Neuromarketing
in Ireland

An investigation on millennials attitudes towards Neuromarketing in the Era of GDPR

Dissertation submitted in partial fulfilment of the requirements for the degree of Msc in Marketing at Dublin Business School

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I, Andrezza Silva Costa, declare that this research is my original work and that it has never been presented to any institution or university for the award of Degree or Diploma. In addition, I have referenced correctly all literature and sources used in this work and this work is fully compliant with the Dublin Business School's academic honesty policy.

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Companies and marketers are facing the increasingly difficult to study the changing consumer behavior. Ingwer (2012, p.20) affirms that “customer satisfaction is used by 90 percent of companies as a benchmark for success”, exposing the importance to understand customers needs and desires to design more efficient marketing strategies. Currently researches have highlighted the power of unconscious insights in the decision making process (Linehan, 2008, p. 4). Allying neuroscience techniques and marketing, Neuromarketing is a new field promising to uncover the “black box” of consumer brain, however posing several ethical issues, concerns and fears due to the infancy stage of the field. Ireland is a growing economy country and Neuromarketing may be helpful to gain competitive advantages, whereas there is limited literature about it. Nevertheless, regarding to the ethical issues, as part of the European Union, Ireland is under the recent and strict GDPR regulation, what may impact in the possibilities of increasing the usage of Neuromarketing research in the country.

This dissertation examines the advantages, issues and applications of Neuromarketing techniques in Ireland, considering the actual data protection awareness and GDPR regulations. Pursuing insights about Neuromarketing consumer research in Ireland and GDPR effects, the researcher analyses relevant elements of consumer behavior, Neuromarketing, data protection and Ireland market, comparing and contrasting different academic views, disclosing aspects that have been addressed in the literature, due to limited research in these contemporaries fields.

The research methodology undertaken is based on a subjectivist and interpretative exploratory approach, resulting in cross-section and qualitative mono method. Two focus groups with different populations- practitioners and ethnic subgroups- are proposed to contrast and define millennials attitudes towards Neuromarketing and GDPR.

The researcher expects to evaluate the feasibility and generate relevant insights and considerations about Neuromarketing applications in Ireland alieneed with beliefs about GDPR, appealing as a motivation for future research.
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CHAPTER 1: DISSERTATION OVERVIEW

1.1 Introduction

The current overwhelmed competitive market is driving companies to adopt a “consumer-oriented marketing philosophy” (Linehan, 2008, p. 3). Thus, according to authors as Ingwer (2012, p.32) and Sethna and Blythe (2016, p.5), consumer behavior study is essential for companies trying to succeed. Consumer is changing, increasing the complexity to understand them, and in this scenario Neuromarketing emerge as a solution to access emotions and feelings that traditional research methods are unable to uncover (Lindstrom, 2009, p. 18; McDowell and Dick, 2013; Ming Hsu, 2017, p. 5). Neuromarketing is a broad and interdisciplinary science, attracting the attention of marketers, due its innovative neuroscience approaches to study consumer behavior. However, according to scholars analysed and practitioners, Neuromarketing is surrounded by ethical concerns, fears about manipulation power and doubts related to its efficiency as research method, impacting in the attitudes towards this field. Although Lindstrom (2009, p.176) predicts that Neuromarketing will become the most popular tool in the research future, the actual data protection concerns may influence its applications.

Ireland is a growing economy country, attracting international companies and new business, increasing the competition, and Neuromarketing potential may be more explored in this market, whereas there are no evidences of considerable usage of its techniques in the country. Nevertheless, as any research undertake in European territory, Neuromarketing practitioners need to be aware of GDPR implications, which, likewise Neuromarketing, is a new topic with little academic literature.

Hence, this dissertation intends to add relevant insights to the literature in the academia. Firstly, the research evaluates secondary data, adopting important concepts and contrasting scholars’ views in a coherent flow, to define issues and gaps to study, resulting in a research question, aims and objectives. Secondly, considering it a polemic topic, an inductive approach with interpretivism philosophy is applied, and two qualitative Focus Groups are executed among millennials living in Ireland, to identify their attitudes towards the themes undertaken, respecting policies and regulations required by the Ethical Committee of Dublin Business School and also the European Data Protection and GDPR. According to Murphy et. al (2008, p.297) and Schiffman and Wisenblit (2015, p. 408), qualitative methods as focus groups understand that consumers are not “rational decision makers” and analyzing their psychology is more advantageous for research.

Therefore, the research explores gaps found in the literature review in its primary research, in order to achieve relevant outcomes for the marketing field.
1.2 Justification for Research

According to de Oliveira and Giraldi (2017, p.20), Neuromarketing is a trend method drawing attention of marketers and academics because of its potential. The complexity to define this field, the scepticism about Neuromarketing findings validity (Fisher, Chin and Kitzman, 2010, p. 235; McDowell and Dick, 2013; Smidts et al., 2014, p. 260; Hensel et al., 2017; Ming Hsu, 2017, p. 13) and the ethical challenges that practitioners have to face, may impact in Neuromarketing performance. Ming Hsu (2017, p.6) affirms that “there has been a widespread tendency to overestimate both effectiveness and limitations” related to Neuromarketing. Additionally, the research applied by Hensel et. al (2017) informs that marketing professionals and academics agree that Neuromarketing research needs to follow an ethical conduct to be applicable in consumer behavior and marketing studies.

Considering one of the most important topics related to Neuromarketing, the researches about the field very often approach ethical issues from the practitioners and scholars point of view. However, Hensel et. al (2017) recommends that future researches should also consider the “participants” perspective, and in agreement, Flores et. al (2014, p79) suggests that “the distinction between what is considered ethical and unethical by consumers, must be better understand and may have the potential to guide the use of Neuromarketing in the future”. Moreover, Flores et. all (2014, p.88) believes that further researches must examine consumers behavioural intentions and beliefs related to Neuromarketing privacy’s breaches and fears about manipulation potential.

Following the authors suggestions, this research evaluates and contrasts consumers and professionals related to neuroscience, marketing, research and ethics attitudes towards Neuromarketing techniques. Additionally, the researcher found limited literature about Neuromarketing in Ireland, emerging a doubt about the feasibility of its applications in the country, also considering that there are not Irish Neuromarketing companies in the NMSBA website. Moreover, performing the research in the Irish market context may be more valuable for the academic literature and marketing field, considering the actual growing economy in the country. In order to apply Neuromarketing in Ireland is crucial to consider GDPR regulations implications and the data protection discussions, and there is no literature found relating these three themes, extremely correlated, especially in the ethical area.

Concerned about research limitations related to time and resources, the researcher is targeting only millennials for this study, based on literature reviews affirmations about the relevance of them. Bordbia (2014, p.7) research assumes that millennials are “tough customers to please” and Culiberg and Mihelic (2016, p.99) complements that they are opinion leaders, prone to judge unethical practices and moreover, currently occupying the managerial and decision making positions, becoming them important to consider the feasibility to apply Neuromarketing, whether the prospect neuromarketing practitioners (marketers and researchers) and consumers perspectives.
1.3 Research Aims and Objectives

According to Saunders et al. (2015, p.44), the aims should reflect the purpose of the research. Therefore, the researcher proposes three aims for this research:

1. Evaluate the attitudes of millennials living in Ireland to data protection.
2. Identify prevailing attitudes and concerns among millennials to GDPR regulations.
3. Evaluate the attitudes of millennials living in Ireland to Neuromarketing with special consideration to GDPR.

Consequently, it is important to define the direction to achieve the aims. Saunders and Lewis (2011, p.21) explains that research objectives are “clear, specific statements that identify what the research process seeks to achieve as a result of doing the research”. Considering that this research is evaluating attitudes towards the themes, the objectives are framed on the ABC Model of Attitudes proposed by Solomon (2015, p.324) and discussed in Chapter 2, in order to scrutinise the three elements (affect, behavioural and cognition) that supports an attitude. Thus, the objectives propose are:

**Objective A** - to examine affective aspects considered by millennials towards Neuromarketing, data protection and GDPR.

Approaching:
- Emotions
- Feelings
- Evaluations

**Objective B** - to identify millennials’ behavioural intentions related to Neuromarketing, data protection and GDPR.

Revealing:
- Intentions to participate in a Neuromarketing research.
- Values given to Neuromarketing techniques and possible applications as practitioners.
- Attempts and intentions to protect personal data.

**Objective C** - to investigate cognitive aspects related to Neuromarketing, data protection and GDPR.

More specifically:
- To identify awareness about them.
- To reveal beliefs.
- To explore perceptions.
1.4 Research Question

"A research question will allow you to say what the issue or problem is that you wish to study and what your research project will seek to find out, explain and answer” (Saunders, Lewis and Thornhill, 2015, p. 42). Relying on the issues and gaps evaluated in the “research justification” topic, the research question proposed is:

Is it feasible to apply Neuromarketing techniques among millennials living in Ireland with special consideration to GDPR implications?

1.5 Scope and Limitations

This research is focus on to evaluate and examine millennials living in Ireland attitudes towards Neuromarketing, considering the GDPR implications. Relevant aspects and concepts related to consumer behavior, Neuromarketing, data protection, GDPR and Irish market are discussed among the literature review to enhance the aims of this study. However, global market and other generations are not included in this research about Neuromarketing, due to research limitations.

1.6 Dissertation Structure

Expecting to present a clear, organised and coherent project, this dissertation will be divided in sections called chapters. Chapter 2 consists on a critical review the existing literature about consumer behavior, Neuromarketing, data protection, GDPR and Irish market, conducting topics to introduce each other in a dynamic and efficient flow, summarizing the most relevant perspectives in these themes. Chapter 3 introduces and justify the methodology applied in this study, presenting research choice, approach, philosophy, strategies, sample and limitations. Chapter 4 discuss the research findings and Chapter 5 presents conclusions and recommendations resulted.
CHAPTER 2: LITERATURE REVIEW

"Reviewing the literature is one of the first things you need to do when you start your research as it will provide the base on which your research project is built” (Saunders and Lewis, 2011, p. 33). The literature review is important to define the main theories, contrast studies and find gaps and deficiencies that may suggest a topic to investigate.

2.0 Introduction

“The interest in the topic of Neuromarketing has grown exponentially in recent years and the myriad of different definitions indicates the need of a deep theoretical discussion. The potential of this new discipline has drawn the world's attention, which can be verified through a query on Google trends” (de Oliveira and Giraldi, 2017, p.19). This literature review aims to analyze and contrast the concepts and ideas about Neuromarketing, which is a new field using the cutting-edge neuroscience technologies to better and deeply understand consumer behaviour and their attitudes towards products and brands, in order to identify the applicability of it in Ireland.

The following literature review is divided in two parts.

The Academic part examines concepts and theories about consumer behavior study and its relevance in marketing strategies. Moreover, identify Millennials behavior, considering them as an important target to be studied, and reflect how subcultures impact country consumption, due to the notable presence of immigrants in Ireland. Further, this part will also evaluate definitions, influencers, applications, techniques and ethical issues surrounding Neuromarketing, following by considerations about Data Protection and GDPR, whereas GDPR is drastically impacting business activities in Europe.

The Market part is a close up in Irish market, informing some relevant aspects of Irish consumer and Data Protection in Ireland, furthermore attempting to find Neuromarketing insights in the country.

According to Lindstrom (2009), traditional research methods are not longer efficient to discover customer thoughts and behavior (Lindstrom, 2009, p. 18), and here Neuromarketing can appeal as a solution. Therefore, this literature review scrutinizes the main points of these themes pertinent to visualise Neuromarketing applications, benefits and possible issues, in order to provide evidence for the research question and look for gaps in the literature, to emerge an interesting and relevant new research.
Part 1: Academic Review

2.1 Heads- Up Consumer Behavior

In relation to marketing principles, one of the most relevant statements is the importance of understanding and satisfying consumer needs (Solomon, 2015, p. 30), and business and marketers have glanced behavioural sciences as psychology to support them in this challenging task (Foxall, Goldsmith and Brown, 1998, p. 24). Moreover, marketers need to understand how and why people consume (Sethna and Blythe, 2016, p. 9).

Emerging around 1960s, Consumer Behavior is a quite new field of study (Foxall, Goldsmith and Brown, 1998, p. 23), developed to explain decision making process and what aspects influence consumers to invest in products and services (Schiffman and Wisenblit, 2015, p. 30). In Solomon (2015, p.30) words “Consumer behavior is the study of the processes involved when individuals or groups select, purchase, use or dispose of products, services, ideas or experiences to satisfy needs and desires.”. Thus, consumer behavior expands the analysis of the exchange process (Linehan, 2008, p. 3), to the analysis of the whole consumption process, divided by Solomon (2015, p.29) in 3 phases as demonstrated in figure 1. Foxal, Goldsmith and Brown (1998, p.28) highlight that consumer behavior results from a “mental information processing”, referring to consumer decision making process. It starts with the problem recognition driving the consumer to search for solutions, which ones he will evaluate and generate attitudes and intentions to define his choice, followed by the outcomes of this purchase, designing the (Solomon, 2015, p. 70). According to Ingwer (2012, p.23), decision making is a result of “conscious rational logic and subconscious emotional needs”, influenced by the consumer characteristics, the environment where he is insert and his biological situation (Chaudhuri, 2006, p. 1).

Figure 1: Stages in the Consumption Process
Source: Solomon, 2015, p.29
Schiffman and Wisenblit (2015, p.47) affirm that consumer behavior is an interdisciplinary field, because of its aspects on Psychology, studying personality traits, learning process, motivation, perception, attitudes; Sociology perspectives, looking through the society structure and characteristics; Anthropology, evaluating cultures and subcultures; and Communication, investigating the “exchange information” with persuasive messages. Furthermore, Sethna and Blythe (2016, p.6) also consider Economics and Neurology as an important part of it.

2.1.1 Consumer Behavior for Marketing

Basically, consumer behavior study emerged when marketers had realised that instead to persuade consumers to buy what they have, it would be more appropriate to sell what these consumers want and need, adopting a “consumer-oriented marketing philosophy”, following by most of the companies nowadays (Linehan, 2008, p. 3). Marketers need must know what influence consumer´ decisions and attitudes (Foxall, Goldsmith and Brown, 1998, p. 2) to create sell values, satisfy their needs and possible retain them (Schiffman and Wisenblit, 2015, p. 32), because, added by Solomon (2017, p.27) consumer behavior “plays important role in many marketing applications”. Marketing and consumer behavior are interrelated, due to they can influence each other in both ways (Chaudhuri, 2006, p. 1; Sethna and Blythe, 2016, p. 9) Furthermore, studying consumer behavior can also help companies with segmentation and positioning (Sethna and Blythe, 2016, p. 10).

2.1.2 Consumer Behavior Research

Concerned about the importance of consumer behavior in marketing decisions, Linehan (2008, p.7) suggests the engagement with in depth market research to indentify customer´s satisfaction or disappointment, and complementary pointed by Evans et al. (1996, p.8) important to also “identify and anticipate consumer behavior” (Evans, Moutinho and van Raaij, 1996, p. 8). From other perspective, Ingwer (2012, p.9) assumes that researching consumer behavior, through observing and listening their attitudes, enable marketers to modify their behavior and consequently their decision making process. This type of market research focus on consumer behavior is called by Schiffman and Wisenblit (2015, p.33) as “Consumer Research”, including all the process and tools involved (Schiffman and Wisenblit, 2015, p. 33). However, Schiffman and Wisenblit (2015, p.33) argue that consumer research often focus on the acquisition phase, whereas it should also evaluate the consumption phase, considering that the outcomes are communicate by consumers through word-of-mouth to other consumers.

According to Schiffman and Wisenblit (2015, p.405), defining the objectives is the most challenging stage of consumer research and for that reason, marketers usually first apply qualitative methods due to their open questions, allowing to find out aspects never considered before, regularly hid on consumer unconscious or when they don´t want to reveal their feelings about it (Schiffman and Wisenblit, 2015, p. 405). The authors point that qualitative consumer research is also known as
“motivational research”, a movement started by the psychoanalyst Dr. Ernest Dicther Freudian psychoanalytic techniques to access unconscious motivations (Schiffman and Wisenblit, 2015, p. 408), valuable to understand consumers attitudes follow by consumer behavior.

2.1.3 Understanding Consumer Attitudes

According to Sethna and Blythe (2016, p.9), the behavior of an individual depends on his attitudes and personal and environmental factor. Solomon (2015, p.323) and Linehan (2008, p.11) define attitude as “a lasting general evaluation of people towards an Attitude object (Ao)”. According to the authors, lasting because it “tends to endure over time”, however, attitudes are more vulnerable to changes considering the changing consumer behavior aligned with technology.

Linehan (2008, p.111) and Schiffman et al. (2015, p.172) agree that attitudes are learned by direct and indirect experiences, whereas Sethna and Blythe (2016, p.208) believes that attitudes may emerge from unconscious evaluations. However, all these authors agree that personality traits bring relevant influences to the attitudes formation and Sethna and Blythe (2016, p.306) also claim other personal characteristics, as culture and mood for example (Sethna and Blythe, 2016, p. 306).

Marketers must observe consumers attitudes to evaluate the functionality of marketing strategies, forecast consumer behavior and even generate new products or strategies, seeking for a positive attitude (Foxall, Goldsmith and Brown, 1998, p. 102). Negative attitudes can propagate and become a harmful Word-of-Mouth, affecting other customers ‘attitudes (Schiffman and Wisenblit, 2015, p. 172). Foxall et al. (1998, p.102) and Solomon (2015, p.340) agree that persuasion is a robust strategy to affect attitudes, usually applying psychological principles as reciprocity, scarcity, authority, consistency, linking and consensus on the advertising messages.

ABC Model of Attitudes

Attitudes are compounded by three elements called by Schiffman at all (2015, p.176) as “Tri-Component Attitude Model”, Sethna at al (2016, p.307) as “Dimensions of attitude” and Solomon (2015, p.324) as “ABC Model of Attitudes”. The researcher believes the ABC Model nomination is more appealing because it reminds the alphabet, which is also an elemental structure. Thus, uniting the definitions proposed by different authors, the model can be described as follow:

- A refers to Affect, representing feelings, emotions and evaluations about an Attitude object;
- B refers to Behavior (called in the other theories as conative element), reflecting the behavioural intention;
- C refers to Cognition, expressing knowledge, awareness, beliefs and perception about the Attitude object.
Measuring these elements are crucial for consumer research (Evans, Moutinho and van Raaij, 1996, p. 206) and understanding the interrelationship among them can be helpful to determine decision making process in different individuals, as proposed in the hierarchy of effects. There are different measurement techniques and attitudes evaluations developed by researches to use in consumer research, as for example Semantic differential, a set of bipolar scales to identify emotions; Likert scales, presenting statements about the Attitude object and asking the degree of agreement and Thurstone scale, presenting statements and asking the participants to select the one closest to their attitude (Evans, Moutinho and van Raaij, 1996, p. 206). Besides these methods, there are different frameworks to analyze attitudes, as described in chart 1.

![Attitudes Metrics for Evaluation](chart.png)

Figure 2: Attitudes Metrics for Evaluation (own illustration based on Schiffman and Wiseman, 2015, p.177; Solomon, 2015, p.291; Sethna and Blythe, 2016, p.331)

### 2.1.4 Millennials Behavior and Attitudes

Segmentation is an essential core marketing concept, which identify “segments of buyers”, to define target market and study consumer behavior (Kotler and Keller, 2016, p. 31). There are several segmentations variables, such as generations. Millennials or Generation Y or often “teased as Generation Why” (Sethna and Blythe, 2016, p. 372) is a generation rose with technology (Schiffman...
and Wisenblit, 2015; Kraljević and Filipović, 2017) and currently considered important to be investigated (Kraljević and Filipović, 2017, p. 10).

Millennials are becoming more responsible about their own attitudes and also the others. In contrast, Culiberg and Mihelic (2016, p.94) believes that they have “individualistic traits”. Machtiger and Prieto (2016, p.6) emphasize that they are “guided by their values rather than external measures”, and additionally Solomon (2015, p.455) assumes that they strongly endure these values. They are more likely to notice and disclose their judgments towards unethical misconduct (Culiberg and Mihelič, 2016, p. 99).

“Gen Y adults do not respond to marketing the same way their parents did, and the most effective way to reach them are messages online and cable TV” (Schiffman and Wisenblit, 2015, p. 329). Millennials require actions and values from the brands they consume, since they use them to express their own personality (Bordbia, 2014, p.9). Because of their “purchase power”, Kraljevic and Filipovic (2017, p.7) perceive millennials as a sophisticated shoppers.

Impatient, optimistic, experimental learners, digital native, multitasked, adventures, feedback prayers, easily bored, hopeful about the future, connected 24/7, keen to progress, worried about savings and the freedom admirers (Schiffman and Wisenblit, 2015, p. 329; Solomon, 2015, p. 454; Kraljević and Filipović, 2017, p. 7; Bordbia, 2014). These are some of the characteristics of millennials described by the authors, which explains the lower rates of employment, marriage and parenthood (McDonald, 2015, p. 90). Pepsi company discovered that 95% of millennials are positive about world change and Bordbia research (2014, p.17) agree with this “optimism among them” (Solomon, 2015, p. 454). According to Culiberg and Mihelic (2016, p.94) millennials are “occupying more managerial positions in work and making them highly involved in decision making about strategic goals and ethical issues” (Culiberg and Mihelič, 2016, p. 94), making them an influent target in the market. Schiffman and Wisenblit (2015) assume that this is a more confident generation while Deloitte (2017, p.1) research argues that this confidence is shaken after all the last events around the world as for example terror attacks and Brexit.

Considering the importance to understand this generation, Schiffman and Wisenblit (2015, p.329) divide millennials in six segments, in order to cooperate with the analyses of this complex target, described in Table 1.
2.1.5 Ethnic Influences in Consumer Behavior

Eurostat reveals that EU28 had grown 98.9 million of people from 1960 to 2012 and immigration caused 80 per cent of this population growth (Solomon et al., 2016, p. 591). Regarding to this data, Solomon et. al (2016, p.439) consider that “savvy companies recognize subcultures in targeting consumers”, and Schiffman and Wisenblit (2015, p.320) and Sethna and Blythe (2016, p.419) agree that marketers should consider the ethnic subcultures and their consumer behavior. Consumers coming from another countries usually make an effort to maintain their “subcultural identification” and culture alive (Solomon et al., 2016, p. 596), and as consumers they demonstrate this “ancestral pride” through consuming ethnic products and services to remember “homeland” (Schiffman and Wisenblit, 2015, p. 320) and meet religious or traditions practices (Sethna and Blythe, 2016, p. 419). Despite of this need to live their culture outside home, Sethna and Blythe (2016, p.419) also observe the attempt to embrace the culture of the host country, to insert themselves as members. Moreover, Solomon et. al (2016, p.439) highlight the importance of brands to try to “speak the same language” than the subcultures when promoting products and services and Schiffman and Wisenblit (2015, p.60) agree with it, assuming that “marketers should target them using different
promotional appeals”.

Sethna and Blythe (2016) notice that the migration to Europe is increasing, representing in the Figures, generating two different groups “foreign born and non-national”, where the first one represent the people that “emigrated from their country of origin” and the second one represent who born in a country with parents from different nationality (Sethna and Blythe, 2016, p. 418; Solomon et al., 2016, p. 591).

Figure 3: Share of non-nationals in the resident population, 2015
Source: Eurostat cited in Solomon et. al, 2016, p. 594

2.1.6 Empowered and Digital: the complexity to understand the new consumer

Consumer research requires to “spot emerging trends in the marketplace” and customers lifestyle (Evans, Moutinho and van Raaij, 1996, p. p.331). In the “Age of the Customer”, individuals are demanding more than promises. Now, they want value and action (Machtiger and Prieto, 2016, p. 3). Companies must listen to their customers and respond with a product/service experience. Consumer behavior is changing, establishing three relevant customer´s needs: humanizing the relationships, defining identity and individualism. Consumers are more “quality-conscious” (Evans, Moutinho and van Raaij, 1996, p. 332) and apprehensive to present a unique identity, called by Yarrow (2014) as Narcissism, inspired by a feeling of being “less visible” and more “self-focused” (Yarrow, 2014, p. 81). Thusly, products and services are delimited to boast a “cognitive matching between products attributes and the consumer´s self-image” (Beverland, 2009, p. 297).

Yarrow (2014, p.26) observes an effect by the “Digital Age” in our adapted brain, producing anxiety and less ability to focus. Besides, people are connected 24 hours in their smartphone, sharing and collecting opinions before purchase. “Social Epidemics- instances, where products, ideas and behaviours diffuse through a population. Spread almost like a virus.” (Berger, 2014, p. 4). Consumers are opinion leaders, stakeholders, investors, and more credible, persuasive value- free advertising for
the brands that they stand for. Additionally, Clow and Baack (2017), internet changes the way people communicate (Clow and Baack, 2017, p. 243).

Thus, consumer behavior is becoming more complicated and consumer research needs to find alternative methods to be more precise.

2.2 Neuromarketing: the link between Neuroscience and Marketing

Every company aim to understand consumer behavior, and neuroscience can light up the way to achieve this knowledge (Hensel et al., 2017, p. 1). “The unconscious mind may be hidden from us, but that doesn’t diminish its power” (Yarrow, 2014, p. 34). People usually believe that their decision making and behavior is based on conscious perspectives. However, marketers has already realized the importance to consider physiological factors and neuroscience has the tools to scrutinize these elements (Smidts et al., 2014, p. 265). Neuromarketing is an emerging field, promising to understand “emotions, cognitions, physiological reactions and behaviours” (de Oliveira and de Moura Engracia Giraldi, 2017, p. 24) and to uncover what consumers “really think”, what is usually divergent from their responses for traditional research methods (Lindstrom, 2009, p. 18), attracting researchers worldwide, as for example the big research company Nielsen Corporation (Hsu, 2017,p.11).

According to Eser et. al (2011), the history of Neuromarketing had the first step when the neuroscientist Antonio Damasio detected that the emotional part of the brain is used when individuals are making decisions (Eser, Isin and Tolon, 2011, p. 855). In the late 1990s, Professor Gerald Zaltman, from Harvard University, decided to use the cutting-edge neuroscience’s equipment for marketing purposes, giving him the patent for applying neuroscience in marketing (Fisher, Chin and Klitzman, 2010, p. 231; de Oliveira and de Moura Engracia Giraldi, 2017, p. 20; Ming Hsu, 2017, p. 7). Nearly the end of the century, researchers were able to use neuroscience to study a “fundamental aspects of human cognition, specially neural circuits related to perception, attention, and memory”, which are relevant elements to the field of consumer behavior, attracting marketers practitioners in the early 2000s (de Oliveira and de Moura Engracia Giraldi, 2017, p. 21; Ming Hsu, 2017, p. 7). The term “Neuromarketing” was used for the first time by the Dutch professor Ale Smidts, who define it as “the study of the cerebral mechanism to understand the consumer’s behaviour in order to improve the marketing strategies” (Ulman, Cakar and Yildiz, 2015, p. 1272; Ćosić, 2016, p. 140; de Oliveira and de Moura Engracia Giraldi, 2017, p. 19). In the following years, neuroscience had a significant progress, offering to this new field, a powerful tool for marketing (Smidts et al., 2014, p. 258) while, generating public aversion (Ulman, Cakar and Yildiz, 2015, p. 1271) and researches doubts.

Described by authors from different fields, there is not a singular definition for Neuromarketing (Eser, Isin and Tolon, 2011, p. 856; de Oliveira and de Moura Engracia Giraldi, 2017, p. 21). According to Eser et. al (2011, p.854), “neurologists and marketing professionals perceive
neuromarketing more favourably than marketing academics”. Neuromarketing has its origin with medicine and academia, however some authors describe it as business endeavour for its marketing relations (McDowell and Dick, 2013, p. 27), while Fisher et. al (2010, p.232) argue that this “manifestation of neuroculture”, researches rather perceive it as a scientific field than business field. Table 2 present some attempts from the authors to describe this quite unfamiliar field.

Currently, there are more than 300 Neuromarketing companies around the world, selling neuromarketing techniques to study consumer behavior and increase sales (Ulman, Cakar and Yildiz, 2015), assuming that they can find the “buy button” in the “black box” of consumers´mind (Fugate cited in de Oliveira and de Moura Engracia Giraldi, 2017, p. 20), which Murphy et al. (2008) affirms to”creates fear, anxiety or mistrust in the general public“ for believing that they can be manipulated “below the level of consciousness”(Stanton, Sinnott-Armstrong and Huettel, 2017, p. 804), concept argued by Stanton et al. (2016) and Lindstrom (2009), who defends the idea that people are free to take their own decisions (Lindstrom, 2009; Stanton, Sinnott-Armstrong and Huettel, 2017, p. 803). Consumers can have a negative attitude towards companies using Neuromarketing (Flores, Baruca and Saldivar, 2014, p. 79), however Lindstrom (2012) argues that marketing and stealth advertised have always tried to manipulate consumer behavior (Lindstrom, 2012, p. 11).

These misinterpretations surrounding Neuromarketing are expected considering that the field is still in the infancy level. Fisher et. al (2010) declare the importance of media to communicate discoveries and generate impressions, and additionally Hensel et al. (2017) explain that journalists do not have enough information about Neuromarketing techniques. However some researchers as Kenning (2008) and Stanton et. al (2017) have argued that there is no substantial evidence of “buy button” in the brain, only areas responsible to code value and reward that can help marketers, (Fisher, Chin and Klitzman, 2010, p. 234; Flores, Baruca and Saldivar, 2014, p. 81; Hensel et al., 2017; Stanton, Sinnott-Armstrong and Huettel, 2017, p. 804). Controversially to this unfavourable reputation, Eser et. al (2011) argue that participants in Neuromarketing researches have expressed positive attitudes towards Neuromarketing, feeling the process enjoyable and interesting, perhaps incentivised by their curiosity or the reward offered (Senior et. al cited in Eser, Isin and Tolon, 2011, p.854).

Graham (2002) argues that people are not “zombies”: they are aware of their decision making and will not be influence by Neuromarketing techniques and its attempts to manipulate their shopping. Hsu (2017) affirm that some researchers disagree that observing the brain can help marketing and Smitds et. al (2017) believe that they are theoretical researchers, perceiving Neuromarketing findings as irrelevant and with no validity (Fisher, Chin and Klitzman, 2010, p. 235; McDowell and Dick, 2013; Smidts et al., 2014, p. 260; Hensel et al., 2017; Ming Hsu, 2017, p. 13). However, its potential to understand consumers can´t be ignored for the currently marketers, even it can be fairly expensive (Kotler and Keller, 2016, p. 133).
2.2.1 Introduction to some Neuromarketing Techniques

Usually, fMRI and ECG are the most popular brain scan techniques applied in Neuromarketing, however Ming Hsu (2017, p.9) affirms that there are more precise methods - representing in the figure 4 for the dashed lines- “capable of measuring the firing of individual neurons or even the finer cellular and molecular changes within neurons”, whereas they are not applicable due to their invasive nature. Besides the popularity and accuracy of these methods based on brain reactions and central and peripheral nervous system, the high prices for it can be an obstacle for companies to invest on it. As an alternative, how referred by Staton et al (2016, p.800) and de Oliveira et al (2017, p.23), Neuromarketing also offers more accessible approaches based on...
physiology and body reactions connected with cognitive neuroscience as eye tracking, blood pressure, facial movement, heart rate, galvanic skin conductance, hormones, genetic information and etc.

These techniques can measure attention, sensory experience, memory, process of learning, motivation and emotions, correlated with future behavior. Further, Smidts et al. (2014) believes that “neurobehavioral models” will be able to inform economic decision making (Smidts et al., 2014, p. 263; Ćosić, 2016, p. 141). Staton et. al (2016) compare the most popular methods through Figure 5.

➢ **fMRI:**

The most famous Neuromarketing experiment with Coke x Pepsi used fMRI, tracking participants’ blood flow in response to stimuli. Granting excellent spatial resolution and poor temporal resolution, fMRI is capable to capture the oxygenated haemoglobin in the brain, using magnetic and radio waves to generate the brain scan, mapping and indirect measuring the blood flow. Neuromarketing experiments may stimulate the relevant areas in the brain, analysing how much “blood supply” is driven to this region to support this reaction, detecting consumers’ preferences and choices. However, due to the high cost and immobility, it has been used more often for scientific and clinical proposes. A MRI scanner costs several million dollars, and additionally the research spends extra hundreds of dollars for each participant with marginal costs. The immobility of this machine is also a limitation because it requires a prepared laboratory set and an expert to analyse the images. Furthermore, due to the lack of comfort and excessively noise produced by the machine, Smidts et. al (2015) evidence that this inconvenient environment can negatively influence cognition and choice, “distorting the relationship between brain and behavior”. Lindstrom (2009) agree with this concept, describing the fMRI machine as “clankingly noise” “tedious” and “claustrophobic”. Considering an ethical perspective, fMRI is capable to find medical diseases and the magnetic field utilized can be harmful for the individual’s health (Lindstrom, 2009, p. 13; Eser, Isin and Tolon, 2011, p. 855;

EEG (Electroencephalography):

Perceived as the most popular brain scan method, EEG has already been used for over 35 years to investigate attention and memory aspects related to commercial messages. Smidts et. al (2015) suggest that EEG should be applied for marketing strategies, considering it cost effective. EEG is much less expensive than fMRI, representing only 5% of the cost of a fMRI machine and the marginal costs are also lower. Other important advantage when compared with fMRI is the mobility, allowing more comfortable and favourable environments. Neurofocus has adopted an advanced wireless EEG, enabling the researcher to apply it in natural environment, outside of laboratories, and also omitting some procedures that can be inconvenient as the gel usually applied to improve the contact with the scalp. EEG, contrary of fMRI, offers an excellent temporal resolution and has a poor spatial resolution. An elastic cap with electrodes is place around the scalp and it can measure milliseconds of neural electrical activity and its changes across the brain, when they are under specific stimuli. It can be used to evaluate emotional and motivational aspects of the consumers, when observing an advertising or packet for example. According to Smidts et. al (2015), an ECG media-frontal oscillations in the beta frequencies range represent reward and lower theta frequencies are associated to loss and negative outcomes, modulated by experience. A part of all the advantages offered by ECG, Staton et. al (2017) argue that this method sometimes lacks to measure brain activity in other areas far from the scalp, as for example the sub cortical, important to analyse decision making process, and moreover , likely fMRI, it may provide some ethical issues, considering medical diseases findings during the experiment (Boksem and Smidts, 2015, p. 484; Ćosić, 2016, p. 141; Stanton, Sinnott-Armstrong and Huettel, 2017, p. 800).

PET (Positron Emission Tomography)

This method has not gain much popularity in Neuromarketing because of its process and high cost. Researchers need to inject radioisotopes in the participants and observe how these components accumulate in their brain, what makes it uncomfortable and slightly intrusive. Furthermore, these radioactive ligands may lead to negative effects in the subject health. Lastly, it also undergo poor temporal and spatial resolution (Ćosić, 2016, p. 141; Ming Hsu, 2017, p. 8).

MEG (Magneto- Encephalography)

Likely EEG, this technique holds an excellent temporal resolution and poor spatial resolution, analysing neural activity across the interested areas in the brain, which propagate through the scalp.
The only difference between this two methods is that MEG require magnetic fields, increasing technical complexity and for that reason, it is hardly ever used for Neuromarketing research (Stanton, Sinnott-Armstrong and Huettel, 2017, p. 800).

- **EYE TRACKING**

According to Cosic (2016), eye tracking is the most popular technique in Neuromarketing with high temporal resolution, efficient to valuate product design, web pages and marketing communications. Through capturing pupil dilation and head movement, this method can detect what is calling the subject attention, emotional response and level of difficult related to specific task. It can be conducted by eyeglasses, allowing mobility till the shop for example, or by a stationary tracker with infrared camera. It is considered the least intrusive technique, and unlike the brain scan methods, it is more ethically acceptable (Ćosić, 2016, p. 141; Stanton, Sinnott-Armstrong and Huettel, 2017, p. 802).

- **BIOMETRICS**

This technique is composed by observing different aspects of peripheral physiology through devices used for medical purposes, in response to internal and external stimuli. Marketing may use that to measure motivation, interest, and excitement, moreover also combine it with data mining to reach consumers in the right moment, based in their hormones for example. It includes heart rate, respiration, skin conductance, pupillometry and etc (de Oliveira and de Moura Engracia Giraldi, 2017, p. 23; Stanton, Sinnott-Armstrong and Huettel, 2017, p. 800).

- **GENETICS**

Smidts et. al (2014) disclose that “choice behavior is the result of interactions between genetic, environmental and developmental/epigenetic process”. Thus, Neuromarketing must consider genetics and molecular insights to understand consumer behavior. For example, the author identify that dopaminergic pathways can represent reward (Smidts et al., 2014, p. 262).
<table>
<thead>
<tr>
<th>Technique</th>
<th>Measure</th>
<th>Advantages</th>
<th>Disadvantages</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brain imaging</td>
<td>Functional magnetic resonance imaging (fMRI)</td>
<td>Localized brain areas’ oxygen use</td>
<td>Good temporal precision (sec) Excellent spatial resolution</td>
<td>High cost Restrictive environment for subjects</td>
</tr>
<tr>
<td>Electroencephalography (EEG)</td>
<td>Localized brain areas’ electrical activity</td>
<td>Least expensive brain imaging Excellent temporal resolution (msec)</td>
<td>Limited spatial resolution, especially of subcortical regions</td>
<td>Telpaz et al. (2015) Pozharliev et al. (2015)</td>
</tr>
<tr>
<td>Physiology</td>
<td>Hormones (e.g., testosterone, menstrual cycle)</td>
<td>Hormone concentration in saliva, blood, etc.</td>
<td>Low cost Can be non-invasive Collected in field and lab</td>
<td>Less temporally precise</td>
</tr>
<tr>
<td>Eye tracking</td>
<td>Target of gaze Pupil diameter</td>
<td>Unique measure of attention Low cost Excellent temporal resolution (msec)</td>
<td>Difficult to attribute value to eye movements</td>
<td>Venkatraman et al. (2012) Meissner et al. (2015)</td>
</tr>
<tr>
<td>Skin conductance</td>
<td>Rate of hand perspiration</td>
<td>Measure of general arousal</td>
<td>Not specific to particular emotions</td>
<td>Reimann et al. (2012)</td>
</tr>
<tr>
<td>Interventions</td>
<td>Transcranial magnetic stimulation (TMS)</td>
<td>Transient inhibition or enhancement of local brain function</td>
<td>Reveals causal role for brain regions Limited temporal resolution Can only test 1 brain region at a time</td>
<td>Camus et al. (2009)</td>
</tr>
<tr>
<td>Drug administration/ neurotransmitter depletion</td>
<td>Transient changes in brain chemistry</td>
<td>Causality with regard to specific neurochemicals</td>
<td>Often requires physician oversight</td>
<td>Lichters et al. (2015)</td>
</tr>
</tbody>
</table>

* This list is not exhaustive. Other measures such as facial EMG, heart-rate variability, pupillometry, MEG, and more will likely be used in research

** All techniques listed require significant training to be used with precision, validity, and reliability

Figure 5 - Comparing Neuromarketing Techniques
Source: Stanton et. al, 2017, p.801.
2.2.2 Looking inside the human brain

Brain is a magnificent system capable to control all the functions in the body, instigating researchers interested in understanding human behavior. Marketers aim to investigate aspects as loyalty, memory, value perceived and attachment prized by them (Ming Hsu, 2017, p. 11). Research have mapped the areas in the brain in their different functions related to human psychology, as examples present in Table 3.

<table>
<thead>
<tr>
<th>Brain Area</th>
<th>What means brain activity is this area?</th>
</tr>
</thead>
<tbody>
<tr>
<td>vmPFC (ventromedial prefrontal cortex)</td>
<td>Unconscious valuation, preferences and goals. Essential to study consumer behavior. Subjective pleasure experience.</td>
</tr>
<tr>
<td>Hippocampus</td>
<td>Related to emotion and affect. Memory.</td>
</tr>
</tbody>
</table>
| Dorsolateral                 | Related to emotion and affect.  
| Prefrontal cortex            | Related to emotion and affect. Preference.  
| Basial Ganglia               | Memory.                                                                                                    |
| Nucleus Accumbens            | Emotions in general.  
| Insula (cerebral cortex)     | Reward centre and negative emotions. Predict choice and means likelihood of purchase.                       |
| Neocortex                    | Positive and negative emotions. If the activation happens when looking at the price, indicates lower likelihood to purchase. |
| Orbital Frontal Cortex       | Consolidation of a memory.  
| Visual cortex                | Enjoyment and preferences.                                                                                |
| Inferotemporal Cortex        | Light up when emerge the possibility of consumption.                                                      |
| Parietal Cortex              | Possibility of consumption, brought from Visual cortex through memory circuits  
| Medial Prefrontal Cortex     | Decision made.                                                                                             |
| Amygdala                     | More likely to prompt purchase. Memory.  
| Midbrain                     | Important part of the emotion, memory, valuation and attention circuits.  
|                              | Related to emotion and affect.                                                                             |

*Table 3: Relevant Brain Areas for Neuromarketing*

*Source: own illustration based on Draganski et al., 2006, p. 1635; Eser, Isin and Tolon, 2011, p. 855; Flores, Baruca and Saldivar, 2014, p. 84; Smidts et al., 2014, p. 265; Boksem and Smidts, 2015, p. 484; Ćosić, 2016, p. 142; Ming Hsu, 2017, p. 11)*
2.2.3 The applications of Neuromarketing in Marketing

Marketers have already realised the importance of uncovering consumer emotions and satisfying these needs, defined by Ingwer (2012, p.8) as looking “beyond logical explanations of consumer behavior” (Ingwer, 2012, p. 8; Sethna and Blythe, 2016, p. 23). As an attempt to understand consumer behavior, Neuromarketing emerges enabling marketers to find answers for unfeasible questions (de Oliveira and de Moura Engracia Giraldi, 2017, p. 25; Ming Hsu, 2017, p. 20).

Many international companies as Google, Facebook, Ford and Chrysler have been used Neuromarketing, perceiving some advantages on it (Eser, Isin and Tolon, 2011, p. 859). Neuromarketing is an efficient tool to assess purchasing likelihood; brand loyalty (Ming Hsu, 2017, p. 11); define positioning (Ming Hsu, 2017, p. 20) and segmentation (Stanton, Sinnott-Armstrong and Huettel, 2017, p. 809); measure and enhancing consumer experience (de Oliveira and de Moura Engracia Giraldi, 2017, p. 23; Stanton, Sinnott-Armstrong and Huettel, 2017, p. 809); verify usability or possible improvement of products or develop more desirable and personalised ones (Ćosić, 2016, p. 144; de Oliveira and de Moura Engracia Giraldi, 2017, p. 25; Stanton, Sinnott-Armstrong and Huettel, 2017, p. 809); create efficient packaging and product design, improving perception and boost sales (Ingwer, 2012, p. 8; Smidts et al., 2014, p. 259); pricing strategy related to perceptions of financial decisions (de Oliveira and de Moura Engracia Giraldi, 2017, p. 23; Stanton, Sinnott-Armstrong and Huettel, 2017, p. 800); and marketing mix process in general (Smidts et al., 2014, p. 259). Understanding consumer unconscious can bring explanations related to brand equity, and moreover access the features of brand personality, considered by Hsu (2017, p.14) existing only in
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consumer’s mind.

Besides all these strategies previously described, the authors emphasize the benefits Neuromarketing offers to the communication field, delivering more affective and better quality ads. The ARF (Advertising Research Foundation) began accessing Neuromarketing techniques in 2010 to improve the advertising offered to consumers, who are overwhelmed with communication, seeing about 2,000,000 commercials during their life (Stipp, 2015, p. 121; Ćosić, 2016, p. 144; de Oliveira and de Moura Engracia Giraldi, 2017, p. 23).

Contrary, Neuromarketing may also result in higher product’s price, due to the expenses with its expensive techniques and the speculations about its manipulation power can be harmful for marketing image, driving consumers to reflect of marketers and companies should know about them (Eser, Isin and Tolon, 2011, p. 860; Stanton, Sinnott-Armstrong and Huettel, 2017, p. 809).

Subliminal and Sensorial Messages

Ingwer (2012, p.8) affirms that “researches have known for a century that background aethesis (music, smell, floor design) are subliminally persuasive”. Subliminal concept first appear in 1950 with James Vicary, spreading fear and ethical breaches related to privacy, due to the idea of entering subconscious and changing an individual behavior without his awareness and manipulating unnecessary purchases. The effectiveness of subliminal message was proved and Murphy et. al (2008) recognize a higher interest in Neuromarketing since then. However, in USA is illegal to produce subliminal advertising, in order to protect consumers.

Besides subliminal commercials, other approach to reach consumers unconscious and improve recognition of the brand and pleasant experience is applying sensory Neuromarketing through smells, sounds, taste, sight and touch. Cosic (2016, p.143) points that smell arrives faster in the brain and citrus scent can increase likelihood to purchase (Ćosić, 2016, p. 143). The sensory approach has been used very often by companies, especially inside the shops for creating a favourable environment.

2.2.4 Neuromarketing x Traditional Research

“Marketing research has experienced a groundbreaking turn with the increasing use of neurotechnologies and neuroimaging techniques especially in the last decade” (Ulman, Cakar and Yildiz, 2015, p. 1272). More precisely, Lindstrom (2009, p.18) assumes that by 2003 researchers realized that traditional research methods are not able to find “what consumers really think” (Lindstrom, 2009, p. 18). The literature analyzed strongly argues Neuromarketing efficiency as research approach, developed to understand the brain (Ulman, Cakar and Yildiz, 2015, p. 1272), capable to sort out the ‘well known limitations’ suffered by the traditional methods based on verbal reports and with unclear temporal resolution, as surveys, focus group, ethnography and etc. (Ulman,
Neuromarketing is mentioned in many researches as an excessively expensive method, whereas Eser et. al (2011) argues that it is only “slightly more expensive than the cost of conducting focus groups”, revealing that a medium-sized Neuromarketing study would cost between $94,000 and $188,000. Additionally, Boksem et. al (2015) assume that smaller samples represent more accurate predictions and Neuromarketing can be cheaper and faster than traditional methods (Boksem and Smidts, 2015, p. 482). However, Ulman et. al (2015) argue that the sample size depends on the tools that are going to be used. Usually, qualitative researches are used to analyse consumer’s “motivations, perceptions and decision-making processes” and Schiffman et al (2015) assume that contemporary qualitative research understand that consumers are not “rational decision-makers” (Schiffman and Wisenblit, 2015, p. 408), so that Neuromarketing can be useful for a deeper understanding of these aspects in consumer research if adjunct to the traditional methods, as focus group (Eser, Isin and Tolon, 2011, p. 855; Ming Hsu, 2017, p. 20). Furthermore, Fisher et. al (2010, p.231) affirms that Neuromarketing findings are more persuasive due to the brain images proofs, although the insecurity about its validity.

Stanton et al (2016, p.805) declare the lack of peer review on the reports produced by Neuromarketing companies, what can result in an overstating result, and moreover they “maintain property control of the data collected”, against the transparency claimed by consumers (Lindstrom, 2009, p. 18) and the essential trust to avoid research limitations (Murphy, Illes and Reiner, 2008, p. 296). Thus, the efficiency and ethical conduct of Neuromarketing techniques are questionable, and according to a study performed by Pop et. al (2016), advertisers believe that neuromarketing is more efficient than traditional methods, while they also believe traditional methods are more ethical than neuromarketing, as for example, if used to influence political election, what can be harmful for the whole population of a country (Hensel et al., 2017). Also, Neuromarketing research requires awareness of ethical issues, making sure to apply an appropriate consent form and information sheet, and being responsible for participant’s privacy, especially about incidental diseases findings. The French parliment, for example, determined that brain scan methods are only allow to be used for medical and scientific (Ulman, Cakar and Yildiz, 2015, p. 1273).

2.2.5 The future of Neuromarketing

Many authors are attempting to predict the future of Neuromarketing and the traditional marketing research. Lindstrom (2009, p.176) believes that Neuromarketing will become “the primary tool companies use to predict the success or failure of their products”, becoming more popular than traditional methods and further cheaper and more available. Controversy, Ming Hsu (2017, p.20) supports the idea that Neuromarketing will complement and improve precision and temporal resolution of traditional research and de Olivera et. al (2017, p.27), sharing the same opinion, complement that “biofeedback responses” found in Neuromarketing representing the future of marketing research and it will be mandatory in the coming decades, perhaps five to ten years how predicted by Moore (2005, cited in Eser et. al, 2011, p.865). However, the future of Neuromarketing
will depend on the acceptability of the society and individuals where it will attempt to perfume.

**2.2.6 Ethical Issues in Neuromarketing**

New York Times Magazine informs about a “fear among scholars that brain scanning is a kind of super mind-reading device that threatens the privacy and mental freedom of citizens” (Lindstrom, 2009, p. 35). Neuromarketing field is surrounded by speculations and ethical concerns. In 2002, USA spend around 60 billion dollars with Neuromarketing research, provoking apprehension and resulting in a letter directed to Emory University requesting to interrupt Neuromarketing experiment because of its business endeavour and for being against ethical principles (Ulman, Cakar and Yildiz, 2015, p. 1278). According to Hensel et al. (2017), Neuromarketing stakeholders endorse different opinions and beliefs, according to their interest on it, however they do not considered Neuromarketing unethical. Council of Europe on Human Rights and Biomedicine obtain bioethical concerns about the application of neurotechnologies in different fields, included Neuromarketing. (Fisher, Chin and Klitzman, 2010, p. 236; Ulman, Cakar and Yildiz, 2015, p. 1272; Hensel et al., 2017; Stanton, Sinnott-Armstrong and Huettel, 2017, p. 803)

Stanton et. al (2017, p.866) point that Neuromarketing companies are “unlikely to full transparency”. Transparency and validity are considered essential to build trust among the public and permit Neuromarketing to develop (McDowell and Dick, 2013; Hensel et al., 2017, p. 5). Fisher et. al (2010) and Ulman et. al (2015) agree with the transparency, affirming that Neuromarketing should be understand in public sphere, what would fight against negative attitudes towards Neuromarketing (Fisher, Chin and Klitzman, 2010, p. 236; Ulman, Cakar and Yildiz, 2015, p. 1272). Additionally, Fisher et. al (2010) suggest to have a close participation of medical professionals in Neuromarketing experiments, proposing more responsibility and reliability.

The literature analyzed, point some fears and concerns about Neuromarketing. Firstly, the whole concern about manipulation and stealth marketing, which Murphy et. al (2008, p.297) assumes not being possible, due to the current technology , however assuming the harms it can have in the future, creating powerful advertising able to generate unnecessary desire and increasing consumption, also offering to salesperson unfair advantage (Hensel et al., 2017, p. 8; Stanton, Sinnott-Armstrong and Huettel, 2017, p. 807). However, some scholars as Lindstrom (2008) disagree, highlighting that Neuromarketing is only uncovering what is already inside the consumer brain, named by him as “Buyology” (Lindstrom, 2008, p.35) and Stanton et al (2016) share the same point of view. Other issues cited in the literature are the unethical research with vulnerable groups, the possibility of diagnosing brain diseases in respondents, the capability to turn consumer choice predictable and the fear to“ treat them as robots without freedom and dignity” and the usage of Neuromarketing to promote unhealthy products that could affect public health (Eser, Isin and Tolon, 2011, p. 856; McDowell and Dick, 2013, p. 27; Hensel et al., 2017, p. 7; Stanton, Sinnott-Armstrong and Huettel, 2017, p. 803).
Therefore, marketers and academics realized the necessity of a regulatory framework for Neuromarketing and NMSBA (Neuromarketing Science and Business Association) proposes a code of ethics in order to ensure ethical conduct in Neuromarketing applications (NMSBA, 2018; Murphy, Illes and Reiner, 2008; Hensel et al., 2017, p. 2), extremely important nowadays when consumers are more aware and exigent about their rights and privacy.

2.3 Ethics implications in Marketing and Research

"In a single day, consumer creates 2.5 quintillion bytes of data” (Solomon et al., 2016, p. 34). This data is extremely valuable for marketers in order to create and define efficient marketing strategies, suitable to their target, and marketing obtains more sophisticated tools to track this data, what is increasing ethical issues due to consumers’ awareness about their privacy (Schiffman and Wisenblit, 2015, p. 396). Compliance with data protection and general legislation, honesty, transparency, consideration of vulnerability are some important aspects to be considered when applying research, in order to respect human rights and dignity (Saunders and Lewis, 2011, p. 74). Therefore, marketing and research field are vulnerable to accusations if they do not follow a conduct of ethics.

2.3.1- Save the Data: discussions about Data Protection

"Probably knows more about your wants, your needs, your dreams and your habits than even you do. And it’s using this information to make money off you in ways you couldn’t even imagine. Welcome to the 60 billion pounds world of data mining” (Lindstrom, 2012, p. 197). Controlling and protecting the personal data is a huge challenge nowadays. Companies are constantly using data mining advanced and sophisticated tools, working as a “Big Brother“ to track every consumer step in order to predict consumer behavior. Sharing the location in Foursquare and even GPS, posting the daily events in Facebook and Instagram, selecting the favourites videos in Youtube, inserting bank details to purchase online, using digital coupons: they are all alternatives that allow companies to track consumers’ information about and consequently, generate better marketing strategies (Lindstrom, 2012, p. 226). Lindstrom (2012) assumes that consumers are responsible for easily offering their own data through social media and other methods to benefit companies to reach them. It can be beneficial if consider better and more personalised offers of products and communication and in the other hand it can be harmful, once that it influences consumer’s choice.

Currently, discussions about data protection are proliferating and driving people to evaluate what companies are doing with their data. Specially after the Facebook scandals, as for example the study where they manipulate nearly 700,000 users’ mood states and for selling their information without consent (Stanton, Sinnott-Armstrong and Huettel, 2017, p. 807). Moreover, politics are also being charged for using bid data to improve politicians campaign, as for example the speculations
about Obama’s reelection, whereas people believe that Democratic part access datasets to support the campaign (Solomon et al., 2016, p. 35).

2.3.2- Welcome to the GDPR Era

“The GDPR defines ‘biometric data’ as meaning: personal data resulting from specific technical processing relating to the physical, physiological or behavioural characteristics of a natural person, which allows or confirm the unique identification of that natural person, such as facial images or datyloscopic data” (Kelleher and Murray, 2018, p. 104). GDPR, standing for General Data Protection Regulation, is a new regulation added to the European Data Protection law with “long-arm jurisdictional” covering even non-EU organisations, while they “target and monitor EU individuals”, in order to protect the data and personal information (Goddard, 2017, p. 704). According to EUGDPR.ORG, the regulation imposed to all European Member States from 25 of May 2018 aim “to protect all EU citizens from privacy and data breaches in an increasingly data-driven world that is vastly different from the time in which the 1995 directive was established” (EUGDPR.ORG, 2018).

Basically, companies and marketers have to be aware of GDPR and its exigencies when personal data is collected. “GDPR article 2(1): GDPR applies to the processing of personal data wholly or partly by automated means and to the processing other than by automated means of personal data which form part of a filing system or are intended to form part of a filing system.” (Kelleher and Murray, 2018, p.61). Kelleher and Murray (2018) explain that all data processing technologies as smartphones, CCTV and all the “Internet-of-things” must follow a default to process it (Kelleher and Murray, 2018, p.61). GDPR also defines that personal and household that are related to data not used for commercial or professional purposes, so for example, a personal Facebook page or a Facebook group with domestic activity are excluded of GDPR penalisations, moreover GDPR definitely applies for social networks itself (Kelleher and Murray, 2018, p.67). Considering that Freedom of Expression is one of the fundamentals of EU rights, GDPR suggests that the Member states are responsible to find the balance between the freedom of expression and data protection (Kelleher and Murray, 2018, p.69).

This regulation can be considered a new challenge for research, however, the article 89 of GDPR enable research to continue, providing a regime of data collection for the ones that aim topics in the public interest, scientific or historical research (Kelleher and Murray, 2018, p.74), and onlye the ones with business purposes will suffer by GDPR inspection. Personal data means any information that can identify a person, such as name, identifiers and location data (including the ones generated by mobile, cookies, and Internet Protocol).

The core of GDPR is based on the foundations for European data protection law and set the rules for processing personal data as follow (Kelleher and Murray, 2018, p.137):

1- Lawfulness, fairness and transparency of the data collected;
2- Purpose limitation, specifying the purpose of data collection and not further processed for different objectives;
3- Data Minimisation, data relevant and limited for the set purpose;
4- Accuracy, demanding rectification in case of mistaken and unreliable information;
5- Storage Limitation, being used as long it achieves the purpose;
6- Integrity and confidentiality;
7- Accountability, demonstrating compliance with GDPR defaults.

Therefore, according to Goddard (2017), driven by a “philosophical approach”, GDPR will impact globally, ensuring that organizations are responsible for the data they are collecting (Goddard, 2017, p.703), once GDPR is a “user-centric”, claiming for transparency and trust.

**Part 2: Market Review**

**2.4 The Irish Consumer**

Consumers are more often online, as discussed in the Changing Consumer topic previously, and it can be observed in Ireland. Euromonitor 2018 detects that “consumer’s shopping habits are changing as internet penetration increases” in Dublin. Looking into Ireland market and possibilities to develop a E-commerce, it’s possible to point that Ireland population in 2017 was 4,749,153 and into that population, 4,453,436 are internet users, representing a 93.8% of penetration online.

Irish consumers are becoming more quality-conscious and are changing attitudes towards nutrition and food hygiene, concerned about the increasingly obesity rates in the country, according to Mintel study (Linehan, 2008, p. 112). BoardBia research detected that Irish consumers are willing to invest more money in shops offering better quality, good service and pleasant environment (Bordbia, 2014, p.29). The figure 7 proves that Irish millennials are visiting healthy shops with more frequency, representing their health mindset changing.

Besides a more conscious and sustainable consumer (Linehan, 2008, p. 17), also empowered by the Internet, companies have to deal with a more exigent customer with a lack of trust. According to Mintel Trends (2018), consumers want “transparency, simplicity and evidence” from the brand they stand for. Ireland is represented as “distrust” country in the Eldeman’s Trust Baramoter (Appendix 1), what means that a company entrant in the Irish Market needs to appeal with credibility and build a good reputation.

According to Bordbia (2014) and Deloitte (2017) surveys, Irish consumers are positive about the future of the economy in Ireland and it can be the reason why the immigration rates are growing again in the country, as demonstrated in figure 9. Thus, how discussed before in the Cultural topic, these different subcultures affect Ireland’s market, becoming important considering for companies looking for established business in the country.
Neuromarketing in Ireland: an investigation on Millennials attitudes towards Neuromarketing in the Era of GDPR

**Figure 8: Immigration in Ireland**
Source: EMN Statistics

<table>
<thead>
<tr>
<th></th>
<th>Millennials</th>
<th>Gen X</th>
<th>Baby Boomers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Farmers’ Market</td>
<td>1.5</td>
<td>1.1</td>
<td>0.7</td>
</tr>
<tr>
<td>Health food store</td>
<td>1.8</td>
<td>1.1</td>
<td>0.5</td>
</tr>
<tr>
<td>Ethnic Food Store</td>
<td>1.6</td>
<td>1.3</td>
<td>0.4</td>
</tr>
<tr>
<td>Specialist off-license</td>
<td>1.9</td>
<td>1.2</td>
<td>0.6</td>
</tr>
</tbody>
</table>

*Figure 7: Irish Food’s shop*
Source: Bordbia 2014
2.5 Neuromarketing in Ireland

During the literature review process, the researcher could not find a range of material about Neuromarketing in Ireland. NMBSA list the regions around the world where Neuromarketing companies associated to them are connect, and there is no company in Ireland. However, King (2015) brings some information about Neuromarketing in Ireland in his article in Irish Times, informing that Trinity College, having the biggest neuroscience laboratory in Ireland, is conducting few researches using fMRI machines to understand the reactions in the brain related to individual’s attitudes and behavior. Additionally, King mentions the company Mindlab in UK, also established in Ireland, offering trainings for sales department using Neuromarketing insights and moreover, Neuromarketing research techniques.

2.6 Data Protection in Ireland

Ireland regulations protect its population personal data and as part of European Union, it is also under GDPR regulations, requiring from companies established in the country the awareness and compliance with them. According the EU DP Directive, personal data refers to “any information relating to an identified or identifiable natural person” (Lambert, 2013, p. 3), and the Data Protection regime in Ireland aims to provide obligations for the companies and various data protection rights for the data subjects, assumed by Lambert (2013, p.6) as control, security and respect to informational personal data. Organisations that collect and process personal data must deal with data protection issues, mostly related to “fairness, consent, accuracy, security and proper and transparent purposes for processing” (Lambert, 2013, p. 14). Ireland define “obligations to report data breaches and losses”, and these breaches can result in financial penalties for the companies against the regulations. For example, Data Protection Commissioner in Ireland fined Eircom and Meteor 15,000 Euros each, and those fines can reach the amount of 250,000 euros. Lambert (2013, p.11) believes the penalties values will have a notable increase while discussions about data protection are also becoming more frequent and GDPR is already in practice.

2.7 Conclusion

Between 80 to 90 percent of new products and services launched in the market, break down or do not achieve their expectations, illustrating the lack of knowledge about the target selected (Ingwer, 2012, p. 20). Neuromarketing may be helpful for companies to study consumer behavior and achieve a deeper understanding about consumers´ unconscious decisions, however because is a broad and new concept, it generate some fears and ethical issues (Stanton et al, 2016, p.802), and to be effectively exploit, trust and ethical conduct are essential (Hensel et al., 2017, p. 1). The literature review obtain a constantly comparisons between Neuromarketing and traditional research, making
authors predict the future of Neuromarketing for their point of view, however not asking the consumer and practitioners opinions. There is a gap concerning to Neuromarketing in Ireland, which is a country with low trust according to Edelman (2018), resulting in unclear information about the usage and opportunities to apply Neuromarketing techniques among Irish consumers and also the feelings coming from marketers and business practitioners about using these techniques.

Moreover, the literature review identifies the complexity to define Neuromarketing and the outcomes are speculations and misunderstandings, what claims the necessity to research what are consumers’ beliefs and awareness about the field and their availability to participate in marketing research, which can be evaluated as uncomfortable and suspicious.

Finally, reflecting on new strategies for consumer research in Ireland, it is essential to consider GDPR a new challenge to be effective in European market. Likely Neuromarketing, it is a new legislation and there is a lack of research about Irish consumers attitudes towards it.

Thus, Neuromarketing and GDPR are new areas that are related to each other and there is no research approaching how GDPR and Data protection discussions affect Neuromarketing for Europeans consumers.
CHAPTER 3: METHODOLOGY

“The method is designed to answer the question, ‘how shall I conduct my research?’” (Saunders, Lewis and Thornhill, 2015, p. 57). Thereafter a critical literature review, the next step is to identify the methodology approach, reflecting the philosophical assumption of the paradigm (Collis and Hussey, 2009, p.73) to achieve the findings expected and guarantee a valuable research for the marketing field in Ireland, where the research will take place, and further global, considering Ireland is as a multicultural country.

3.1 Proposed Research Methodology

According to Collis and Hussey (2009), “methodology is an approach to the process of the research, encompassing a body of methods” (Collis and Hussey, 2009, p.73). Based on the methodologies proposed by Saunders et al (2015)- as demonstrated in figure 9- this section will define from the research philosophy and approach, the most appropriate strategies and methods to be undertaken, knowing the limitations and challenges to achieve the results (Saunders, Lewis and Thornhill, 2015, p. 57). Thus, the research onion by Saunders became a guide for the researcher in order to generate and answer the research question.

Figure 9 - The Research Onion
Source: Saunders et. al (2008)
3.2 Research Philosophy

According to Saundeurs et al (2016), research philosophy is the "system of beliefs and assumptions about the development of knowledge" (Saundeurs et al, 2016, p.124). It’s a reflexive process reflecting the way the researcher view the world and so on conduct the research.

Firstly considering the research assumptions, this research proposed is based on Axiology Subjectivism. Axiology due to the high value of personal interaction with the respondents, referring to the role of their values and ethics (Saunders et al, 2016, p.128), and matching with the discussions about ethical conduct of research and data protection regulations, moreover for being a research based on ethical discussions. Offering more detailed about respondents opinions, the researcher gain the possibility to contrast with her own feelings and beliefs, whereas the researcher is also part of the population studied. Ontology is rejected for considering only the researcher impressions, what would not be as valuable as Axiology, likely Epistemology was rejected for concerning only assumptions about knowledge, and this research aims to evaluate emotions and feelings as well. Moreover, this research is Subjectivism, since that social reality is made from the perceptions and actions of the participants, and how suggest by Saunders et al (2015), when studying customers views in the scenario they are included, the outcome is a value-bound, integral and reflexive research (Saunders et al, 2016, p.130), what is more interesting for this research than Objectivism, which is value-free.

Subsequently, with the assumption determined, the researcher can define the philosophy which will drive this research between Positivism, Realism, Interpretivism, Postmodernism and Pragmatism. According to the researcher’s methodology lectures in Dublin Business School, none of the philosophies are better than the other, and often researches combine more than one philosophy. However, Positivism for quantitative studies and Interpretivism for qualitative ones are more popular for master’s researches. Considering it and focus on the best way to answer the research question and achieve better findings, the researcher rely on Interpretivism, related with the Axiology and Subjectivist assumption, where the researcher biases and background will influence the final interpretation. Also because of its nature of lending to human elements of business, as marketing and consumer behavior, what exactly this research propose to study, constructing the meaning through different interpretations with the purpose to create “richer understandings and interpretations of social worlds and contexts” (Saunders et al, 2016, p.140). Aiming for a reflective research, the researcher rejected Positivism and Realism for their scientific and measurable approaches(Saunders and Lewis, 2011, p. 105).

3.3 Research Approach

The research approach represents how the researcher will conduct the research related to the theory taking in board, perhaps not obvious in the research design and more notable in the presentation of findings and conclusions (Saunders and Lewis, 2011, p. 107; Saunders, Lewis and
Thornhill, 2015, p. 144). The research onion proposed by Saunders et. al (2015) proposes three different approaches: deductive, “which involves the testing of a theoretical proposition by using a research strategy specifically designed for the purpose of its testing”; inductive, “which involves the development of theory as a result of analysing data already collected” (Saunders and Lewis, 2011, p. 108); and abductive, “where the researcher are collecting data to explore a phenomenon, identify themes and explain patterns, to generate a new or modify an existing theory” (Saunders, Lewis and Thornhill, 2015, p. 145). Considering that this research aims to understand the “meanings humans attach” and evaluate the whole context about Neuromarketing, an Inductive approach is applied, once that it permits more flexible structure to the researcher, attempting to generate conclusions about Neuromarketing in Ireland, area where the literature review introduced highlights a gap, thus with inexistent accurate premises to test, as proposed by the Deductive approach, or to modify, as proposed by the Abductive approach (Saunders and Lewis, 2011, p. 109; Saunders, Lewis and Thornhill, 2015, p. 145). Moreover, Deductive approach is “operationalised”, what means that facts needs to be measured, and a quantitative strategy would be necessary and controversy, the research question proposed requires a more reflective and broad questions to explore respondents attitudes and also, due to lack of time, small sample will be selected, instead of a large one, usually necessary for deductive approach.

Furthermore, Saunders et. al (2011) introduces three different types of studies, also exploit in Marketing Research, according to Kolb (2018). Exploratory study pursues new insights and conducts the researcher to explore aspects that seems unclear or bringing questions not evaluated by other researchers in the topic, corresponding with the research question of this research, based on gaps found in existent literature about Neuromarketing and GDPR. Additionally, Kolb (2018) assumes that exploratory study can be used to research attitude towards the object studied, in this case Neuromarketing, once that this research aims to identify the millennials living in Ireland attitudes towards it. Descriptive study, as deducted by its name, accurate describes the events or situations studied, which is not interesting for the purpose of this dissertation seeking a more critical analyses. As yet, the research findings generated by this research would not offer numbers and quantitative details as required by descriptive approach (Saunders and Lewis, 2011, p. 110; Kolb, 2018, p. 28). Finally, the Explanatory study offers an explanation for a particular aspect of a descriptive research, allowing the use of quantitative or qualititative data collection, scrutinizing the relationship between variables related to the situation or problem researched. Thus, Exploratory and Explanatory are suitable for this research, however, based on the arguments proposed by Hensel et. al (2017), cited in the literature review, where the author is also researching theory on ethical aspects of Neuromarketing gathering data with unexpected aspects, the researcher is following an Exploratory study (Hensel et al., 2017, p. 5).
3.4 Research Strategy

"In general terms, a strategy is a plan of action to achieve a goal” (Saunders, Lewis and Thornhill, 2015, p. 177). The research strategy, based on the philosophy and approaches selected by the researcher, is a plan about how to collect the data necessary to answer the research question (Saunders, Lewis and Thornhill, 2015, p. 177). The research strategies presented in Saunders et. al (2015,p.178) are: Experiment, Survey, Archial and Documentary Research, Case of Study, Ethnography, Action Research, Grounded Theory and Narrative Inquire. According to the authors, Experiment is mainly and exclusively selected for quantitative methods, excluding this strategy to this actual research, whereas the researcher must apply a qualitative design, considering the Interpretivism and Inductive approach previously discussed (Saunders et al, 2015, p.140), and moreover because it offers richer answers and information than a quantitative strategy, conceding the development of the theme with a “open-ended approach”, useful to answer exploratory questions (Hensel et al., 2017, p. 5). Case of study, Archival and Documentary, Action Research, Narrative inquiry, Ethnography and Grounded Theory are impractical for this research, due to the lack of time to closely and deeply observe the object studied for longer time. Therefore, the only left and more appropriate strategy for this research is Survey for a group discussion. Although it is usually associated with deductive research, it is popular in academic research and an alternative when qualitative data is needed but there are limitations to apply Ethnography or Grounded Theory for example.

3.5 Research Choice

"A qualitative research design may use a single data collection technique, such as semi-structured interviews, and corresponding qualitative analytical procedure. This is known as a mono method qualitative study” (Saunders, Lewis and Thornhill, 2015, p. 168). This example presented by Saunders et. al (2015) is equivalent with the research choice selected for this research. The research assumes that a mono method using only focus group is suitable to achieve the research objectives and explore stakeholders’ attitudes and following the affirmation of Oates and Alevizou (2018) that “focus group can stand alone in a research project” (Oates and Alevizou, 2018, p. 1).

3.6 Time Horizon

While designing the research, it is crucial to consider the availability of time to perform it. According to Saunders et. al (2015, p.200), the time horizon can be cross-sectional, when the research is a “snapshot” of a particular period or longitudinal, representing events in a longer given period. Therefore, because of the short-term give to complete this research, approximately 3 months,
a cross-sectional study, which often employs a survey strategy (Saunders, Lewis and Thornhill, 2015, p. 200).

3.7 Data Collection

Regarding to the importance of accuracy and validity for researches discussed in the literature review among Neuromarketing and Data Protection topics, the data collection in this research must be based on accurate and validated sources as well as the primary data generated must be accurate to be relevant for the marketing field.

3.7.1 Secondary Data Collection

According to Kolb (2018, p.93), secondary data must be the first accessed in a research process, evaluating external data available, which may be helpful to answer the research question and not generating any cost for the researcher. Saunders et. al (2015) explain that the secondary data may be raw or compiled data and also from the Big Data, cited in the literature review. Furthermore, the authors propose different types of secondary research, demonstrated in the figure 10. In this case, the researcher lean on multiple sources snapshot and also longitudinal, collecting from books, journals and governmental and European Union (GDPR) publications, mostly using the electronic database and the library catalogue offered by Dublin Business School.

![Figure 10- Types of secondary data](image)

Source: Saunders et. al (2015, p.319)
3.7.2 Qualitative Data Primary Collection

As mentioned in the previously sections and following the approaches and philosophy selected, this research will be conduct from a Qualitative perspective, also considering the evaluations discussed in the literature review, where the authors agree that qualitative are more efficient to study consumer behavior and attitudes. Moreover, Hensel et. al (2017, p.5) highlight that “a qualitative approach helps to focus on additional ethical aspects that should be considered in Neuromarketing studies and that entail a new ethical code for such studies”, what links the topic and literature review with methodology. “Focus groups are the ideal place to begin understanding what products mean to consumer in their deep psyches” (Goebert and Rosenthal, 2001, p. 3).

According to Saunders et. al (2015, p.168), qualitative research aim “to develop a conceptual framework and and theoretical contribution”. Schiffman et. al (2015, p.44) highlight consider Focus Group a well-established qualitative method to gain insights for consumer motivations and Goebert and Rosenthal (2001) assumes that this method is valuable to drive companies to the success. Furthermore, when applied personally, allows a closer “relationship between researcher and subject” (Yeung, 1995, p.318) and analysis of body language and expressions, assisting the interpretation of the answers collected.

The researcher performs two focus groups, aware of the necessity to offer a pleasant environment, in order to make respondents feel more comfortable, whereas it can influence their answers. Introducing a semi-structured discussion application and following a “discussion agenda” (Appendix 2), in order to assist the researcher, who has no experience on moderating a focus group (Oates and Alevizou, 2018, p. 18), the researcher moderator will encourage the free flow and ensure all participants contribute with their opinions. The questions proposed aim to enhance a dialogue between the participants and access their attitudes, answering the objectives and following the principles of the ABC Model of Attitudes (affect, cognition and behavioural aspects), demonstrated in the literature review. Schiffman and Wisenblit (2015, p.410) assume that applying a screener questionnaire to recruit the sample is important to ensure their part of the target of the research. Thus, the researcher applies a study screener questionnaire (Appendix 3) to identify what kind of millennials they are, according to the categories presented in the literature review, and also generates participants profiles, demonstrated in Appendix 4, to assist the data analyses process. Moreover, the questionnaire requires participants to match the archetypes for brand personalities proposed by Solomon et al. (2015, p.287) with their own personalities, considering the influence of personality traits in consumer’s attitudes (Sethna and Blythe, 2016, p. 306).

The group discussion, with approximately an hour, is video recorded, requiring the permission and authorization of the participants, to respect the code of ethics and assuming the responsibility with their personal data, which corresponds to the topic studied in this research (research considering data protection and GDPR regulations), seeking for a fair and transparent research. The recording is necessary to assist the further analysis and also permit the moderator to focus more in the flow of
the conversation than in taking notes, and the video will be helpful to analyse body language (Goebert and Rosenthal, 2001; Saunders, Lewis and Thornhill, 2015; Oates and Alevizou, 2018).

3.7.2.1 Population

"By 2025 they will have entered the work force and become a more important consumer group" (Kraljević and Filipović, 2017, p. 10). Agreeing with the previously literature review, the researcher is studying Millennials attitudes towards Neuromarketing, considering their importance in the actual market. Regarding to the complexity described in the literature review to define the actual age of millennials, this research will consider Millennials who are born between 1980 and 2000, based on three different authors analysed that agree with this period.

Considering the incapability of reach all people from the population, this research will select a representative non-probability sample, due to large population of millennials living in Ireland and considering the short time limit for this research. In order to define the sample faster and also create are more comfortable environment for the interviews in the Focus Group, the sample will be chose by Purposeful strategy, selecting relevant people to answer the research question. Oates and Alevizou (2018, p.27) assumes that a “face-to-face focus group involve inviting approximately four to twelve participants” and some authors affirms that more than twelve is complicated to control. The first focus group proposed approaches practitioners in the fields related to the topic, selecting five professionals from marketing, neuroscience, research and human resources to contrast their attitudes and explore the aspect presented in the literature review by Hensel et. al (2017, p.3) assuming that different stakeholders have different views, according to their direct interests. The second focus group approaches seven consumers living in Ireland from different nationalities, attempting to gain more accurate data about Irish consumers, considering the increasingly immigration rates in Ireland and the influence of subcultures in consumer behavior, also analysed in the literature review. Thus, the researcher believes the outcomes of contrasting the attitudes from these two different groups are more valuable.

3.7.2.2 Analysing Qualitative Data

Qualitative data means that the data collected can’t be quantify, non-standardise with intangible words. According to Saunders et al (2015), there are different "analytical techniques“ to analyse this broad data collected (Saunders et al, 2015, p.567), however this research applies DDA (Data Display and Analysis), based on the work of Miles et al (2014) and assumed by Saunders et al (2015) as an easy and effective way to generate, analyses and represent your data, moreover, while transcribing the answers, the researcher is already drawing the conclusions, helpful considering the short time to develop this project (Saunders et al, 2015, p.615).

DDA consist in three processes (Saunders et al, 2015, p.613):

1- **Data condensations**, transcribing the data recorded, tidying up, summarising and cleaning irrelevant data and analysing body language also as soon as possible to date after the focus
group, so that the researcher can have recent memory of the discussion. Using the interview questions as headings, terms from literature and some pronounced by the participants, and perhaps giving codenames for them, the transcription needs to be more accurate and objective as possible;

2- **Data display**, categorizing data through similarities and relationship. Compare and display the answers in a way where is possible to connect them, maybe using matrices and networks. Uniting and Codifying, using tables and Mind maps to facilitate the visualization and the analysis;

3- **Drawing and verifying conclusions**, being the interpretative narrative to come up with the findings achieved from this research.

Moreover, considering that is not easy to measure attitudes and answers may be superficial, the researcher applies some attitude measurement techniques as semantic differential, likert scales and thurstone scales to facilitate the analyses, calculating a overall average for all scales (Evans, Moutinho and van Raaij, 1996, p. 206; Schiffman and Wisenblit, 2015).

### 3.8 Research Ethics

Besides understanding the sample opinions, knowledge and belies about Neuromarketing and Data Protection, the aim of this dissertation is to carry out an ethical research, respecting human dignity and privacy, and take the responsibility on protecting the data collected. After so many scandals involving an irregular usage of data, as for example the Facebook polemic in 2012, researches and any method capable to collect personal data, are being assisted more often, especially in Europe with the GDPR regulation as presented in the literature review.

This research presents an ethical conduct, being responsible and attending the requirements established by legislation as EU Data Protection Act and GDPR, policies, procedures, codes and guidelines, as the one purposed by Dublin Business School and also approved by the Ethics Committees.

The participants are receiving a information sheet, clarifying the proposal of this research, the methods applied and how the data will be utilized and further proposals, and further, they are required to sign a consent form. Their personal data will be available for them if they want to access at any time, and they have the researcher contact for any further questions and claims. The participation will be completely voluntary, respecting their freedom and rights, and also any financial inducements are applied in this research, against any association with bride, what can harm the accuracy of their answers.

The researcher is also aware that the nature of focus group interview can cause embarrassment or stress, and for the reason, the behaviour and objectivity of the moderator is extremely important, additionally the sensibility to identify any possibility of physical or emotional harm to the interviews.
Therefore, caring over the primary data, the research ensures confidentiality, protection of participant anonymity and attention to all procedures for an ethical research. The accuracy of the data is also going to be assisted; not changing or excluding information gave from interviews (Saunders, Lewis and Thornhill, 2015, p. 220; Kolb, 2018, p. 15).

3.9 Limitations of Methodology

Besides of being enthusiastic to apply the research after design and develop all the methodology and strategies, it is important to consider the relevant limitations that may influence the achievement of the results expected. Observing this approach selected in the past items, it is possible to define the following limitations:

1- Difficult to generalise findings coming from an Interpretivism philosophy, considering that every person and situation is different,

2- Lack of knowledge to apply and conduct focus group research;

3- Complicate to manage and arrange time that all the participants will be available to attend the meeting;

4- Being a group discussion, some interviews can feel intimidate and also be influenced by the others, harming the accuracy of their answers;

5- Because it will be video recorded, it may inhibit the participants and can reduce reliability;

6- Possibility of technical problems of equipments during the Focus Group;

7- Delay of some participants can result in frustration for others;

8- Difficult to define a valuable sample and find a place.

9- Ethical issues, considering the high level of confidentiality related to Focus Group.

10- Lack of literature review on Neuromarketing in Ireland.

11- Usually literature reviewed recommend to apply a series of focus groups, however, due to lack of time and sources, the researcher performed only two sections.

However, the researcher carefully proposed a structured project, in order to be able to accomplish a relevant and excellent dissertation, being prepared for all the limitations and harms that can come across the development of the research.
CHAPTER 4: FINDINGS AND DISCUSSION

This section presents the research outcomes in a coherent flow, categorizing the findings into the research objectives explained in Chapter 1, based on the ABC Model of attitudes, considering that the researcher is seeking to define relevant elements of the participants’ attitudes towards Neuromarketing, GDPR and data protection.

The research consists on qualitative data, thus the findings are presented in a way that the discussion is already implicit on that, establishing important aspects to generate the further conclusions. Some sort of attitudes measurements introduced in the literature review in Chapter 2 is also being applied to establish more consistent theories, how highlighted in Chapter 3. In order to perform an ethical research, during the discussion, the participants are identified by their selected personality archetypes, respecting their privacy and confidentiality. Moreover, the focus group with practitioners of fields related to the topic will be identified as focus group 1 and the one with different ethnic subcultures will be identified as focus group 2.

4.1 Objective A- Affective Perspective

During the focus group discussions, the moderator introduced some questions to examine affective aspects considered by millennials towards Neuromarketing, data protection and GDPR, approaching emotions, feelings and evaluations, collecting the following data.

4.1.1 Evaluating Data Protection Regulation in Ireland

The researcher notices that only Irish participants answered this question. Especially Sage, due to his profession as a HR porter, being constantly aware of legislation and regulation changes. For them, data protection is really important and relevant in the country, and currently even more with the compliance of GDPR, ensuring that companies protect the information they access.

4.1.2 Feelings about techniques to collect personal data.

Reflecting on tools that collect personal data, Orphan Warrior has a favourable feeling about it, arguing that she does not mind sharing her information. However, she highlights the importance to give the customers the choice, respecting their privacy. CCTV generates some surprise from participants in both groups, assuming that have never thought about the data this cameras collect, and generating some uncomfortable feelings related to it, considering the lack of information about where this data recorded is stored. Apparently, millennials are comfortable about sharing personal data in social media, and Smartphones are perceived as pros and con, depending on the possibility to control what content is shared. Additionally, Sorcerer Magician points how uncomfortable he feels when Telecom companies, which he never had contact before, find out a way to access his email or phone number, and Addict Matriarch highlights that this strategy is quite common in Mexico, when
often sales person go till consumers house to offer products and services that they know match with their consumer behavior, what Angels points as ethically bad, gathering Destroyer Sage and Magician agreement.

4.1.3 Feelings related to digital fingerprints tracking.

Millennials are uncomfortable about the digital fingerprints tracking, what generates fears, how described by Troubadour and Magician. The feeling of being observed and how much information companies know about individuals, generate insecurity through millennials.

4.1.4 Critical evaluation about privacy policies.

Privacy policies are spotted by GDPR regulations, proving the importance to understand millennials feelings towards them. Addict Matriarch and Queen agree that privacy policies need improvement, with more clear and easy language, and also reduce their length, considering that, how added by Destroyer Sage, people do not want spend time reading them, and in the end they just agree without knowing what they are agreeing about. Orphan Warrior and Sage argue that idea, considering that it depends on the platform, so it is not possible generalise. However, Sage evaluate that companies make difficult to find the privacy bottom in their website, because it is not interesting for them that consumers access it, representing a lack of trust, notable in Irish population according to literature review analysed on Irish consumer. Furthermore, Shadow Witch Sage feels that GDPR is attempting to improve this policies, improving consumers’ understanding.

4.1.5 The most important GDPR principle.

The research introduced the 7 main principles of GDPR to the participants, in order to verify which one is the most valuable for millennials in Ireland. The most selected one was “Integrity and confidentially”, regarding to the importance of a transparent and responsible conduct from the companies. As observed in the previously literature review, millennials are more prone to judge ethical misconduct, characteristic implicit in this finding, confirming that companies can access their data, although they have to protect them. Sage contextualizes the idea of integrity and confidentially linking with trust, affirming that “even from business perspective, it should be built on trust”, what also is related to the Irish consumer lack of trust and need of companies they can keep a trustful relationship.

As extra insight, Angel affirms that he does not feel annoyed if companies send him ads about products he is interested in, like the experiment done by Sage, however, he expects transparency from the company.
4.1.6 Evaluation of Neuromarketing considering personal privacy.

According to Eser et. al (2011, p.860) some people believe that Neuromarketing invade consumers privacy and manipulate their decisions. In general, participants believe that personal privacy is not a big issue of Neuromarketing. They believe if the research object agrees to participate and is informed about the procedures, it would not become a problem for the company applying. Additionaly, Magician believes that Neuromarketing may be good for giving consumers what they want, and the companies will have the consumers.

4.1.7 Evaluating feelings related to Neuromarketing field.

Related to consider Neuromarketing an ethical or unethical approach, 58% of the participants evaluate the field as ethical, and this feedback come mostly from practitioners in the areas of marketing and neuroscience.

About Neuromarketing reliability, 58% of the participants are not sure about it, considering that the field is still in development and also from the point of view of fears about accessing people´s brain.

Reflecting if Neuromarketing practices are invasive or non-invasive, 50% of the responds feels it invasive, while the other 50% is distributed between not sure and non-invasive. Invasive answers were more apparent in the focus group 2, with consumers from different ethnics, representing that their culture must influence their concepts.

Considering that many authors are insecure about Neuromarketing effectiveness according to the literature analysed, 66% of the respondents believes on the effectiveness of Neuromarketing.

In resume, millennials evaluate Neuromarketing as apparently ethical and effective, however it may be invasive and the reliability is questionable, arguing with scholars evaluations.

4.1.8 Trust feelings about EGNM.

According to the literature review, NMSBA (Neuromarketing Science Business Association) established a code of ethics called EGNM, in order to create standards that neuromarketing companies should comply with. Considering the ethical doubts surrounding the field, the research wants to find out if it would be valuable and generate trust on millennials. However, the participants with already positive evaluation about Neuromarketing belive it is a good approach, informing individuals their rights, whereas participants as Angel, who has a unfavourable opinion about Neuromarketing, assumes that it would not change his beliefs and he would still with a lack of trust.

4.1.9 Evaluating the Neuromarketing application to design political campaigns.

Participants agree that using Neuromarketing for political campaign is extremely unethical, a part of Queen, who justify that depends in which way applied, would not be unethical. Also, most participants affirm that it is not a good strategy, because it would impact people´s trust in the candidate.
4.1.10 Projecting feelings about brain scan.

Only two participants have already done a brain scan, in their case fMRI. Both agree that it is really claustrophobic, noise and uncomfortable, likely described by Lindstrom (2009, p.18). The neuroscientist participant also points that usually takes a hour and a half to set up the room for fMRI, and for that reason, Sage believes that he would probably be bored, due to the long wait. The other participants, when asked to predict how they would feel, they said scared, mix feelings, weird.

4.1.11 Rating Neuromarketing Techniques.

Pursuing to evaluate millennials impressions on the techniques applied in Neuromarketing, this topic aims to identify which are the most empathetic ones to apply in Ireland market, between fMRI, EEG, MEG, Eye tracking and biometrics. According to the evaluations, the most trustful one is Eye tracking and the most reliable would be between Eye Tracking and EEG, considering that in the first focus group EEG was strongly emphasised by the neuroscientists as an excellent method, précised, efficient and very reliable, even thought the marketer Orphan Warrior believes that fMRI is more efficient. Eye tracking is also the most comfortable and convenient one, according to the participants and also in the literature review analysed, if compared with the claustrophobic fMRI. However, when take in board about valuable method, the ones based in brain scan, fMRI and EEG, are considered more valuables than the others.

Thus, how highlighted by Orphan Warrior and agreed by Troubadour, the right method will depends on the focus of the research and what is looking for. Every method has a different approach and functionality, however, rating this techniques allow the researcher to evaluate the feelings of consumers that are not aware of these techniques, to identify accessibility. Considering the less invasive method, eye tracking apparently is the favourite among the millennials studied.

Moreover, participants were tasked to rate subliminal message as a Neuromarketing strategy and it rates more as suspicious, unreliable and inconvenient, confirming fears around the topic, although it is considered effective.

4.2 Objective B- Behavioral Perspective

The research applies some questions in order to to identify millennials´ behavioural intentions related to Neuromarketing, data protection and GDPR, revealing Intentions to participate in a Neuromarketing research, values given to Neuromarketing techniques and possible applications as practitioners and attempts and intentions to protect personal data, generating the following data.

4.2.1 Attempts and Intentions to protect the data.

Participants of group 2 believes that impossible to protect personal data, once that the only way they can consider is not sharing anything online, hence leaving the social medias. Magician and
Angel came with a positive mindset about it, talking about hope and possibility to at least control the personal data.

Troubadour, as a neuroscientist researcher, assumes an incomprehension related to these personal data discussions, considering that in even research conducted, researchers need to ensure a ethical conduct, and exemplifies that "Neurodata" has to be stored during 10 years.

4.2.2 Behavioral intention considering misuse of personal data

In terms of data misuse and unethical conduct with their data, millennials assume that they would feel extremely disappointed and would response to it, perhaps suing the company through GDPR, creating bad reviews and sending email complaint. Moreover, they wouldn’t purchase products offered by the company anymore, and hence, the end of trust. Orphan Warrior suggests that it is a matter of trust and transparency.

4.2.3 Intention to invest in Neuromarketing Research.

In relation to consider possible investment in Neuromarketing research if they had a company, participants mostly answered that they would, however they would evaluate the scenario, size, scale, prize. Also the Destroyer Sage highlights that he wouldn’t apply Neuromarketing in its own, once that it is not totally accurate, gathering the other participants agreement and also likely some researchers introduced in the literature review. The participants point that people change opinion very often and many times the brain may reacts in different way that the actual behavior. Related to the sensory approach, Sorcerer Magician and Troubadour agreeing that this strategy effectiveness is contextual, as for example how justified by Troubadour, the leather smell would not be appealing for a vegetarian person.

4.2.4 Intention on participating in Neuromarketing Research.

As a consumer, some participants agree that they would like to participate in a Neuromarketing research for curiosity and others comment on the possibility of some prize or payment. However, the Magician and Angel affirm that they would not participate, once the idea of companies analysing your brain and thoughts are not comfortable for them.

4.3 Objective C- Cognitive Perspective

In order to investigate cognitive aspects related to Neuromarketing, data protection and GDPR, more specifically, to identify awareness about them to reveal beliefs and to explore perceptions, the research introduce cognitive questions, which reveal the following data.

4.3.1 Defining personal data

Personal data is a popular topic at the moment, according to evidences presented in literature review in Chapter 2. Hence, the millennials respondents have some sort of awareness about it. In
general, they describe different personal information; however, most of them agree that it is any kind of information related to them and capable to identify them as individuals. Moreover, the participants in focus group 1 one presented a deeper reflection, with a professional point of view, and adding as identifier medical information, genetics, habits and PDFI, standing for personal data file information, whereas the focus group 2 brought more general aspects as social media profiles, email, date of birth and etc.

Analysing what is personal data made the participant Troubadour in focus group 1, realize the amount of data he offer to the government “multiples time” without receiving a consent form about the usage of this data.

Thus, the millennials analysed are aware of personal data, however they do not seem worried about it. Observing their body language and tone of voice, the researcher assumes that it was the first time most of them reflect about their own data. Furthermore, this question can carry out some bias, considering that it was the opening questions and participants were still a bit embarrassed, as perceived in Orphan Warrior and Addict matriarch behavior.

4.3.2 Technology perceived as a threat to the personal data protection.

Millennials are concerned that technology increase treats to their personal data, strongly agreeing with this statement. Magician brings a strong insight that “you are controlled all the time, even if you do not want to”, exemplifying with a personal experience about when she moved from Spain to Ireland and her Spotify informed that she was in other country and additionally, Sorcerer Magician cites data mining about experiments already done, proving that Facebook, for example, is listening to you. For Idiot Queen, the location target is the biggest problem, considering that you always have to let apps access your location to use their features.

Furthermore, Troubadour emphasise the benefits of new and stronger regulations to control data, considering that online sources facilitates companies to access individuals information and enabling them to find them wherever they are.

4.3.3 Awareness related to digital fingerprints tracking.

Responds confirm they are aware that companies are tracking their digital fingerprints, and Addict Matriarch blames the own individuals for allowing companies to access their data in exchange to use new technologies to feel insert in the society. Destroyer Sage argues that individuals do not have the choice, considering that companies “secretly manipulate” and “sneaky” to collect their data, and Addict Matriarch complements that nowadays companies are pretending to give consumer the option, what she seems septic about.

Sage confirms his concern reporting that he had already done an experiment, talking for a week about the same product close to his Smartphone when the social media was open, and he realised that he started to receive ads related to this product, agreeing with Sorcerer Magician that social medias are listing to people from the Smartphone´s microphone and selling this information for
companies. Angel argues with a positive perception about it, affirming that companies need people’s personal data to understand their needs and desires and offer to them, which is the main concept of the Consumer Behavior study and marketing principles in general, approached in Chapter 2. Moreover, Sage points that it is a “catch 22” related to the exchange of personal data to access companies services.

4.3.4 Awareness and Perceptions about GDPR.

All the participants demonstrated awareness and agree that GDPR is a new regulation in order to protect data of EU residents. However, divergent perceptions and beliefs generated a discussion about its efficiency, depends also of the point of view as a customer against the professional who has to deal with the regulation implications. Queen affirms that before GDPR some things were in silent with no consent express, and Destroyer Sage and Orphan Warrior agree that at least, now companies are giving consumers the choice to decide about their own data usage. However, Addict Matriarch and Magician do not believe GDPR intentions to protect data, considering that companies still accessing people information even if they choose “no”. Contrary, Shadow Witch Sage is favourable to GDPR, believing that it is helpful to consumers that currently have the option to take some action if disagreeing with some misuse of data, charging companies “massive fines”, what is not appealing for companies, who can easily loose about a billion dollars, according to Sage, who works in HR of a big company in Ireland, and add that the company hired a new department focus only in GDPR, relying on the importance to be cautious with that. Orphan Warrior, with a marketer point of view, agrees with the company attitude, believing that complying with the regulation pays out to the company. Moreover, Troubadour female called GDPR a “nightmare” for her as a professional, because of the time and effort spend to ensure the company is following what, causing Destroyer Sage frustration, once that he believes “the practices should be already there because in the end of the day it is human rights”. This discussion from different points of view, prove the Troubadour’s theory that the participants of the focus group and all individuals in general have different standards for personal data, however agree that the regulation is advantageous for all of them.

Sage assumes that GDPR brings more transparency and it is generating a positive awareness about data protection, what people before would not considerate. Shadow Witch Sage believes that this issue was even more visible after Facebook scandals, described in Chapter 2.

Summarizing, millennials perceptions about GDPR are contrasted by the ones who agree with it benefits and the ones sceptical about its functionality. Troubadour assumes his fear about tracking information and for that reason, he sees GDPR as an improvement to protect his data.

4.3.5 Establishing barriers to protect the personal data from marketing.

Presenting a strong positioning against business endeavours, Magician states that “marketer should know what we allow them to know”. Again, millennials require the right of choice, and Idiot
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queen reflect on the importance of marketing to make sure they are not being “creepy”. According to the practitioner Orphan Warrior, marketing can access consumers’ data, ensuring “to input consent correctly”. Sage believes that the GDPR and data protection regulation are driving marketing to a difficult position, considering that they need that information for many strategies, as targeting.

4.3.6 Beliefs about conscious and unconscious consumption.

The participants agreed that conscious or unconscious consumption will depend on the product. The main example for conscious consumption is buying a car, where they believe a rational evaluation is fundamental, likely any product or service for higher prices or the ones that require quality. The unconscious consumption was related to “impulsive buying”, how described by Idiot Queen, related to products with low costs, which sometimes consumers has no reason for this buying process. Angel believes that this subject comes out to consumer behavior and the factors that influence their purchase. Thus, Orphan Warrior affirms that “subconscious place a bit part of everything in the decision making process”.

4.3.7 Awareness and perceptions about Neuromarketing.

Mostly, the participants were not aware about Neuromarketing, however their interpretations were quite close to the real meaning. Only Troubadour and Orphan Warrior from the focus group 1 knew about the topic. Regarding to the complexity to find a standard definition to Neuromarketing, introduced in the Chapter 2, they brought different views, where him as a neuroscientist, defined it as “a field of neuroscience interested in how decisions are made “ evaluating aspects as value and attention and neurotransmitters involved in the process of joy and happiness, whereas she just says that is a broad field where marketing use methods such a MRI and ECG to measure how certain areas in the brain react to advertising for example. Even though working with research, the Sorcerer Magician admits that heard about Neuromarketing in the news, related to sensory marketing, using smells for example, to increase purchase. The definitions were around studying the brain, understand how consumer behave, tools to reach customers without their perception, and relations with psychology. Magician presents a divergent behavior for the others, demonstrating a bit of fear about a future when companies will know your thoughts, similar to the issues determined in the literature review.

4.3.8 Evaluating the use of Neuromarketing for marketing strategies and consumer behavior.

Neuromarketing is perceived as an effective tool for some marketing strategies as packaging and advertisement evaluations. The participants agree with that and add that it can be helpful also to analyse sales.

Considering consumer behavior study, participants seems not sure about Neuromarketing effectiveness, claiming that people can change opinion, and Troubadour neuroscientist assume that if
I Neuromarketing research record only four or five consumers, it might not generate valuable and precise data about consumer behavior, however, he believes that Neuromarketing can definitely help consumer behavior, once that it can identify decision making process.

4.3.9 Neuromarketing transmitted by WOM and public awareness implications.

Participants were asked to play a role as a journalist and the other participants would have to transmit to each other the definition developed by the first one. In both groups the result was the same: the final message was completely different of the one proposed in the first place. The researcher aims to enhance an analogy with word-of-mouth and how people change the information received according to their own perceptions. Considering it, the participants were asked about the Neuromarketing information be available in the public sphere, as suggested by Ulman et. al (2015, p.1272), and participants believe that public should know about it, unless the awareness about it the process can influence the results of the research or jeopardize marketing strategies.

4.3.11 Interpreting ethical issues and capabilities related to Neuromarketing

Hensel et. al (2017, p.9) present some ethical issues involving Neuromarketing. Based on them, participants were asked to evaluate them, and they presented contrasting ideas related to the topics discussed among the literature review on Neuromarketing, which can influence the feasibility of Neuromarketing applications in Ireland. Mostly, they strongly agree that Neuromarketing should not perform among vulnerable groups, especially kids and mental diseases, because they are not capable to make their own decisions. Evaluating manipulation issues, participants mostly agree that Neuromarketing can manipulate consumers; likely marketing has been doing for so many years, however they are not so sure it can manipulate their behavior. Most of the participants also agree that Neuromarketing can find the “buy button”, however, people have different “buy buttons” and different contexts, expressing the complexity of consumers discussed during consumer behavior topic in the literature review.

4.3.12 Impressions and beliefs about using Neuromarketing in Ireland.

Participants of focus group 1 agree that companies established in Ireland can use Neuromarketing more often. Unlikely, in focus group 2, participants reveal that they do not believe in the potential of Irish market considering it limited for such a high investment in Neuromarketing techniques. Moreover, Destroyer sage affirms that Neuromarketing wouldn´t be applicable with older generations, who has difficult to trust.
Finally, to conclude the findings section, the following topics attempt to summarize participants’ attitudes towards the themes on board.

4.4 Attitudes towards Data Protection and GDPR.

In order to identify millennials’ attitudes towards data protection and GDPR, the research suggests a Thrustone scale, proposed by Evans et. al (1996, p.210) as an efficient method to measure consumers attitudes. The statements proposed (Appendix 2, question 7), perform in the way that the score is +2 for the first statement and -2 to the last one. Thus, the final scored is 14, considering that statement one was the most selected by the participants, representing that millennials care about data protection and believe GDPR is an important regulation, followed by the statement that assumes GDPR is not good for business. However, Idiot Queen strongly believe that consumers do not care about their personal data, arguing with Shadow Witch Sage who believes that applying GDPR can be valuable for companies, once that then can gather consumer trust and loyalty.

4.5 Attitudes towards Neuromarketing and Traditional Market Research.

According to Ulmar et. al (2015, p.1281) “neuromarketing has emerged as an applied field which may transform traditional marketing research”. Participants agree that Neuromarketing is a powerful tool for consumer research, collecting insights from the subconscious. However, they also believe it is not accurate and for that reason, it would be interesting to combine Neuromarketing methods with traditional method researches.
CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

5.0- Introduction

Limitations and issues defined during the literature review process expressed a need to evaluate Neuromarketing feasibility in Ireland, considering it a growing country, whereas GDPR regulations started to be applicable in the whole European Union during this year, becoming a considerable topic for every research methods, especially for Neuromarketing, surrounding of ethical issues, doubts and scepticism. Considering millennials an important target to currently observe, the research aims to evaluate Neuromarketing feasibility among their attitudes towards it, once that attitudes influence behavior. Thus, this research established three aims in Chapter one, which will be discussed as follow.

5.1- Evaluate the attitudes of millennials living in Ireland to data protection.

The primary research combined with secondary data proves that people are becoming more aware about data protection, especially after the scandals involving Facebook. According to the findings of primary research, it is possible to identify that millennials require the “right of choice”. Once they are advised about the purpose of their data collected and are empower to agree or not with that, they do not mind sharing their personal data. Moreover, millennials agree that to receive better offers of products and services, companies need to access their data, attitudes, desires and needs.

Furthermore, some participants on the primary research affirms that people do not care about their data available online, because they need to offer the data to access companies products and services.

5.2- Identify prevailing attitudes and concerns among millennials to GDPR regulations.

While evaluating millennials attitudes towards data protection and GDPR, the researcher noticed the concept of “trust” appear many times, confirming that Irish consumers present a lack of trust, and moreover, the importance of companies to establish a trustful relationship with their customers. Complying with GDPR regulations and Data protection can motivate consumers to have a favourable attitude towards the brand. Although millennials assume the importance of GDPR and data protection in a currently scenario that companies are “watching” consumers 24/7, the primary research have found some scepticism related to GDPR, once they don´t believe in the effectiveness of
that because companies still have access to all their information.

5.3- Evaluate the attitudes of millennials living in Ireland to Neuromarketing with special consideration to GDPR.

The first research evaluating practitioners of areas related to the themes in board, results in a favourable attitude towards Neuromarketing practices in order to improve marketing strategies and consumer behavior research in Ireland. Contrary, the research evaluating consumers living in Ireland from different ethnics groups, results in a reflection about Neuromarketing in Ireland, once they consider the Irish market limited to invest high costs in Neuromarketing.

Furthermore, due to the complexity of the consumers and considerations that people constantly change opinions, Neuromarketing is not consider accurate, expressing the need of development in the field.

Thus, it is feasible to apply Neuromarketing in Ireland among millennials, however, considerations about the investment and outcomes are fundamental.

5.4- Recommendations for further research

The research proposed addresses some gaps in literature review. However, as a qualitative exploratory, this research seeks to find some insights that further research need to explore.

5.4.1- Academic Research

During the application of the focus groups, the researcher identifies an issue about the value of GDPR for consumers. Considering this a new topic, more literature needs to explore consumers perceptions and attitudes towards GDPR as its performance.

Furthermore, scholars must study the other generations in Ireland to evaluate more truly the applicability of the field in Ireland. Also, a research based on scientific proof of its accuracy would be essential to increase the trust in the area.

5.5- Marketing Practitioners

Considering the valuable information that Neuromarketing can offer to marketing strategies and consumer behavior, marketers should consider explore this kind of research, combined with traditional researchers, to explore the practical use of the field, bringing consistent insights based on real case of studi
CHAPTER 6: SELF-REFLECTIVE OF LEARNING

6.1 Introduction

"Everything you know, you have learned. Everything you can do you have learned. Everything you believe- your attitudes, standards and values- you have learned” – Honey, 2003, p.1.

Honey (2003) and Kolb (1984) reflect that the learning process is essential and constantly in humans lives. Moreover, it is about adaptability and knowledge, main factor to survive in this world. Consumer behavior study, previously introduced in Chapter 2, assumes that learning process is important to understand decision making process (Solomon et al., 2016, p. 249). Solomon et al (2016) assumes that “behavioural learning apply to many consumer phenomena”, being helpful for many marketing strategies. Likely, neuroscience examines the areas of the brain responsible for stages in learning process, offering to Neuromarketing another relevant perspective to study. Considering the importance of learning, a reflective learning after projects similar to this dissertation, is required, allowing researches to evaluate their acquired knowledge.

According to Saunders (2015, p. 13), researchers must understand the importance of their own evaluation and interpretation on the role they are planning during the process of the research, known as "reflexivity", observing how their actions influence in the research outcomes. Additionally, Cottrell (2015, p.218) assumes that students also are expected to undertake this challenging process, reflecting their performance and consequently, reflect and how they can improve. So, in this chapter, the researcher first discusses learning theories and styles, following by her own analyses on her learning style and the transferable skills outcomes after this dissertation and the whole Msc course. In order to enhance the learning process during this research, the conclusion presents final considerations.

6.2 Learning style theories

Learning is an fundamental process in every stage and moment of an individual’s life (Honey and Mumford, 1992, p. 1). It is a natural event, and for that reason Honey (2002, p.2) highlights that people can learn on "automatic pilot of unconscious subliminal level", whereas Kolb (1984, p.3) states that people "learn from their experience”. Indeed, it is a "life-long process”, "never-ending spiral", representing individuals adaptation to the world conditions, and affected by personality, perceptions, motivations and attitudes (Kolb, 1984, p. 31; Honey and Mumford, 1992, p. 3). Kolb (1984, p.38) defines learning as “a process whereby knowledge is created through the transformation of experience”.

Inspired by different models of learning as for example the one proposed by John Dewey, Kolb (1984, p.25) designed the theory of experiential learning cycle, expressing the belief that
“learning is a continuous process grounded in experience” (Kolb, 1984, p. 27) and motivating the reflection about experiential learning (Cottrell, 2015, p. 233). According to Kolb (1984, p.4), he expected to offer a framework to perform “critical linkages among education, work, and personal development” (Kolb, 1984, p. 4). The process of experiential learning consists of the transactions between the four stage cycle: concrete experience, the reflective observation, abstract conceptualisation and active experimentation (Kolb, 1984, p. 4; Cottrell, 2015, p. 233; Saunders, Lewis and Thornhill, 2015, p. 13). Saunders et. al (2015, p.13) assumes that the cycle means that the actual learning only happen, when the cycle is completed. Cottrell (2015, p.233) explains that there are other options of models focusing on relevant aspects of learning procession, as “awareness of initial responses” and “the impact of emotions on behavior”, which are also elements of attitudes, how explained in the chapter 2.

Honey and Mumford (1992, p.4) adapt Kolb’s theory, and according to them, it has gained more validity with users, whereas they approach direct questions about how people learn. Furthermore, they explain that learn may be taught or experienced, sometimes unconsciously, and observe that learning is more familiar and straightforward than the experiential learning (Honey and Mumford, 1992, p. 2).

Concerned that learners are different from each other with different needs (Honey and Mumford, 1992, p. 1), Honey and Mumford (1992) established a set of learning styles to categorize and understand different learning preferences and address communication and activities in a more appropriated approach, which, according to Cottrell (2015, p.233), are paralleled with the four stages of Kolb (1984), how demonstrated in Figure 11. The four learning styles are:

- **Activists**: seeking new experiences, doing personas, open minded and are able to make instantaneous decisions,
- **Reflector**: enjoying observe situations and habits from different perspectives, constantly collecting data before define any conclusion, tending to postpone to get better solutions, and for that reason, do not like time pressure. Also are able to listen to the others.
- **Theorists**: logical thinking, enjoy coherent theories, analysis and synthesises, feeling uncomfortable with lateral thinking and subjective approaches.
- **Pragmatists**: like experimenting theories and practices capable to attract them, do not like open-ended discussion and take practical decisions to solve issues.

Through the learning style questionnaire designed by Honey and Mumford (1992), the researcher identify her reflector style, which is equivalent with the methodological approach, philosophy and choices adopted in this research, once that Axiology, Subjectivism and Qualitative data require a reflecting performance, with deep observation. However, to achieve the goals of this dissertation, the researcher had to apply theorists style in order to produce a more academic approach.
6.2.1 The Reflector Style

According to Honey and Mumford (1992, p.22), “reflectors learn better from activities they are allowed or encouraged to watch/think/ ponder over activities”, making them willing to undertake some painstaking research, however they do not like deadlines and short time available. These traits of the reflector style were notable for the researcher during this dissertation, enjoying the project, however, dealing with time management issues and tight deadlines and research limitations. Moreover, the detailed evaluations and huge quantify of sources accessed are also related to aspects of this group that the researcher identify in herself. As reflectors, the researcher enjoys meetings and discussions and exchanging ideas with others, which explains the desire to apply a focus group method, also for being a good listener.

6.3 Transferable Skills Developed

“The extent to which you add value to your learning by transferring learning from one situation to other situations” (Honey, 2003, p.13). The following topics expose the skill development of the researcher consequent of the learning process of this dissertation and Msc course in Dublin Business School.

6.3.1 Research Skills

During the master course and especially the dissertation process, the researcher had the opportunity to improve her research skills, which was in the “infancy stage”, coming from a level 8 standards. Firstly, the development of critical analyses, contrasting and combining different theories, resulting in pleasant conclusions and becoming an enjoyable activity, which may be explained by the
reflector style of the researcher. Moreover, synthesise is a challenge and relevant issue for the researcher, who spend precious time trying to do. Hence, the researcher realise the need to be more objective when researching secondary data and improve the time management.

The dissertation introduced new methodologies concepts to the researcher. For the first time, the researcher conducts a focus group, which was a coherent decision with her desire to challenge herself in this interesting and complex research strategy, and also matching with her reflector style, considering Honey and Mumford (1992) assumption that the reflectors are efficient to stand back and observe and listen a group for example. However, during the data analyses, the researcher evaluates her performance as a moderator, finding aspects that must be improved in next researches based on this method. For example, the researcher needs to control better long speeches and to spot situations, when she could have pulled more information.

Finally, the researcher gains knowledge about the whole process of learning, how to gather valuable information, time management control, how to communicate with participants for primary research, the importance of ethical conduct and the lasting reflective learning about herself.

6.3.2 Marketing Skills

The whole course in Msc in Marketing offered substantial knowledge for the researcher, improving her as a professional. The insights transferred from the lecturers drive the researcher to evaluate previous concepts and reformulating some of them.

Indeed, this dissertation was an incredible opportunity for the researcher to do an in-depth study about Neuromarketing, subject which she has extremely interesting because of its methods, once that the researcher has considerable curiosity about human brain and its functions. This project even afford the researcher to participate in a eye-tracking experiment in Trinity College, in order to have a closer understanding about it and build her attitudes towards it before studying the other millennials´ perceptions. Besides Neuromarketing, this research provide the researcher to identify empathy to Consumer Behavior studies and its theory, which may be an insight of future professional career, once that as a reflector, she enjoys evaluating individuals attitudes, personality, behavior and etc.

The awareness and knowledge of GDPR and its implications may be one of the most important outcomes of this dissertation, which will strongly impact the marketer career of the research in Ireland.

6.3.3 Language Skills

The decision of doing the masters course in a foreign language was a huge challenge for the researcher, requiring extra effort to express ideas naturally in an idiom that she doesn´t dominate. However, it is also extremely valuable for the communication skills of the researcher, providing an improvement related to vocabulary, terms, marketing theories nominations and grammar. The assignments, lectures, projects and oral presentations proposed during the course lead the researcher
knowledge in English in a higher standard, which will be relevant for further written, reading and oral activities in the work place.

6.3.4 Self- Reflective Skills

During the first semester of the Msc course, the researcher completed a self-awareness study, leading her to a critical assessment and conducting her to articulate personal and professional skills. This reflective learning endorses some findings of these tests, revealing developments and issues. According to Cottrell (2015, p.25), “we are more likely to succeed in our endeavours when we know what impacts on our performance”.

6.3.5 Self- Management Skills

Emotional intelligence is the ability of being on control of unpleasant situations in the work place and in our daily life, expressing and using the own emotions and recognising how they influence the ambient and others. The researcher had to deal with some issues during the dissertation process, for example a work injury in the right hand, which jeopardizes her performance in the first month. However, the researcher positive attitude and mindset motivated her to pursue the conclusion of this meaningful project, becoming her a stronger person and so develop personal skills.

Considering this dissertation the most important stage of the course, the researcher had to deal with stress and own pressure, due to deadlines. Through a managing stress exercise applied during the course, the researcher found out that the stress is based on time and anticipatory, follow by encounters and situational. Proactive, enactive and reactive are the performances the researcher must assume to deal with the stress, due to its implications in the researcher health and performance.

6.4 Conclusion of Learning Process

Reflective learning is important to improve personal and professional behavior, and researches and lecturers are required to practice it (Honey, 2003, p. 1). Considering the researcher aspiration to teach in the future, this reflective learning was valuable to understand important concepts about herself and others.

The learning curve of the researcher during the masters course started in unconscious incompetence, due to initial issues and fears about the first foreign course in other language, and after an year, she is closer to achieve the unconscious competence, due to the need to exploit faster and more effectives research methods.

Thus, through the Msc course proposed by Dublin Business school, the researcher developed some skills as critical analyses, working in group, accepting feedback, becoming more confident to do
oral presentations in English, and finally the self-reflective analysis, which are valuables to succeed in her professional future in the marketing field.


Appendix 1: Trust Barometer Ranking by Edelman Trust Barometer Global Report

Global Trust Index remains at distruster level

20 of 28 markets are distrusters, up 1 from 2017

Source: 2018 Edelman Trust Barometer. The Trust Index is an average of a market’s trust in the institutions of government, business, media and NGOs. General population, 28-market global total.
Appendix 2: Focus Group Discussion Agenda

Discussion Agenda- Focus Group
Neuromarketing in Ireland

Introduction

Good evening everyone. First of all, I would like to say thank you very much for coming today, I really appreciate you are offering your time and ideas to help me out. My name is Andrezza and I am a master student in Dublin Business School, currently working in my thesis about the feasibility of Neuromarketing techniques in Ireland, considering the data protection and GDPR regulations. This study is important to conclude my Msc in Marketing, as requested by the Dublin Business School. You were selected because you’re part of millennial generation living in Ireland, and this generation is playing an important role in the actual marketing field, hence the need to understand these people’s attitudes. We will spend the next hour discussing your feelings, beliefs and perceptions about those quite new and contrasting topics, especially because Neuromarketing field has been surrounding by ethical discussions. This study aims to point your attitude towards Neuromarketing and data protection in order to verify the feasibility of Neuromarketing applications in Ireland. A copy of the report will be available to you, if you would like. Please keep in mind that no specific knowledge is required, and there is no right answer, people has different opinions and perceptions, so feel free to share your opinions, which are highly valued, but most importantly enjoy the discussion. Please, at this point we can all switch off/put on silent mode our phones. If you need to answer an urgent call, please just step out of the run and come back when you finished. We have some snacks on the table, and coffee and juice, please feel free to get it and help yourself. I would like to introduce you Michal, he will be helping me to record this meeting, crucial to help me in the analyses, because I won’t be able to take notes of everything you say, I can lose something important. So I would like to know if you mind video recorded, no problem at all if you don’t want, we do just audio record. Please, thumbs up for who agree with video (distribute the Information sheet and give few minutes to read). I also would like to introduce Dr. Ronda, psychology lecturer in DBS, that is going to be helping me to take notes and analyse the answers. My job is to moderate the conversation and ensure we will cover all the topics in time. So along the way, I might interrupt your talk to finish in time. I will introduce few questions, but feel free to introduce your opinions along the table for all participants. Now, I would like you to introduce yourself saying your name and answering the question:

Opening Question: What do you consider your personal data?

Discussion questions

1) What do you know about data protection in Ireland? Do you consider important to have these regulations?
2) How do you protect your personal data?

3) Thumbs up please: Who doesn´t mind to offer your personal data through:
   - Social Media
   - CCTV
   - Smartphone (GPS location)
   - Cookies

4) Do you believe technology is increasing the treats for our personal data? How?

5) Are you concerned that companies are tracking you by your digital fingerprints and even from your Smartphone? How do you feel about it?

6) Have you heard about GDPR? What do you know about it? (SHOW VIDEO THAT EXPLAINS)

7) Please, select the following statement that most accurately reflects your attitude:
   - I care about my data protection and I believe GDPR is an important regulation.
   - I care about my data protection but I don´t believe GDPR is good for business.
   - I don´t care about data protection but I believe GDPR is a good regulation to protect people against harmful marketing purposes.
   - I don´t care about my data protection and I am annoyed with the constantly notifications of privacy policies.

8) What do you think about the privacy policies? Are they easy to understand? How could the companies improve it?

9) GDPR has 7 general principles. Which of them do you consider most important? Why?
   - Lawfulness, fairness and transparency—Personal data shall be processed lawfully, fairly and in a transparent manner in relation to the data subject.
   - Purpose limitation—Personal data shall be collected for specified, explicit and legitimate purposes and not further processed in a manner that is incompatible with those purposes.
   - Data minimization—Personal data shall be adequate, relevant and limited to what is necessary in relation to the purposes for which they are processed.
   - Accuracy—Personal data shall be accurate and, where necessary, kept up to date; every reasonable step must be taken to ensure that personal data that are inaccurate, having regard to the purposes for which they are processed, are erased or rectified without delay.
Neuromarketing in Ireland: an investigation on Millennials attitudes towards Neuromarketing in the Era of GDPR

- Storage limitation—Personal data shall be kept in a form that permits identification of data subjects for no longer than is necessary for the purposes for which the personal data are processed.
- Integrity and confidentiality—Personal data shall be processed in a manner that ensures appropriate security of the personal data, including protection against unauthorized or unlawful processing and against accidental loss, destruction or damage, using appropriate technical or organizational measures.
- Accountability—The controller shall be responsible for, and be able to demonstrate compliance with, the GDPR.

10) How would you react if you know a company sells your data without your permission?
11) What marketers can know and what they shouldn’t know about us, consumers?
12) Do you believe you are conscious or unconscious when deciding what to buy? Can you give some examples?
13) Have your heard about Neuromarketing? What do you know about it? (SHOW VIDEO AFTER EXPLAINING WHAT IT IS)
14) Regarding to the data protection, how do you evaluate Neuromarketing in terms of privacy and confidentiality? (These techniques can even find pathology in the brain tested)
15) A researcher states that Neuromarketing is a “Golden opportunity to market the products directly to the subconscious”. For which marketing strategies do you think Neuromarketing can be helpful?
16) For you, why do you think is important to understand consumer behavior? Do you believe Neuromarketing can help with that?
17) If you have a company, would you invest in Neuromarketing research, even knowing that it’s more expensive than traditional methods?
18) As a consumer, would you participate in a Neuromarketing research and let the companies access your brain data? Why?
19) Please, using the scale demonstrated in the board, how do you evaluate Neuromarketing?

![Scale](Evalution-Scale.png)

- Ethical ------------------------------------------ Unethical
- Reliable ---------------------------------------- Unreliable
- Invasive---------------------------------------- Non Invasive
- Effective ---------------------------------------- Inefficient

20) If you were a journalist in a mass communication channel, how would you briefly define Neuromarketing in an easy way to understand? Please, write it down in a paper and give to the person beside you (Ask this participant in the table to say to the person beside privately what she understood and passed it through until the last person, who is going to say which information arrived to her.

21) Do you believe people need to be aware of NM methods and implications? Why?
22) NMSBA (Neuromarketing Science and Business Association), institution that control Neuromarketing practices around the world, proposed a code of ethics called EGNM (show the main points). Do you think can it increase thrust in Neuromarketing? Please, elaborate.

23) In 2012, Mexican president Enrique Peña Neto used a number o Neuromarketing experiments to develop his message. Do you believe is it a good strategy? Why?

24) Please, can you tell me your agreement scale (from to strongly agree to disagree) in the following statements:

- Neuromarketing shouldn´t study vulnerable groups (kids, people with mental diseases, refugees).
- Neuromarketing will be able to manipulate consumer behavior
- Neuromarketing can be harmful for society, promoting unhealthy products.
- In the future, Neuromarketing will enable corporations to influence consumer behavior.
- Neuromarketing can find a buy button in consumer´s mind.
- Neuromarketing can create a super heroin food.
- Neuromarketing is a portal to consumer mind.
- Neuromarketing can´t decide what I am buying. It can persuade but not obligate.

25) Has somebody in the room already done a brain scan? How did you feel? If not, how do you believe you would feel? (Show some emotions to help then with their answer- claustrophobic, noise, tedious).

26) Please, evaluate the following techniques using the following scale (show pictures and examples for each):

- fMRI (show the picture)
- ECG (show picture)
- Eye tracking (show picture)
- Biometrics
- MEG
- Subliminal message

<table>
<thead>
<tr>
<th>Trustful</th>
<th>Suspicious</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reliable</td>
<td>Unrealiable</td>
</tr>
<tr>
<td>Comfortable</td>
<td>Uncomfortable</td>
</tr>
<tr>
<td>Valuable</td>
<td>Poor value</td>
</tr>
</tbody>
</table>
Convenient------------------------------------Inconvenient

27) After this reflexion, do you believe Neuromarketing can be used more often for companies established in Ireland, once they are informed of all the procedures and purposes of this research? Why?
28) Do you think that Neuromarketing is more efficient than traditional research, even though it isn’t peer reviewed and sometimes scripted with no scientific validity? Why?
Appendix 3: Recruitment Questionnaire for Focus Group

Recruitment Questionnaire - Study Screener

1. Age
   - 18-24
   - 25-29
   - 30-35
   - 35-40

2. Gender
   - Male
   - Female
   - Other

3. Occupation
   _______________________________________________________

4. Marital status (please indicate number of children if applicable)
   - Single
   - Married
   - Divorced

   Number of children:

5. Education Level
   - High School
   - Professional Degree
   - Bachelor’s Degree
   - Master’s Degree
   - Doctorate Degree

6. What is your nationality?
   _______________________________________________________

7. Do you support any social case, philanthropy?
   - Yes
   - No

8. Would you buy an eco-friendly product even if it’s more expensive than the same original product?
   - Yes
   - No

9. Do you rather communicate with people:
   - Personally
   - Online
10. How often do you use social media?
   - All day
   - 3 times per day
   - Once per day
   - Not use everyday

11. Please, write down some of your favourite brands.

12. What do you do more often in social media?
   - Post content
   - Watch other peoples post but don´t react.
   - Comment and share others posts

13. Please, chose 2 items that would better describe you in your time off:
   - Travelling
   - Use of Technology
   - Different Activities
   - Relaxing at home with family
   - Social Media

14. For reading, do you prefer:
   - Book
   - Online sources
15. Please, in the picture below, select the archetype that better describes you, and write your name beside it:
### Appendix 4: Participants Profile - Data Analyses

<table>
<thead>
<tr>
<th>Name</th>
<th>Age</th>
<th>Gender</th>
<th>Occupation</th>
<th>Nationality</th>
<th>Millennial Segments</th>
<th>Personality Archetype</th>
<th>Personality traits by researcher observations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SAGE HRG1</strong></td>
<td>30-35</td>
<td>Male</td>
<td>HR Business Porter</td>
<td>Irish</td>
<td>Old-School Millennials online presence.</td>
<td>Sage Peace: wise, visionary, mentoring.</td>
<td>Talkative, strong beliefs, value oriented.</td>
</tr>
<tr>
<td><strong>TROUBADOR NG1</strong></td>
<td>25-29</td>
<td>Male</td>
<td>Neuroscientist</td>
<td>Belgian</td>
<td>Clean and Green Millennial lifestyle</td>
<td>Troubadour Joy: joyous, free-spirited, and agile.</td>
<td>Reserved, science oriented beliefs.</td>
</tr>
<tr>
<td><strong>ORPHAN WARRIOR MG1</strong></td>
<td>25-29</td>
<td>Female</td>
<td>Marketer</td>
<td>German</td>
<td>Millennial Mom lifestyle</td>
<td>Orphan: abandoned, vulnerable, frightened. Warrior: ego, confident, powerful, heroic.</td>
<td>Honest, reflective, reserved, optimistic.</td>
</tr>
</tbody>
</table>
Neuromarketing in Ireland: an investigation on Millennials attitudes towards Neuromarketing in the Era of GDPR

<table>
<thead>
<tr>
<th>QUEEN MG1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age:</strong> 30-35</td>
</tr>
<tr>
<td><strong>Gender:</strong> Female</td>
</tr>
<tr>
<td><strong>Occupation:</strong> Digital Advertising</td>
</tr>
<tr>
<td><strong>Nationality:</strong> Italian</td>
</tr>
<tr>
<td><strong>Millennial Segments:</strong> Millennial Mom lifestyle Old School Millennial online presence.</td>
</tr>
<tr>
<td><strong>Personality Archetype:</strong> Queen Being: relaxed, comforting, sociable.</td>
</tr>
<tr>
<td><strong>Personality traits by researcher observations:</strong> Introspective, lazy back, kind.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TROUBADOR CAG2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age:</strong> 25-29</td>
</tr>
<tr>
<td><strong>Gender:</strong> Female</td>
</tr>
<tr>
<td><strong>Occupation:</strong> Digital Marketer</td>
</tr>
<tr>
<td><strong>Nationality:</strong> Chinese (Asia)</td>
</tr>
<tr>
<td><strong>Millennial Segments:</strong> Hip-ennials lifestyle and online presence.</td>
</tr>
<tr>
<td><strong>Personality Archetype:</strong> Troubadour Joy: joyous, free-spirited, and agile.</td>
</tr>
<tr>
<td><strong>Personality traits by researcher observations:</strong> Easily distracted, dynamic, energetic.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ADDICT Matriarch MAG2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age:</strong> 35-40</td>
</tr>
<tr>
<td><strong>Gender:</strong> Female</td>
</tr>
<tr>
<td><strong>Occupation:</strong> Graphic Designer</td>
</tr>
<tr>
<td><strong>Nationality:</strong> Mexican</td>
</tr>
<tr>
<td><strong>Millennial Segments:</strong> Clean and Green Millennial lifestyle and online presence.</td>
</tr>
<tr>
<td><strong>Personality Archetype:</strong> Addict: wounded, jealous, tragic. Matriarch Order: organized, systematic, and controlled.</td>
</tr>
<tr>
<td><strong>Personality traits by researcher observations:</strong> Extroverted and rational oriented.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DESTROYER SAGE IEG2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age:</strong> 25-29</td>
</tr>
<tr>
<td><strong>Gender:</strong> Male</td>
</tr>
<tr>
<td><strong>Occupation:</strong> Front Office Manager (Hospitality)</td>
</tr>
<tr>
<td><strong>Nationality:</strong> Irish</td>
</tr>
<tr>
<td><strong>Millennial Segments:</strong> Old School Millennial lifestyle. Hip-ennials online presence.</td>
</tr>
<tr>
<td><strong>Personality Archetype:</strong> Sage Peace: wise, visionary, mentoring. Destroyer: angry, aggressive, and destructive.</td>
</tr>
<tr>
<td><strong>Personality traits by researcher observations:</strong> Honest, focus, lazy back and reserved.</td>
</tr>
<tr>
<td>MAGICIAN SEG2</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td><strong>Age:</strong></td>
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<tr>
<td><strong>Gender:</strong></td>
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<tr>
<td><strong>Occupation:</strong></td>
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<tr>
<td><strong>Nationality:</strong></td>
</tr>
<tr>
<td><strong>Millennial Segments:</strong></td>
</tr>
<tr>
<td><strong>Personality Archetype:</strong></td>
</tr>
<tr>
<td><strong>Personality traits by researcher observations:</strong></td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>ANGEL NAG2</th>
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<tbody>
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<td><strong>Age:</strong></td>
<td>25-29</td>
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<td><strong>Gender:</strong></td>
<td>Male</td>
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<td><strong>Occupation:</strong></td>
<td>Student</td>
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<tr>
<td><strong>Nationality:</strong></td>
<td>Nigerian</td>
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<tr>
<td><strong>Millennial Segments:</strong></td>
<td>Millennial Mom and Gadget guru.</td>
</tr>
<tr>
<td><strong>Personality Archetype:</strong></td>
<td>Angel Dreams: optimistic, innocent, pure.</td>
</tr>
<tr>
<td><strong>Personality traits by researcher observations:</strong></td>
<td>Introspective and conservative.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IDIOT QUEEN BAG2</th>
<th></th>
</tr>
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<tbody>
<tr>
<td><strong>Age:</strong></td>
<td>30-35</td>
</tr>
<tr>
<td><strong>Gender:</strong></td>
<td>Female</td>
</tr>
<tr>
<td><strong>Occupation:</strong></td>
<td>Student</td>
</tr>
<tr>
<td><strong>Nationality:</strong></td>
<td>Brazilian</td>
</tr>
<tr>
<td><strong>Millennial Segments:</strong></td>
<td>Millennial Mom online presence. Old School Millennial lifestyle.</td>
</tr>
<tr>
<td><strong>Personality Archetype:</strong></td>
<td>Queen Being: relaxed, comforting, sociable. Idiot: silly, dim-witted, goofy.</td>
</tr>
<tr>
<td><strong>Personality traits by researcher observations:</strong></td>
<td>Communicative, focus.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SHADOW WITCH SAGE IAG2</th>
<th></th>
</tr>
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<tbody>
<tr>
<td><strong>Age:</strong></td>
<td>25-29</td>
</tr>
<tr>
<td><strong>Gender:</strong></td>
<td>Male</td>
</tr>
<tr>
<td><strong>Occupation:</strong></td>
<td>Student</td>
</tr>
<tr>
<td><strong>Nationality:</strong></td>
<td>Indian</td>
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<tr>
<td><strong>Millennial Segments:</strong></td>
<td>Millennial Mom lifestyle Clean and Green lifestyle and online presence.</td>
</tr>
<tr>
<td><strong>Personality Archetype:</strong></td>
<td>Sage Peace: wise, visionary, mentoring. Shadow witch: cold, vain, selfish.</td>
</tr>
<tr>
<td><strong>Personality traits by researcher observations:</strong></td>
<td>Helpful, relaxed and focus.</td>
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