former. Finally, there were also displayed some questions about their feelings about Sensory Marketing, in order to form a picture of how Sensory Marketing as a technique is perceived in the eyes of real consumers.

6.3 Data collection.

The platform used for creating and analyzing the survey was Qualtrics, defined as a survey and experience management software (Qualtrics XM//The Leading Experience Management Software, 2021).

The distribution form was through three means: (1) Social Media, concretely, though Facebook and LinkedIn (2) WhatsApp platform, and (3) Email.

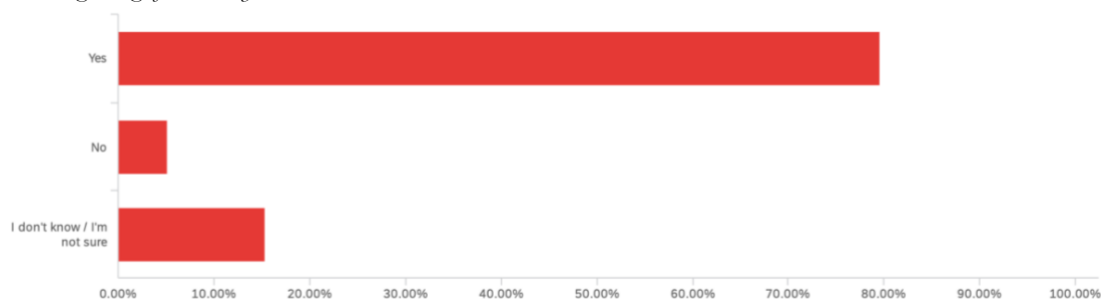
6.4 Data analysis [See Annex 1]

Research question 1: What is the consumers degree of awareness of Sensory marketing employment by technology companies? On what depends on the difference among consumers' awareness?

At the beginning of the survey, 79.59% of the responders affirmed that technology companies and platforms seek to impact their senses in order to increase their engagement, while 5.10% of the participants deny the former, and 15.31% claimed not to be sure. With this, we can conclude that most consumers are aware that technological companies target their senses as a marketing tool, however, it is interesting how still almost 21% of responders claimed to not be sure about or deny the former assumption.

Figure 21.

Results to the question on whether they thought tech companies were impacting their senses as a way to increase their engagement at the beginning of the survey.



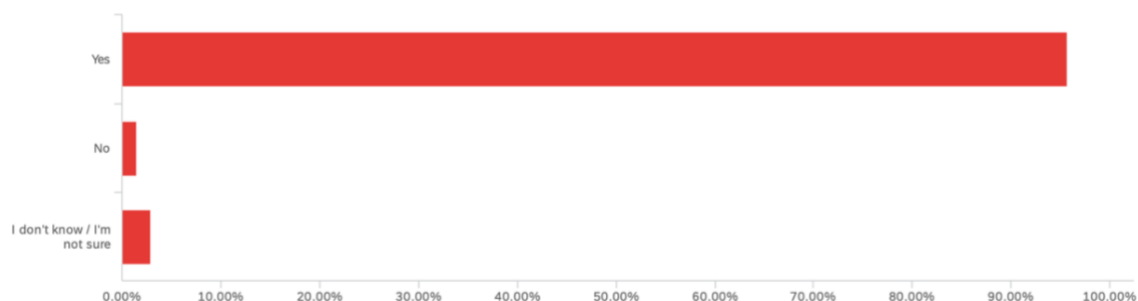
In order to answer the question on what depended the difference on consumers awareness, general questions were asked: their age, sex, living area and average daily technology usage.

The outcome was clear: participants responding negatively were mostly men (9.1% men vs 4.3% women), having 45 or more years old and living in rural areas (9.1% rural areas vs 5.3% urban areas). For the ones responding affirmatively, we can only find slight differences that conclude those are more women (78.3% vs 77.3%), living in urban areas (78.9% vs 72.7%). Something similar happened for the ones alleging not being sure about the answer: more women (17.4% vs 13.6%), living in rural areas (15.8% vs 18.2%). The daily use of technology showed no differences when it comes to the dissimilar degree of consumers' awareness.

After having completed the survey, participants were asked the same first question, in order to observe whether variations could be found after doing a survey where they were directly witnesses of both, how specific brands are impacting their senses to the extent that they are capable of recognizing the tech company only by viewing their logo or listening to a specific sound, and, how, if they take time to think about it, they can affirm that tech products target their senses. The results confirmed what expected; when participants ended the survey, 95.7% affirmed that tech companies and platforms impact their senses as a way to increase their engagement with the company's products, 1.4% claimed the contrary and 2.9% was still not sure. That is, participants claiming being aware of tech companies use of sensory marketing increased in a 16.3%, while the percentage of the ones denying it was reduced on a 3.8% and the one from those not being sure decreased on a 12.6%, which shows for participants, being directly exposed to evidence or realization that their senses are being targeted by tech companies, made them enhance their awareness on the extent to which sensory marketing is actually employed.

Figure 22.

Results to the question on whether they thought tech companies were impacting their senses as a way to increase their engagement at the end of the survey



The conclusion is clear, consumers are aware of the link between tech companies and sensory marketing, being this awareness enhanced when consumers are directly exposed to or asked about it.

Research question 2: What is the effect on consumers of technology companies' employment of sensory marketing techniques?

As a way to observe both, what is the effect of tech companies' employment of sensory marketing, as well as which are the senses more targeted by tech companies and platforms, a small experiment was conducted: in the survey's second section sensory stimuli was presented to participants targeting different senses in distinct randomly created groups. All subjects were asked to try to identify the tech company only with what they were either seeing, listening, or both; a group of 30 participants viewed different tech companies' logos, a second one composed of 20 subjects was only able to listen the most characteristic sounds of those tech companies, and a last group of 30 individuals was allowed to both, see the logo at the same time as listen the characteristic sound (note that not all participants at which the questions were displayed answered them, not always coinciding the number of participants at which the questions were displayed and the ones giving an answer).

The tech brands considered for this experiment were chosen considering they were both, known technological companies so that they were a minimum familiar to participants, and firms which have characteristic sounds that can be identified by subjects. Moreover, in order to compare, at the same time, the differences of Sensory Marketing employment degree or effectiveness in distinctive types of tech companies, I chose firms that pertained to three specific groups: Operating systems, hardware and platforms. The chosen companies were:

- Operating systems: Microsoft, MacOS, Intel
- Hardware: Apple, Samsung, LG, Huawei
- Platforms: Netflix, WhatsApp, Skype, Facebook, Twitter

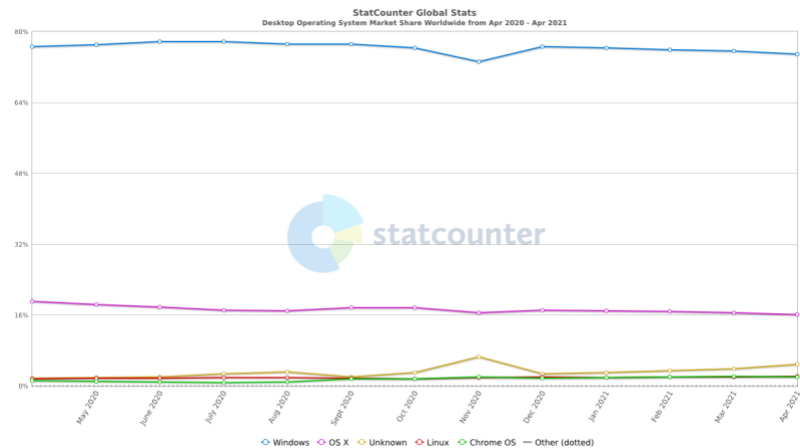
Differences on results among the options displayed to participants were found.

Considering firstly the operating systems companies (Microsoft, MacOS and Intel), we find that when seeing only logos, 96.7%, 5% and 60.7% of participants identified the aforementioned brands respectively, while, when exposed to sounds the percentages of subjects recognizing the tech companies were 94.5%, 0% and 26.7% respectively. Finally, if exposed to both, logos and characteristic sounds, the percentage of participants identifying the operating systems firms increased to 93.4%, 17.6% MacOS, and 82.8% Intel. These results show that, firstly, for this type of tech companies, vision is much more targeted than

auction, since it can be seen a huge difference on the number of consumers that identify the firms whether sight or auction was targeted; take the example of Intel, in which the percentage of participants recognizing it was reduced on a 34% if they were just exposed to its particular start-up sound. Secondly, notice that while for MacOS and Intel the aforementioned difference

is large, it is not for Microsoft, which seem to target correctly both, sight and vision; what is interesting since Microsoft is, among the three, the operating system company having the largest share worldwide (StatCounter, n.d.-a), could this be a cause or even a consequence of the larger use its further use of sensory marketing?

Figure 23.
Worldwide share of the different operating systems.



Reprinted from *Desktop Operating System Market Share Worldwide*, by StatCounter Global Stats, n.d.-a, <https://gs.statcounter.com/os-market-share/desktop/worldwide>

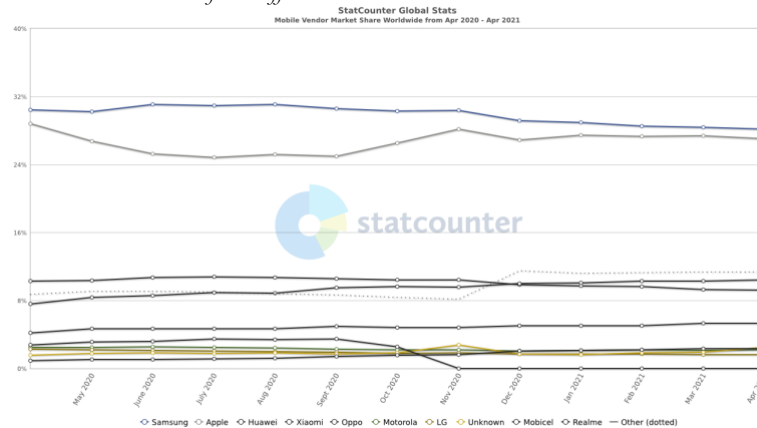
Moreover, if both senses are engaged, the probability of identifying the firm is much higher, what demonstrates the value of multisensory experience creation of companies.

Following, when it comes to hardware companies, in the first alternative question, the 100%, 93.3%, 89.3%, 65.4% of the responders recognized Apple, Samsung, LG and Huawei respectively. The percentages were 77.8%, 9.1%, 7.1% and 6.7% when participants were only able to listen to characteristic sounds of these tech companies. While the percentages increased in the case they could experience both, seeing and listening; 96.7%, 96.7%, 92.6% and 76% respectively. In this case, many conclusions can be made. Firstly, the differences on what senses hardware companies' impact are significant; taking LG as an example, we can observe that their impact on consumers' sight is huge, since almost 90% of participants recognized them by an image of their logo, while only 7.1% of participants recognized the sound that connected to their logo, a reduction of 82.2% of the number of participants identifying the brand; which means that they emphasize the engagement of consumers sight rather than auction, being not a powerful company when only sounds are exposed to subjects. Difference among companies can also be found, taking as an example the two

biggest companies, Apple and Samsung, we can observe that Apple target much more auction, for instance we can all identify Apple's ringtone, while Samsung's targeting of the former sense is really low, what was demonstrated in the survey, where exposing only characteristic sounds decrease the number of participants on 22.2% recognizing Apple, but decreased on 84.2% in the case of Samsung. However, the hypothesis considered for operating systems is not observed in this case, Apple, which is the brand offering the larger multisensory experience, according to the Survey, is not the company having the larger mobile market share worldwide (StatCounter, n.d.-b), but contrary, Samsung does (StatCounter, n.d.-b), although both are not far away, what tears down the pattern considered in the operating system data analysis.

Figure 24.

Worldwide share of the different mobile vendors.



Reprinted from *Mobile Vendor Market Share Worldwide*, by StatCounter Global Stats, n.d.-b, <https://gs.statcounter.com/vendor-market-share/mobile/worldwide>

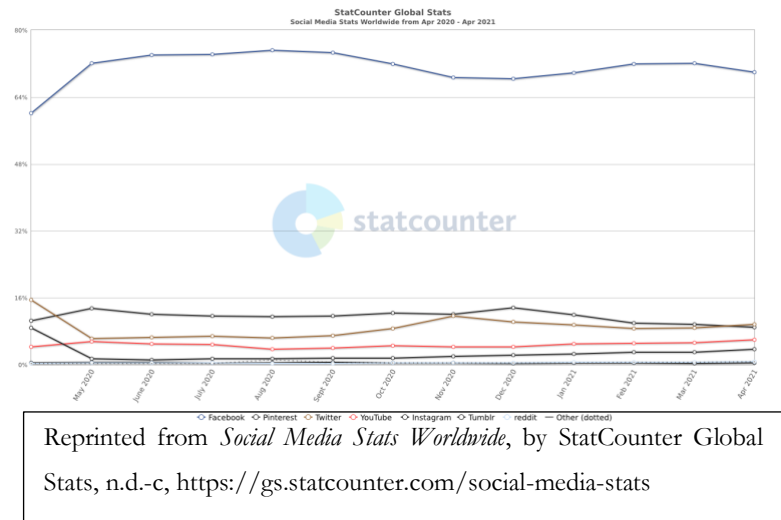
Finally, as in the case exposed before, multisensory experience triggers higher identification, showing its importance.

For the last group of tech companies, which are technology platforms; Netflix, WhatsApp, Skype, Facebook, Twitter, the percentages of identification were 93.3%, 93.1%, 89.7%, 96.4%, and 93.1% of participants respectively if subjects show the former companies' logos. For the ones only hearing their most characteristic sounds, the percentages of participants recognizing the company were 76.5%, 76.5%, 68.8%, 14.3%, and 40% respectively. And finally, for the participants being able to do both, percentages raised to 96.7%, 100%, 96.6%, 93.3%, and 89.7% respectively. The differences here are also large, it can be concluded that tech platforms engage much more sight than auction, being much more significant in social media platforms, for instance, for Facebook and Twitter, where the percentages of participants recognizing the former decreased on 82.1% and 53.1% respectively when only subjects' hearing sense was engaged. Facebook is by large the social media platform with larger share worldwide (StatCounter, n.d.-c), however, it does not seem to be, according to

the survey's results, a company offering multisensory experiences to consumers, tearing down again the hypothesis considered in the operating system data analysis. As in the above cases, multisensory experience also here increased the percentage of participants recognizing the exposed tech platforms.

Figure 25.

Worldwide share of the different Social Media platforms.



As a third part of the study, a Sensory Load Chart was performed for some of the previously considered technology companies. Sensory Load Chart is a tool for measuring the sensory impact companies have on consumers senses (Ramsøy, 2020). Though it, subjects rate how much they feel a product tap into their senses, that is, how they perceive experiencing a brand or product, mapping, in that way, their sensory experiences and providing fruitful impressions on how individuals feel about different brands and products (Ramsøy, 2020). How can be Sensory Load Charts useful? Firstly, it is a powerful way of visualizing how different senses are used by products or brands and how consumers are experiencing them (Ramsøy, 2020). And secondly, it can be interesting for firms, through asking product managers how much they expect consumers to experience a particular product and then comparing those to consumer responses available in the Sensory Load Chart (Ramsøy, 2020).

In the Survey, this was done having the aim to compare the observed sensory marketing impact through the degree consumers believe their different senses are targeted and engaged when using technology companies' products or platforms. Participants were asked to point, from 0 (null) to 100 (high), the degree they thought each specific sense was important for the tech company considered, or in other words, the degree in which they considered their senses were engaged when making use of that company's products or platform. The companies considered for this part of the experiment were:

- Operating systems: Microsoft
- Hardware: Apple, Samsung
- Platforms: Netflix, WhatsApp, Facebook

Having Microsoft as a reference of operating systems technology companies, it could be observed that vision is considered the most engaged and, therefore, important sense (86.6), followed by audition (71.4), touch (61.7), smell (15.1) and taste (14.1). Concluding, consumers feel that Microsoft tap the most into their sight, what was proven in the section before, where more people identified the brand if exposed to its logo than if exposed to a specific related-to-the-brand sound: 96.7% vs 94.5% of participants recognized the tech company. It is interesting how, even if Microsoft is an operating system and cannot be physically touched, consumers relate significantly that sense with the company; on average, the score given to audition touch was 61.7 out of 100.

When it comes to hardware companies, the results showed that for Apple, vision is the most targeted and important sense (88.5), followed by audition (75.2) and touch (68.7), being the ones with lower importance taste (18.7) and smell (15.5). For Samsung, the conclusions were the same, being the most important sense vision (86.7), and followed by audition (73.8), touch (68.1), taste (17.6) and smell (16). These two concur with the previously showed results, where more participants identified these two tech companies only by watching their logos. It is curious how consumers rate audition high for Samsung in the Sensory Load Chart and, however, only 9.1% of them were able to identify the brand hearing their most characteristic sound; what demonstrate that the company is not successfully targeting that sense although consumers believe they do so, does this mean something is not working in the way Samsung target audition on its consumers? Are they incorrectly targeting that sense? Or are consumers confused? This should be further study but is clear that they could benefit from targeting that sense since, firstly consumers already believe they are doing so while the company is not having results, and secondly, taking the example of Apple, where almost the same percentage of participants could identify the brand by either seeing the logo or hearing their most characteristic sound, Samsung could also get to that point and benefit of a greater brand recognition.

Something similar was found for platforms; for Netflix vision is the most important and engaged sense (92.4), followed by audition (82.8), touch (34.2), taste (19.9) and smell (15.8). For WhatsApp the considered most engaged sense was also vision (88.5), then audition (75.1), touch (56.4), taste (19.5) and smell (14.1). Finally, the same for Facebook, being vision the most engaged (87.4), followed by audition (66.5), touch (37.6), taste (18.7) and smell (14.0). All these results were confirmed in the former section, where more participants recognized

those tech companies by seeing their logo compared to the ones hearing a characteristic sound. Moreover, Facebook, demonstrated not influence much on consumers' auction sense since only the 14.3% of participants were able to identify the company by hearing its notification sound, compared to the 96.4% that did so if they were exposed to its logo; what is also identified here, where for Facebook consumers consider auction the second most important or engaged sense but far behind the first one, vision.

Finally, some questions were displayed in order to see how consumers feel about Sensory Marketing: the 98.5% of all participants considered Sensory Marketing as successful way to attract consumers, 66.7% consider it a fair and reasonable marketing technique and, further, 66.2% recognize it as ethical. However, 58.8% of participants consider sensory marketing intrusive for consumers. These results show that, although considered successful and rationable, consumers see the fact that companies try to influence them through engaging their senses intrusive. Being the former an important fact to be considered due to the importance of consumers' view of a specific company reflected in, among others, individuals' company loyalty and engagement. Concluding, companies must be cautious with the use of Sensory Marketing, not getting to the point of being extremely intrusive for their consumers.

6.5 Conclusions.

As an overall conclusion, we can affirm that tech companies' employment of sensory marketing techniques truly has an effect on us, consumers, since we are able to even identify the brand though only our eyes, such as seeing a logo, or our hears, listening to a specific sound. The thing is that, the Apple logo that we see in every product of the brand, the Microsoft Windows logo we see every time we switch on a computer, on the logo we see when starting Netflix, all are not casual visual inputs, they are deeply meditated and designed so that we, consumers, are impacted when seeing them, even if we are not conscious of it, since, as showed in the first question, almost 21% of responders claimed to not be sure about or deny the idea that technology companies and platforms seek to impact their senses in order to increase their engagement.

Going deeper in the study analysis, vision is a much more targeted sense than auction when it comes to tech companies, what enhances consumers possibilities of identifying the formers through just the input receiving through their eyes. However, at this point, differences among

the distinctive type of tech companies arise on the difference of brand recognition when targeting either participants' sight or audition: for operating systems companies, for instance, Intel, when only its characteristic start-up sound was displayed, the number of participants able to identify the company was reduced in a 34.1%, while for hardware technology companies, for instance LG, when only hearing a characteristic sound, the participants able to identify the firm were 82.2% less, and finally, in social media platforms, such as, Facebook and Twitter, the percentages of brand recognition decreased on 82.1% and 52.9% respectively when only hearing sense was engaged. Concluding, hardware companies and platforms are the ones where vision is much more engaged than sound, which, considering our daily-life experiences, makes sense; firstly, considering hardware companies, when seeing a phone, we identify the brand by seeing if it has some logo printed on it, such as the apple on iPhones, while identifying this type of tech company by the sound is a harder task, maybe because characteristic sounds, such as ringtones or notifications are quite similar. Secondly, when it comes to platforms, it makes sense that vision is more engaged than audition due to the fact that we are continuously seeing those apps logos in our tech devices, such as on our smartphone, even if we are not in the platform, while we are not always listening the sounds, and, moreover, characteristic sounds such as notifications are quite similar among different platforms.

Finally, a common conclusion valid for the three tech company types considered is that a multisensory experience, in the case of this study, combining sight and audition, increase exponentially their brand recognition, emphasizing, in that way, both, the power of sensory marketing on consumers, and the importance for brands to center more effort on creating a multisensory experience since involving more senses is proven to enhance consumer engagement.

A finding that is surprising is that, although operating system companies, such as Microsoft, and platforms such as WhatsApp, cannot be physically touched, consumers consider that sense is significantly engaged when using those, 61.7 and 56.4 out of 100 respectively. Not far from hardware companies such as Apple or Samsung that can be related to the physical touch of their smartphones, being touch rated in their case with 68 and 68.1 out of 100 respectively. Considering our daily usage of both, operating systems and platforms, we may relate our sense of touch with the display of the specific operating system or platform.

6.6 Further research.

A first idea for further research is that the senses of smell and taste were also rated higher than expected, since, for tech companies these senses apparently are not engaged. The main idea behind that we may consider in order to understand the former is that participants could be relating the usage of that tech company's products or platforms with specific smells or taste that are not actually associated with the tech firms, such as the smell of popcorns when we are watching a film in Netflix. However, this must be studied deeply since it could be interesting for tech companies for advertising means, among others.

Moreover, the idea considered before of a possible relation between the technology companies having a larger share or being more known and the engagement of more senses should be further studied, since, although, considering the theory it could be expected to be true, it is not determinant. For instance, proof in the survey dismiss it.

Finally, in the completed survey, only two senses were engaged and deeply studied. However, there are still other three senses significantly related, as showed in the theoretical part, with consumer engagement, that may be interesting to be further studied for the case of tech companies.

7. CONCLUSIONS.

We are not a hundred percent owners of our purchasing decisions, rather, different stimuli have an effect on the former. Further, we are now, more than ever, looking for experiences rather than functionality when it comes to products. The main conclusion is that creating a multisensory brand experience is crucial for company's success.

How can they do so? Neuroscience helps on the understanding of consumer behavior through the study of individual's brain reaction to different stimuli, and its findings can be adopted to design the stimuli-combination that could lead to consumer engagement. Concretely, Sensory Marketing, though, sensory stimuli, can be employed by firms as a way to enhance consumer engagement, being seen effective in one fastest growing sectors: the technology sector.

8. BIBLIOGRAPHY.

- 5 Neuromarketing techniques every marketer should know about. (2016). Retrieved March 8, 2021, from www.newneuromarketing.com website: <https://www.newneuromarketing.com/5-neuromarketing-techniques-every-marketer-should-know-about>
- Aarts, H., Dijksterhuis, A., & De Vries, P. (2001). On the psychology of drinking: Being thirsty and perceptually ready. *British Journal of Psychology*, 92(4), 631–642.
- Allison, R. I., & Uhl, K. P. (1964). Influence of beer brand identification on taste perception. *Journal of Marketing Research*, 1, 36–39.
- Anderson, A. K., Christoff, K., Stappen, I., Panitz, D., Ghahremani, D. G., Glover, G., Gabrieli, J. D., & Sobel, N. (2003). Dissociated neural representations of intensity and valence in human olfaction. *Nature Neuroscience*, 6(2), 196–202.
- Argo, J. J., Dahl, D. W., & Morales, A. C. (2006). Consumer contamination: How consumers react to products touched by others. *Journal of Marketing*, 70, 81–94.
- Aydinoğlu, N. Z., & Sayın, E. (2016). Sensory and neuromarketing: about and beyond customer sensation. In *Flavor* (pp. 397-408). Woodhead Publishing.
- Babu, S. S., & Vidyasagar, T. P. (2012). Neuromarketing: is Campbell in soup?. *IUP Journal of Marketing Management*, 11(2), 76.
- Barsalou, L. W. (2008). Grounded cognition. *Annual Review of Psychology*, 59(1), 617–645.
- Bosmans, A. (2006). Scents and sensibility: When do (in)congruent ambient scents influence product evaluations? *Journal of Marketing*, 70(3), 32–43.
- Braun, K. A. (1999). Postexperience advertising effects on consumer memory. *The Journal of Consumer Research*, 25, 319–334.

- Brodie, R.J., Coviello, N.E., Brookes, R.W. and Little, V. (1997). Towards a paradigm shift in marketing: an examination of current marketing practices, *Journal of Marketing Management*, 13 (5), 383-406.
- Brown, B. L., Strong, W. J., & Rencher, A. C. (1973). Perceptions of personality from speech: Effects of manipulations of acoustical parameters. *Journal of the Acoustical Society of America*, 54, 29–35.
- Buck, L., & Axel, R. (1991). A novel multigene family may encode odorant receptors: A molecular basis for odor recognition. *Cell*, 65(1), 175–187.
- Cahill, L., Babinsky, R., Markowitsch, H. J., & McGaugh, J. L. (1995). The amygdala and emotional memory. *Nature*, 377(6547), 295–296.
- Camerer, C. F., Loewenstein, G., & Prelec, D. (2004). Neuroeconomics: Why economics needs brains. *scandinavian Journal of Economics*, 106(3), 555-579.
- Chandon, P., & Wansink, B. (2007). The biasing health halos of fast-food restaurant health claims: Lower calorie estimates and higher side-dish consumption intentions. *The Journal of Consumer Research*, 34(3), 301–314.
- Chu, S., & Downes, J. J. (2002). Proust nose best: Odors are better cues of autobiographical memory. *Memory & Cognition*, 30(4), 511–518.
- Cian, L., Krishna, A., & Elder, R. S. (2014). This logo moves me: Dynamic imagery from static images. *Journal of Marketing Research*, 51(2), 184-197.
- Crusco, A. H., & Wetzell, C. G. (1984). The Midas touch: The effects of interpersonal touch on restaurant tipping. *Personality and Social Psychology Bulletin*, 10, 512–517.
- Dale, E. (1969). Audiovisual methods in teaching.

- Davis, K. D., Taylor, S. J., Crawley, A. P., Wood, M. L., & Mikulis, D. J. (1997). Functional MRI of pain- and attention-related activations in the human cingulate cortex. *Journal of Neurophysiology*, 77(6), 3370–3380.
- de Araujo, I. E., Rolls, E. T., Velazco, M. I., Margot, C., & Cayeux, I. (2005). Cognitive modulation of olfactory processing. *Neuron*, 46(4), 671–679.
- DuBose, C. N., Cardello, A. V., & Maller, O. (1980). Effects of colorants and flavorants on identification, perceived flavor intensity, and hedonic quality of fruit-flavored beverages and cake. *Journal of Food Science*, 45(5), 1393–1399.
- Egan, J. (2008). *Relationship Marketing: Exploring relational strategies in marketing*. Pearson education.
- Eichenbaum, H. (1996). Olfactory perception and memory. In R. R. Llinas, & R. Smith Churchland (Eds.), *The mind-brain continuum* (pp. 173–202). Cambridge, MA: MIT Press.
- Elder, R. & Krishna, A. (2012). The *Visual Depiction Effect* in advertising: Facilitating embodied mental simulation through product orientation. *Journal of Consumer Research*, 38(6).
- Elder, R., & Krishna, A. (2010). The effect of advertising copy on sensory thoughts and perceived taste. *The Journal of Consumer Research*, 36(5), 748–756.
- Engen, T., & Ross, B. M. (1973). Long-term memory of odors with and without verbal descriptions. *Journal of Experimental Psychology*, 100(2), 221–227.
- Erenkol, A. D., & Merve, A. K. (2015). Sensory marketing. *Journal of Administrative Sciences and Policy Studies*, 3(1), 1-26.
- Farias S. A., Aguiar E. C. and Melo, F. V. S., (2014). Store atmospherics and experiential marketing: A conceptual framework and research propositions for An extraordinary customer experience. *International Business Research*, 7(2) , 87-99.

- Frankenfield, J. (2021, January 25). (G. Scott, Ed.) *Technology Sector*. Retrieved from Investopedia website: https://www.investopedia.com/terms/t/technology_sector.asp
- Fugate, D. L. (2007). Neuromarketing: a layman's look at neuroscience and its potential application to marketing practice. *Journal of consumer marketing*.
- Haeckel, S. H., Carbone, L. P., & Berry, L. L. (2003). How to lead the customer experience. *Marketing Management*, 12(1), 18-18.
- Harmon-Jones, E. (2003). Clarifying the emotive functions of asymmetrical frontal cortical activity. *Psychophysiology*, 40(6), 838–848.
- Harvard Business Review. (2015, March). *The Science of Sensory Marketing*. <https://hbr.org/2015/03/the-science-of-sensory-marketing>
- Herz, R. S. (2004). A naturalistic analysis of autobiographical memories triggered by olfactory visual and auditory stimuli. *Chemical Senses*, 29(3), 217–224.
- Herz, R. S., & Engen, T. (1996). Odor memory: Review and analysis. *Psychonomic Bulletin and Review*, 3(3), 300–313.
- Holmberg, L. (1975). The influence of elongation on the perception of volume of geometrically simple objects. *Psychological Research Bulletin*, 15, 1–18.
- Hultén, B., Broweus, N., & Van Dijk, M. (2009). What is sensory marketing?. In *Sensory marketing* (pp. 1-23). Palgrave Macmillan, London.
- Itti, L., Koch, C., & Niebur, E. (1998). A model of saliency-based visual attention for rapid scene analysis. *IEEE Transactions on pattern analysis and machine intelligence*, 20(11), 1254-1259.
- katzmarketing. (2012, July 26). Dunkin' Donuts Flavor Radio (2012 Cannes Lions) [Video]. YouTube. <https://www.youtube.com/watch?v=V2tP-FAn6u8>

- Kirk, U., Skov, M., Hulme, O., Christensen, M. S., & Zeki, S. (2009). Modulation of aesthetic value by semantic context: An fMRI study. *Neuroimage*, 44(3), 1125–1132.
- Klucharev, V., Smidts, A., & Fernandez, G. (2008). Brain mechanisms of persuasion: How *expert power* modulates memory and attitudes. *Social Cognitive and Affective Neuroscience*, 3(4), 353–366.
- Kouider, S., & Dehaene, S. (2007). Levels of processing during non-conscious perception: A critical review of visual masking. *Philosophical Transactions of the Royal Society B*, 362(1481), 857–875.
- Krishna, A. (2012). An integrative review of sensory marketing: Engaging the senses to affect perception, judgment and behavior. *Journal of consumer psychology*, 22(3), 332-351.
- Krishna, A., Cian, L., & Sokolova, T. (2016). The power of sensory marketing in advertising. *Current Opinion in Psychology*, 10, 142-147.
- Krishna, A., Lwin, M. O., & Morrin, M. (2010). Product scent and memory. *The Journal of Consumer Research*, 37 (1), 57-67
- Lau, H. C., & Passingham, R. E. (2007). Unconscious activation of the cognitive control system in the human prefrontal cortex. *Journal of Neuroscience*, 27(21), 5805–5811.
- Lawless, H., & Cain, W. (1975). Recognition memory for odors. *Chemical Senses*, 1, 331–337.
- Leclerc, F., Schmitt, B. H., & Dubé, L. (1994). Foreign branding and its effects on product perceptions and attitudes. *Journal of Marketing Research*, 31(2), 263–270.
- Lee, N., Broderick, A. J., & Chamberlain, L. (2007). What is *neuromarketing*? A discussion and agenda for future research. *International journal of psychophysiology*, 63(2), 199-204.
- Lefever, S., Dal, M., & Matthiasdottir, A. (2007). Online data collection in academic research: advantages and limitations. *British Journal of Educational Technology*, 38(4), 574-582.

- Lindstrom M. and Kotler P., (2005). Brand sense build powerful brands through touch, taste, smell, sight, and sound. New York, Free Press.
- Lindstrom, M (2005), Broad sensory branding, *Journal of Product & Brand Management*, Vol. 14 Iss 2 pp. 84 - 87
- Lohse, G. L. (1997). Consumer eye movement patterns on yellow page advertising. *Journal of Advertising*, 26, 61–73.
- MacInnis, D. J., & Park, C. W. (1991). The differential role of characteristics of music on high- and low-involvement consumers' processing of ads. *The Journal of Consumer Research*, 18, 161–173.
- Mandel, N., & Smeesters, D. (2008). The sweet escape: Effects of mortality salience on consumption quantities for high- and low-self-esteem consumers. *The Journal of Consumer Research*, 35(2), 309–323.
- Manshadi, F. (2020). *Sensory Marketing Key To Real Emotional Engagement*. Marketing Major. https://marketingmajor.com/sensory-marketing-emotional-engagement/#_ftnref2
- Marinkovic, P. (2020, October 6). *Dunkin Donuts: A Multisensory Marketing Campaign*. BetterMarketing. <https://bettermarketing.pub/dunkin-donuts-a-multisensory-marketing-campaign-1ea334469ac8>
- Maymand, M., Ahmadinejad, M., & Nezami, P. (2012). Sensory Brand: Studying Relationship between 5 Senses and Brand Value at World's 100 Top Companies. *Australian Journal of Basic and Applied Sciences*, 6(8), 337–343. https://www.researchgate.net/publication/283080807_Sensory_Brand_Studying_Relationship_between_5_Senses_and_Brand_Value_at_World%27s_100_Top_Companies
- McClure, S. M., Li, J., Tomlin, D., Cypert, K. S., Montague, L. M., & Montague, P. R. (2004). Neural correlates of behavioral preference for culturally familiar drinks. *Neuron*, 44(2), 379–387.

- McFerran, B., Dahl, D. W., Fitzsimons, G. J., & Morales, A. C. (2010a). I'll have what she's having: Effects of social influence and body type on the food choices of others. *The Journal of Consumer Research*, 36(6), 915–929.
- McFerran, B., Dahl, D. W., Fitzsimons, G. J., & Morales, A. C. (2010b). Might an overweight waitress make you eat more? How the body type of others is sufficient to alter our food consumption. *Journal of Consumer Psychology*, 20(2), 146–151.
- Milliman, R. E. (1982). Using background music to affect the behavior of supermarket shoppers. *Journal of Marketing*, 46(3), 86–91.
- Milosavljevic, M., Koch, C., & Rangel, A. (2011). Consumers can make decisions in as little as a third of a second. *Judgment and Decision making*, 6(6), 520-530.
- Milosavljevic, M., Navalpakkam, V., Koch, C., & Rangel, A. (2012). Relative visual saliency differences induce sizable bias in consumer choice. *Journal of Consumer Psychology*, 22(1), 67-74.
- Mitchell, D. J., Kahn, B. E., & Knasko, S. C. (1995). There's something in the air: Effects of congruent or incongruent ambient odor on consumer decision making. *The Journal of Consumer Research*, 22(2), 229–238.
- Molenda, M. (2003). Cone of experience. *Educational technology: An encyclopedia*, 161-165.
- Morales, A. C., & Fitzsimons, G. F. (2007). Product contagion: Changing consumer evaluations through physical contact with “disgusting” products. *Journal of Marketing Research*, 44, 272–283.
- Morin, C. (2011). Neuromarketing: the new science of consumer behavior. *Society*, 48(2), 131-135.
- Morrin, M., & Ratneshwar, S. (2003). Does it make sense to use scents to enhance brand memory? *Journal of Marketing Research*, 40(1), 10–25.
- Muncy, J. A. (1996). Measuring perceived brand parity. *ACR North American Advances*.

- North, A. C., Hargreaves, D. J., & McKendrick, J. (1999). The influence of in-store music on wine selections. *Journal of Applied Psychology*, 84, 271–276.
- Park, C. W., & Young, S. M. (1986). Consumer response to television commercials: The impact of involvement and background music on brand attitude formation. *Journal of Marketing Research*, 23, 11–24.
- Peck, J., & Childers, T. L. (2003). To have and to hold: The influence of haptic information on product judgments. *Journal of Marketing*, 67(2), 35–48.
- Peck, J., & Childers, T. L. (2008). If it tastes, smells, sounds, and feels like a duck, then it must be a....: Effects of sensory factors on consumer behaviors. In C. P. Haugtvedt, P. M. Herr, & F. R. Kardes (Eds.), *Handbook of consumer psychology* (pp. 193–219). Florence, KY: Psychology Press.
- Peck, J., & Wiggins, J. (2006). It just feels good: Customers' affective response to touch and its influence on persuasion. *Journal of Marketing*, 70(4), 56–69.
- Pessiglione, M., Schmidt, L., Draganski, B., Kalisch, R., Lau, H., Dolan, R. J., & Frith, C. D. (2007). How the brain translates money into force: A neuroimaging study of subliminal motivation. *Science*, 316(5826), 904–906.
- Peyron, R., Garcia-Larrea, L., Gregoire, M. C., Costes, N., Convers, P., Lavenne, F., Mauguiere, F., Michel, D., & Laurent, B. (1999). Haemodynamic brain responses to acute pain in humans: Sensory and attentional networks. *Brain*, 122(9), 1765–1780.
- Plassmann, H., & Niessing, J. (2010). Expectation biases as neuropsychological basis for branding. German original title: Expectation Biases als neuropsychologische Grundlage des Markenmanagements. In M. Bruhn, & R. Köhler (Eds.), *Impulse aus der Neuroökonomie für die Markenführung*, 119–130. Wiesbaden: Gabler.
- Plassmann, H., O'Doherty, J., Shiv, B., & Rangel, A. (2008). Marketing actions can modulate neural representations of experienced pleasantness. *Proceedings of the National Academy of Sciences (USA)*, 105(3), 1050–1054.

- Plassmann, H., Ramsøy, T. Z., & Milosavljevic, M. (2012). Branding the brain: A critical review and outlook. *Journal of consumer psychology*, 22(1), 18-36.
- Prahalad, C. K., & Ramaswamy, V. (2000). Co-opting customer competence. *Harvard business review*, 78(1), 79-90.
- Qualtrics XM // The Leading Experience Management Software.* (2021). Qualtrics. <https://www.qualtrics.com>
- Raghunathan, R., Naylor, R. W., & Hoyer, W. D. (2006). The unhealthy = tasty intuition and its effects on taste inferences, enjoyment, and choice of food products. *The Journal of Marketing*, 70(4), 170–184.
- Ramsøy, T. Z. (2020) An Introduction to Consumer Neuroscience & Neuromarketing [MOOC]. Coursera. <https://www.coursera.org/learn/neuromarketing?=&page=1>
- Rathee, R., & Rajain, M. P. (2017). Sensory marketing-investigating the use of five senses. *International Journal of Research in Finance and Marketing*, 7(5), 124-133.
- Reutskaja, E., Nagel, R., Camerer, C. F., & Rangel, A. (2011). Search dynamics in consumer choice under time pressure: An eye-tracking study. *American Economic Review*, 101(2), 900-926.
- Rodrigues, C., Hultén, B., & Brito, C. (2011). Sensorial brand strategies for value co-creation.
- Rozin, P., Millman, L., & Nemeroff, C. (1986). Operation of the laws of sympathetic magic in disgust and other domains. *Journal of Personality and Social Psychology*, 50(4), 703–712.
- Schab, F. R., & Crowder, R. G. (1995). Implicit measures of odor memory. In F. R. Schab, & R. G. Crowder (Eds.), *Memory for odors* (pp. 72–91). Florence, KY: Psychology Press.
- Schaefer, M., Berens, H., Heinze, H. J., & Rotte, M. (2006). Neural correlates of culturally familiar brands of car manufacturers. *Neuroimage*, 31, 861–865.

- Schmitt, B. H., Pan, Y., & Tavassoli, N. T. (1994). Language and consumer memory: The impact of linguistic differences between Chinese and English. *The Journal of Consumer Research*, 21(3), 419–431.
- Schmitt, B.H., 1999. *Experiential Marketing: How to Get Customers to Sense, Feel, Think, Act, Relate to Your Company and Brands*. The Free Press, New York, NY.
- Shabgou, M., & Mirzaei Daryani, S. (2014). Towards the Sensory Marketing: Stimulating the five senses (sight, hearing, smell, touch and taste) and its impact on consumer behavior. *Indian Journal of Fundamental and Applied Life Sciences*, 4(S1), 573–581. <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.1054.2412&rep=rep1&type=pdf>
- Shepard, R. N. (1967). Recognition memory for words, sentences and pictures. *Journal of Verbal Learning and Verbal Behavior*, 6(1), 156–163.
- Shiv, B., Carmon, Z., & Ariely, D. (2005). Placebo effects of marketing actions: Consumers may get what they pay for. *Journal of Marketing Research*, 42(4), 383–393.
- Simmons, W. K., Martin, A., & Barsalou, L. W. (2005, October 1). Pictures of appetizing foods activate gustatory cortices for taste and reward. *Cerebral Cortex*, 15, 1602–1608.
- Sliburyte, L., & Skeryte, I. (2014). What we know about consumers' color perception. *Procedia - Social and Behavioral Sciences*, 156, pp. 468 – 472.
- Small, D. M., Gregory, M. D., Mak, Y. E., Gitelman, D., Mesulam, M. M., & Parrish, T. (2003). Dissociation of neural representation of intensity and affective valuation in human gustation. *Neuron*, 39(4), 701-711.
- Small, D. M., Zatorre, R. J., Dagher, A., Evans, A. C., & Jones-Gotman, M. (2001). Changes in brain activity related to eating chocolate: from pleasure to aversion. *Brain*, 124(9), 1720-1733.
- Squire, L. R., & Zola, S. M. (1996a). Memory, memory impairment, and the medial temporal lobe. *Cold Spring Harbor Symposia on Quantitative Biology*, 61, 185–195.

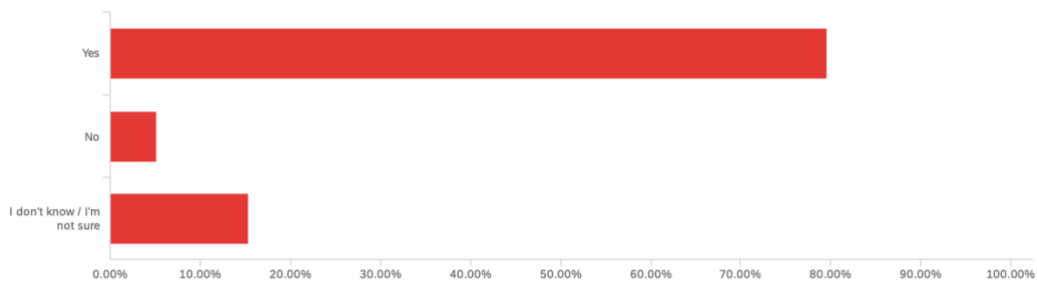
- Squire, L. R., & Zola, S. M. (1996b). Structure and function of declarative and nondeclarative memory systems. *Proceedings of the National Academy of Sciences (USA)*, 93(24), 13515–13522.
- Squire, L. R., & Zola, S. M. (1998). Episodic memory, semantic memory, and amnesia. *Hippocampus*, 8(3), 205–211.
- StatCounter. (n.d.-a). *Desktop Operating System Market Share Worldwide*. StatCounter Global Stats. <https://gs.statcounter.com/os-market-share/desktop/worldwide>
- StatCounter. (n.d.-b). *Mobile Vendor Market Share Worldwide*. StatCounter Global Stats. <https://gs.statcounter.com/vendor-market-share/mobile/worldwide>
- StatCounter. (n.d.-c). *Social Media Stats Worldwide*. StatCounter Global Stats. <https://gs.statcounter.com/social-media-stats>
- Stewart, M., & Ryan, E. B. (1982). Attitudes toward younger and older adult speakers: Effects of varying speech rates. *Journal of Language and Social Psychology*, 35, 345-350.
- Stout, P., & Leckenby, J. D. (1988). Let the music play: Music as a nonverbal element in television commercials. In S. Hecker, & D. W. Stewart (Eds.), *Nonverbal communication in advertising* (pp. 207–233). Lexington, MA: Lexington Books.
- Strack, F., Martin, L. L., & Stepper, S. (1988). Inhibiting and facilitating conditions of the human smile: A nonobtrusive test of the facial feedback hypothesis. *Journal of Personality and Social Psychology*, 54(5), 768–777.
- The 7 most common neuromarketing research techniques and tools. (2019, April 8). Retrieved from Bitbrain website: <https://www.bitbrain.com/blog/neuromarketing-research-techniques-tools>
- Theeuwes, J. (2010). Top-down and bottom-up control of visual selection. *Acta Psychologica*, 135(2), 77–99.

- Todor, R. D. (2016). Blending traditional and digital marketing. *Bulletin of the Transilvania University of Brasov. Economic Sciences. Series V*, 9(1), 51.
- Treisman, A. M., & Gelade, G. (1980). A feature-integration theory of attention. *Cognitive Psychology*, 12, 97–136.
- Twin, A. (2020, August 17). Marketing. Retrieved from Investopedia website: <https://www.investopedia.com/terms/m/marketing.asp>
- Uddin, M. (2011). The Impact of Sensory Branding (five senses) on Consumer: A Case Study on *Coca Cola*.
- Van der Lans, R., Pieters, R., & Wedel, M. (2008). Competitive brand salience. *Marketing Science*, 27(5), 922–931.
- Vargo, S. and Lusch, R. (2004). *Evolving to a new dominant logic in marketing*, *Journal of Marketing*, 68(1), pp. 1-17.
- Waber, R. L., Shiv, B., Carmon, Z., & Ariely, D. (2008). Commercial features of placebo and therapeutic efficacy. *JAMA*, 299(9), 1016–1017.
- Wansink, B., & Chandon, P. (2006). Can a low-fat nutrition labels lead to obesity? *Journal of Marketing Research*, 43(4), 605–617.
- Williams, L. E., & Bargh, J. A. (2008). Experiencing physical warmth promotes interpersonal warmth. *Science*, 322(5901), 606–607.
- Zampini, M., & Spence, C. (2005). Modifying the multisensory perception of a carbonated beverage using auditory cues. *Food Quality and Preference*, 16(7), 632–641.
- Zhu, R., & Meyers-Levy, J. (2005). Distinguishing between the meanings of music: When background music affects product perceptions. *Journal of Marketing Research*, 42(3), 333–345.

ANNEX 1: SURVEY RESULTS

Research question 1: What is the consumers degree of awareness of Sensory marketing employment by technology companies? On what depends on the difference among consumers' awareness?

Do you think technology companies and platforms, like Apple, Google or Netflix, seek to impact your senses (sight, smell, taste, touch, hearing) in order to increase your engagement with their products?

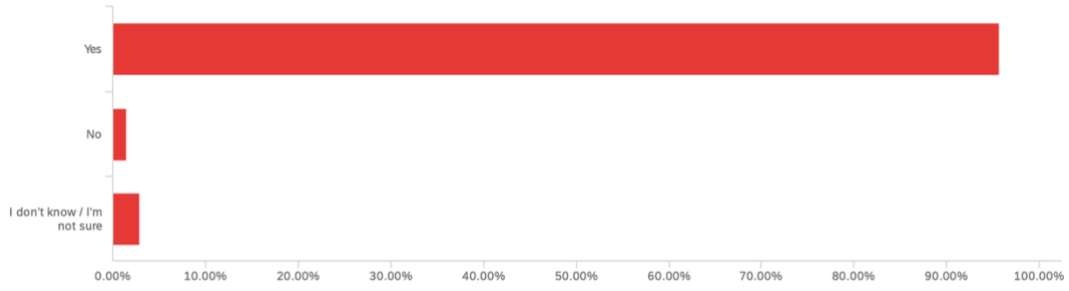


#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Do you think technology companies and platforms, like Apple, Google or Netflix, seek to impact your senses (sight, smell, taste, touch, hearing) in order to increase your engagement with their products?	1.00	3.00	1.36	0.73	0.54	98

#	Field	Choice Count
1	Yes	78
2	No	5
3	I don't know / I'm not sure	15
		98

Now that you have completed this survey...

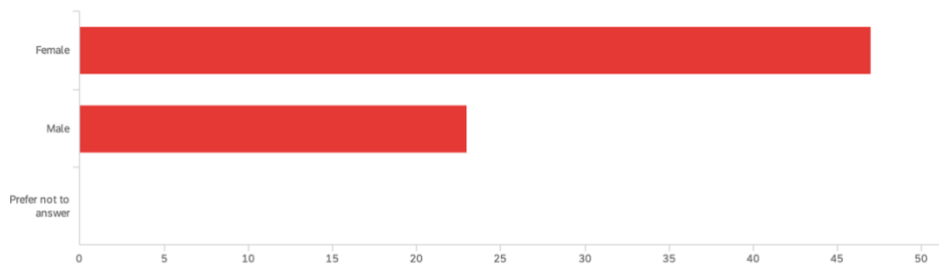
Do you think technology companies and platforms, like Apple, Google or Netflix, seek to impact your senses (sight, smell, taste, touch, hearing) in order to increase your engagement with their products?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	Now that you have completed this survey... Do you think technology companies and platforms, like Apple, Google or Netflix, seek to impact your senses (sight, smell, taste, touch, hearing) in order to increase your engagement with their products?	4.00	6.00	4.07	0.35	0.12	70

#	Field	Choice Count
4	Yes	95.71% 67
5	No	1.43% 1
6	I don't know / I'm not sure	2.86% 2
		70

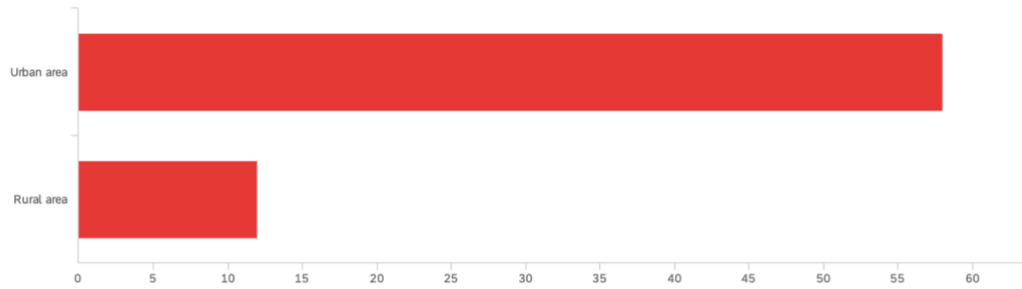
What gender do you identify with?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	What gender do you identify with?	1.00	2.00	1.33	0.47	0.22	70

#	Field	Choice Count
1	Female	67.14% 47
2	Male	32.86% 23
3	Prefer not to answer	0.00% 0
		70

What type of area do you live at?



#	Field	Minimum	Maximum	Mean	Std Deviation	Variance	Count
1	What type of area do you live at?	1.00	2.00	1.17	0.38	0.14	70

#	Field	Choice	Count
1	Urban area	82.86%	58
2	Rural area	17.14%	12
			70

How old are you?

		Q1: Do you think technology companies and platforms, like Apple, Google or Netflix, seek to impact your senses (sight, smell, taste, touch, hearing) in order to increase your engagement with their products?			
		Total	Yes	No	I don't know / I'm not sure
			A	B	C
Q27: How old are you?	Total Count (Answering)	61,0	47,0	4,0	10,0
	≤ 24	28,0	24,0	1,0	3,0
		45,9%	51,1%	25,0%	30,0%
	25 - 32	9,0	5,0	0,0	4,0
		14,8%	10,6%	0,0%	40,0%
	33 - 40	5,0	4,0	0,0	1,0
		8,2%	8,5%	0,0%	10,0%
	41 - 45	6,0	5,0	1,0	0,0
		9,8%	10,6%	25,0%	0,0%
	≥ 45	13,0	9,0	2,0	2,0
	21,3%	19,1%	50,0%	20,0%	
	Average	33,2	32,6	43,3	32,0
	Median	27,0	24,0	48,0	27,5
	Standard Deviation	14,4	14,5	15,5	13,2
	Standard Error	1,8	2,1	7,8	4,2

Research question 2: What is the effect on consumers of technology companies' employment of sensory marketing techniques?

MICROSOFT

SIGHT: To what technology company does this logo belong to?	Total	
	Total Count (Answering)	30,0
	Microsoft	36,7%
	Microsoft	10,0%
	No lo se	3,3%
	Windows	30,0%
	Windows	6,7%
	microsoft	3,3%
	windons	3,3%
	windows	6,7%
Microsoft	50,0%	
Windows	46,7%	
Other no-correct answers	0,0%	
No identification	3,3%	

AUCTION: To what technology company does this sound belong to?	Total	
	Total Count (Answering)	18,0
	Microsoft	16,7%
	Microsoft	5,6%
	No conozco	5,6%
	Windows	38,9%
	Windows	16,7%
	microsoft	5,6%
	windows	11,1%
	Microsoft	27,8%
Windows	66,7%	
No identification	5,6%	

SIGHT & AUCTION: To what technology company does this image and sound belong to?	Total	
	Total Count (Answering)	30,0
	Gmail	3,3%
	Microsoft	26,7%
	Microsoft	6,7%
	No se	3,3%
	Windows	40,0%
	Windows	10,0%
	Windows XP	3,3%
	Windows xp	3,3%
	microsof	3,3%
Microsoft	36,7%	
Windows	56,7%	
Other no-correct responses	3,3%	
No identification	3,3%	

MacOS

Total	
Total Count (Answering)	20,0
Apple	5,0%
Face to face	5,0%
Finder	15,0%
Finder (Apple)	5,0%
Finder de Apple	5,0%
Mac, Apple (Finder)	5,0%
NO	5,0%
Ni idea	5,0%
No lo se	15,0%
No lo sé	5,0%
No se	10,0%
No se	5,0%
No sé	5,0%
No sé	5,0%
ni idea	5,0%
MacOS	1,0
	5,0%
Other no-correct answers	7,0
	35,0%
No identification	12,0
	60,0%

SIGHT: To what technology company does this logo belong to?

Total	
Total Count (Answering)	13,0
Apple	23,1%
Google	7,7%
Ni idea	7,7%
No conozco Movistar	7,7%
No lo identifico	7,7%
No lo sé	15,4%
No sé	7,7%
No sé	7,7%
apple	7,7%
no clue	7,7%
MacOs	0,0%
Other no-correct answers	46,2%
No identification	53,8%

AUCTION: To what technology company does this sound belong to?

Total	
Total Count (Answering)	17,0
.	5,9%
Apple	23,5%
Apple (Mac)	5,9%
Don't know	5,9%
MAC	5,9%
Mac OS	5,9%
MacPhee	5,9%
No clue	5,9%
No lo se	5,9%
No lo se	5,9%
No se ve reproduce	5,9%
No sé	5,9%
No sé	5,9%
jaja	5,9%
MacOs	17,6%
Other no-correct responses	29,4%
No identification	47,1%

SIGHT & AUCTION: To what technology company does this image and sound belong to?

INTEL

		Total
Total Count (Answering)		28,0
SIGHT: To what technology company does this logo belong to?	Asus	3,6%
	INTEL	3,6%
	Intel	50,0%
	Intell	3,6%
	NO	3,6%
	No lo se	7,1%
	No me acuerdo	7,1%
	No se	3,6%
	No sé	3,6%
	No sé	3,6%
	Oral-b	3,6%
	intel	3,6%
	ni idea	3,6%
Intel	60,7%	
Other no-correct answers	7,1%	
No identification	32,1%	

		Total	
Total Count (Answering)		15,0	
AUCTION: To what technology company does this sound belong to?	Apple	6,7%	
	Intel	13,3%	
	Intel	6,7%	
	Intel Inside	6,7%	
	Lenovo	6,7%	
	No idea	6,7%	
	No lo sé	13,3%	
	No sé	6,7%	
	Televisión	6,7%	
	Windows	13,3%	
	no clue	6,7%	
	tele tienda	6,7%	
	Intel	26,7%	
Other no-correct responses	40,0%		
No identification	33,3%		

		Total	
Total Count (Answering)		29,0	
SIGHT & AUCTION: To what technology company does this image and sound belong to?	Dont recognise the sound but the logo is definitely intel	3,4%	
	HP	3,4%	
	Instel	3,4%	
	Intel	69,0%	
	Intel (?)	3,4%	
	Intercol	3,4%	
	No lo se	3,4%	
	No se	3,4%	
	No se reproduce	3,4%	
	intel	3,4%	
	Intel	82,8%	
Other no-correct responses	6,9%		
No identification	6,9%		

APPLE

SIGHT: To what technology company does this logo belong to?	Total	
	Total Count (Answering)	30,0
	Appld	3,3%
	Apple	80,0%
	Apple	3,3%
	appel	3,3%
apple	10,0%	
Apple	100,0%	
Other no-correct responses	0,0%	
No identification	0,0%	

AUCTION: To what technology company does this sound belong to?	Total	
	Total Count (Answering)	18,0
	Apple	50,0%
	Apple	22,2%
	Movistar	5,6%
	Nokia	11,1%
Samsung	5,6%	
appel	5,6%	
Apple	77,8%	
Other no-correct responses	22,2%	
No identification	0,0%	

SIGHT & AUCTION: To what technology company does this image and sound belong to?	Total	
	Total Count (Answering)	30,0
	Apel	3,3%
	Apple	76,7%
	Apple	10,0%
	No	3,3%
apple	3,3%	
iphone	3,3%	
Apple	96,7%	
Other no-correct answers	0,0%	
No identification	3,3%	

SAMSUNG

SIGHT: To what technology company does this logo belong to?	Total	
	Total Count (Answering)	30,0
	No lo se	3,3%
	Samsung	70,0%
	Samsung	10,0%
	Samsungwha	3,3%
	ni idea	3,3%
samsung	10,0%	
Samsung	93,3%	
Other no-correct responses	0,0%	
No identification	6,7%	

AUCTION: To what technology company does this sound belong to?	Total	
	Total Count (Answering)	11,0
	No conozco	9,1%
	No idea	9,1%
	No lo identifico	9,1%
	No lo sé	18,2%
	No sé	9,1%
	No sé	9,1%
	Nokia	9,1%
	Samsung	9,1%
	intel	9,1%
	no clue	9,1%
	Samsung	9,1%
	Other no-correct responses	18,2%
No identification	72,7%	

SIGHT & AUCTION: To what technology company does this image and sound belong to?	Total	
	Total Count (Answering)	30,0
	I dont recognize the sound but i can see its samsung	3,3%
	No lo se	3,3%
	Samsung	76,7%
	Samsung	10,0%
	Sansung	3,3%
	samsung	3,3%
Samsung	96,7%	
Other no-correct responses	0,0%	
No identification	3,3%	

LG

SIGHT: To what technology company does this logo belong to?	Total	
	Total Count (Answering)	28,0
	logis	3,6%
	LG	71,4%
	Lg	14,3%
	Logo LG	3,6%
	No lo de	3,6%
	No sé	3,6%
	LG	89,3%
	Other no-correct responses	3,6%
No identification	7,1%	

AUCTION: To what technology company does this sound belong to?	Total	
	Total Count (Answering)	14,0
	Appel	7,1%
	Bosh	7,1%
	LG	7,1%
	Lo he escuchado pero no caigo	7,1%
	Movistar	7,1%
	No lo identifico	7,1%
	No lo sé	14,3%
	No sé	14,3%
	Samsung	7,1%
	android	7,1%
	balay	7,1%
	no clue	7,1%
	LG	7,1%
	Other no-correct answers	42,9%
	No identification	50,0%

SIGHT & AUCTION: To what technology company does this image and sound belong to?	Total	
	Total Count (Answering)	27,0
	LG	70,4%
	LG Electronics	3,7%
	LGA	3,7%
	Lg	14,8%
	No lo se	3,7%
	lg	3,7%
	LG	92,6%
	Other no-correct responses	3,7%
No identification	3,7%	

HUAWEI

SIGHT: To what technology company does this logo belong to?	Total	
	Total Count (Answering)	26,0
	Hawei	3,8%
	Hitachi(?)	3,8%
	Huawei	46,2%
	Huawei?	3,8%
	Huawei	3,8%
	NO	3,8%
	Ni idea	3,8%
	No lo se	7,7%
	No se	3,8%
	No sé	3,8%
	Xiaomi	3,8%
	huawei	7,7%
	ni idea	3,8%
Huawei	65,4%	
Other no-correct responses	7,7%	
No identification	26,9%	

AUCTION: To what technology company does this sound belong to?	Total	
	Total Count (Answering)	15,0
	Android	6,7%
	Apple	6,7%
	Facetime	6,7%
	Huawei	6,7%
	Motorola	6,7%
	Movistar	6,7%
	Movistar	6,7%
	No lo sé	6,7%
	No sé	6,7%
	Samsung	13,3%
	Samsung	13,3%
	Windows	6,7%
	idk	6,7%
Huawei	6,7%	
Other no-correct answers	80,0%	
No identification	13,3%	

SIGHT & AUCTION: To what technology company does this image and sound belong to?	Total	
	Total Count (Answering)	25,0
	Hawei	4,0%
	Huawei	64,0%
	Huawei	8,0%
	No lo se	4,0%
	No lo se	4,0%
	No se	4,0%
	No se reproduce	4,0%
	No sé	4,0%
	xaiomi	4,0%
	Huawei	76,0%
	Other no-correct responses	4,0%
	No identification	16,0%

NETFLIX

SIGHT: To what technology platform does this logo belong to?	Total	
	Total Count (Answering)	30,0
	NO	3,3%
	Netflix	73,3%
	Netflix	10,0%
	No lo se	3,3%
	creo que Nenfix no estoy segü	3,3%
	netflix	6,7%
Netflix	93,3%	
Other no-correct responses	0,0%	
No identification	6,7%	

AUCTION: To what technology platform does this sound belong to?	Total	
	Total Count (Answering)	17,0
	Apple	5,9%
	Netflix	52,9%
	Netflix	11,8%
	No conozco	5,9%
	No lo sé	5,9%
	No sé	5,9%
netflix	11,8%	
Netflix	76,5%	
Other no-correct responses	5,9%	
No identification	17,6%	

Q10: 3. To what technology platform does this image and sound belong to?	Total	
	Total Count (Answering)	30,0
	Negtflix	3,3%
	Netflix	80,0%
	Netflix	10,0%
	No lo se	3,3%
	netflix	3,3%
Netflix	96,7%	
Other no-correct answers	0,0%	
No identification	3,3%	

WHATSAPP

SIGHT: To what technology platform does this logo belong to?	Total	
	Total Count (Answering)	29,0
	IPhone	3,4%
	Wassap	3,4%
	Watshapp	3,4%
	WhatsApp	24,1%
	WhatsApp	10,3%
	WhatsApp - Facebook	3,4%
	Whatsap	3,4%
	Whatsapp	37,9%
	What's app	3,4%
	wechapp	3,4%
	whatsapp	3,4%
	WhatsApp	93,1%
Other no-correct responses	6,9%	
No identification	0,0%	

AUCTION: To what technology platform does this sound belong to?	Total	
	Total Count (Answering)	17,0
	Android	5,9%
	Entradas de washap	5,9%
	Movistar	5,9%
	No idea	5,9%
	Watshap	5,9%
	WhatsApp	17,6%
	WhatsApp	17,6%
	Whatsapp	23,5%
	Xiaomi	5,9%
	whatsapp	5,9%
	Whatsapp	76,5%
	Other no-correct answers	17,6%
No identification	5,9%	

SIGHT & AUCTION: To what technology platform does this image and sound belong to?	Total	
	Total Count (Answering)	30,0
	Wasap	3,3%
	Watapp	3,3%
	Watshapp	3,3%
	What's app	3,3%
	WhatsApp	16,7%
	WhatsApp	13,3%
	Whatsapp	40,0%
	Whatssapp	3,3%
	Whatsup	3,3%
	wassap	3,3%
	whatsapp	6,7%
	WhatsApp	100,0%
Other no-correct answers	0,0%	
No identification	0,0%	

SKYPE

SIGHT: To what technology platform does this logo belong to?	Total	
	Total Count (Answering)	29,0
	LG	3,4%
	No lo se	3,4%
	SKYPE	3,4%
	SKype	3,4%
	Skipe	6,9%
	Sky	3,4%
	Skype	65,5%
	Skype	3,4%
	skipe	3,4%
	skype	3,4%
	Skype	89,7%
Other no-correct responses	6,9%	
No identification	3,4%	

AUCTION: To what technology platform does this sound belong to?	Total	
	Total Count (Answering)	16,0
	FaceTime	6,3%
	No conozco	6,3%
	No lo identifico	6,3%
	No lo sé	6,3%
	No sé	6,3%
	Skype	50,0%
	Skype	6,3%
	skype	12,5%
	Skype	68,8%
	Other no-correct answers	6,3%
	No identification	25,0%

SIGHT & AUCTION: To what technology platform does this image and sound belong to?	Total	
	Total Count (Answering)	29,0
	LG	3,4%
	Skipe	3,4%
	Skybe	3,4%
	Skype	75,9%
	Skype	10,3%
	skype	3,4%
	Skype	96,6%
	Other no-correct answers	3,4%
	No identification	0,0%

FACEBOOK

SIGHT: To what technology platform does this logo belong to?	Total	
	Total Count (Answering)	28,0
	Facebok	3,6%
	Facebook	82,1%
	Facebook	3,6%
	NO	3,6%
	facebook	7,1%
	Facebook	96,4%
Other no-correct responses	0,0%	
No identification	3,6%	

AUCTION: To what technology platform does this sound belong to?	Total	
	Total Count (Answering)	14,0
	Apple	14,3%
	Facebook	7,1%
	Huawei	7,1%
	Movistar	7,1%
	No lo sé	7,1%
	Nokia	7,1%
	Notificaciones móvil	7,1%
	Samsung	7,1%
	Telegram?	7,1%
	WhatsApp	7,1%
	facebook	7,1%
	idk	7,1%
	no clue	7,1%
Facebook	14,3%	
Other no-correct responses	64,3%	
No identification	21,4%	

SIGHT & AUCTION: To what technology platform does this image and sound belong to?	Total	
	Total Count (Answering)	30,0
	Facebook	73,3%
	Facebook	10,0%
	Facebook messenger	3,3%
	No lo se	3,3%
	No se reproduce	3,3%
	facebook	6,7%
Facebook	93,3%	
No identification	3,3%	

TWITTER

SIGHT: To what technology platform does this logo belong to?	Total	
	Total Count (Answering)	29,0
	NO	3,4%
	No lo se	3,4%
	Tweeter	3,4%
	Twitter	6,9%
	Twitter	65,5%
	Twitter	10,3%
	tiwter	3,4%
	twitter	3,4%
	Twitter	93,1%
	Other no-correct answers	0,0%
No identification	6,9%	

AUCTION: To what technology platform does this sound belong to?	Total	
	Total Count (Answering)	15,0
	Android? No idea	6,7%
	Movistar	6,7%
	No lo sé	13,3%
	No sé	6,7%
	Samsung	6,7%
	Twitter	6,7%
	Twitter	20,0%
	Twitter	6,7%
	WhatsApp	13,3%
	no clue	6,7%
	twittwe	6,7%
	Twitter	40,0%
Other no-correct responses	33,3%	
No identification	26,7%	

SIGHT & AUCTION: To what technology platform does this image and sound belong to?	Total	
	Total Count (Answering)	29,0
	No lo se	3,4%
	No se reproduce	3,4%
	No sé	3,4%
	Twitter	6,9%
	Twitter	62,1%
	Twitter	13,8%
	twitter	6,9%
	Twitter	89,7%
No identification	6,9%	

SENSORY LOAD CHARTS

On the x-axis we can see the different senses and, on the y-axis, a range from 0 to 100, which represents the strength of the sensory experience.

