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**The added value of neuromarketing in Finland**

Master's thesis 2021

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## **ABSTRACT**

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Neuromarketing is a growing field of science that has proven to be a useful tool to support traditional marketing methods. However, there are problem areas in neuromarketing that can prove to be value-reducing factors. Current research has done little to address the added value that can be achieved in Finland through neuromarketing. This study thus examines additional insights gained through neuromarketing in support of normal marketing activities and how a number of ethical issues may undermine the benefits of neuromarketing. In addition, the research aims to clarify and explain neuromarketing in the Finnish context and to consider future trends. The empirical research was carried out as a semi-structured interview by interviewing two Finnish experts who have work history with neuromarketing. According to the results of this study, neuromarketing in Finland is still quite unknown and underutilized, but by utilizing neuromarketing, companies can gain added value to marketing by taking advantage of the human mind as a whole – subconscious, as well as conscious thoughts. In some cases, ethical issues reduce the added value of neuromarketing and thus one should assess whether the product or service itself is ethical. The research aims to promote the spread of neuromarketing as well as to bring it to the public awareness by presenting concrete key marketing points and insights that can be elucidated using this method.

## TIIVISTELMÄ

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Neuromarkkinointi on kasvava tieteen ala, joka on maailmalla osoittautunut hyödylliseksi työkaluksi markkinoinnin tukena. Neuromarkkinoinnissa piilee kuitenkin ongelmakohtia, jotka voivat osoittautua lisäarvoa vähentäviksi tekijöiksi. Nykyiset tutkimukset eivät ole juurikaan pureutuneet siihen, mitä lisäarvoa neuromarkkinointia käyttäen voidaan saavuttaa Suomessa – jos mitään. Tämä tutkimus täten tutkii neuromarkkinoinnin avulla saatavia lisänäkemyksiä tavallisten markkinointitoimintojen tueksi ja sitä, miten useat eettiset ongelmat saattavat heikentää neuromarkkinoinnista saatuja hyötyjä. Tämän lisäksi, tutkimus pyrkii selventämään ja selittämään neuromarkkinointia Suomen kontekstissa sekä pohtimaan tulevaisuuden kehityssuuntia. Empiirinen tutkimus toteutettiin teemahaastatteluna haastatteleamalla kahta suomalaista neuromarkkinoinnin parissa työskennellyttä henkilöä. Tämän tutkimuksen tulosten mukaan neuromarkkinointi Suomessa on yhä melko tuntematonta ja alihyödynnettyä, mutta neuromarkkinointia hyödyntämällä, yritykset saavat lisäarvoa markkinointiin hyödyntämällä ihmismieltä kokonaisuutena – alitajuisia, sekä tiedostettuja ajatuksia. Eettiset ongelmat vähentävät joissain tapauksissa neuromarkkinoinnin tuomaa lisäarvoa ja täten tulisi arvioida onko tuote tai palvelu itsessään eettinen. Tutkimus pyrkii edistämään neuromarkkinoinnin yleistymistä esittämällä konkreettisia markkinoinnin avainkohtia, joihin voidaan saada uusia näkökulmia.

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Now that I have received the first job in the field that I studied for, I feel like the circle is closing. All the different skills I have learned during my studies are finally adding up to bear fruit and I am open for any future challenges I may encounter. The final missing part of lessons is this thesis, which has taught me the most essential wisdom of all: an elephant is eaten in proper sized pieces. I also want to thank my interviewees for contributing to this thesis and giving their time and thoughts to me in a short notice. I would also like to thank my supervisor Anssi for his thoughts and guidance and for giving me the confidence to maul this project through the finish line.

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I am ready to open a new chapter in my life - and it really feels good.

Helsinki, 11.3.2021

Joel Kaskela

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# 1. INTRODUCTION

*“Consumers don’t think how they feel. They don’t say what they think, and they don’t do what they say.”*

-David Ogilvy

The phenomenon and methods of marketing play a huge part in everyday life with not just marketers, but also with consumers. One does not even have to exit their home to become exposed to hundreds of marketing messages, tunes, videos, and photos designed to awake emotions among consumers to consume certain brands’ products. One could say that consumers today are overwhelmed by not just the amount of marketing messages, but also the quality of how they are crafted to fit your interests and preferences. Even though this has an ominous tone of voice in it, one has to keep in mind that the fundamental of marketing is to match the right product with the right consumer (Ariely & Berns 2010). However, with ever evolving technology and in-depth understanding of consumer preferences and mindset, could it be that the marketing message becomes so strong that the purchased product or service is not the right for the consumer?

## 1.1 Research background

New marketing methods that could be used to stand out from the mass of competitors have attracted interest ever since consumers have had the option to choose what they consume. Traditional marketing methods and studies give the opportunity to understand what consumers like and what they are likely to purchase. This is the critical insight in creating a successful marketing strategy – to understand your current and potential future customers. As a field, neuromarketing has been acknowledged from the beginning of early 2000’s as the concept was introduced by Ale Smidts (Ariely & Berns 2010; Lim 2018). However, technological growth and the development of the fields concerning consumer neuroscience; economics, marketing, decision theory, psychology, and neuroscience have boosted neuromarketing to its today’s proportions (Morin 2011). More important, according to



forecast by Mordor Intelligence (2020), a compound annual growth rate of 15.6% is expected in the timespan of 2020-2025 for neuromarketing.

The idea of neuromarketing challenges the traditional marketing methods in a groundbreaking manner, as it is possible to gain answers of consumers' preferences even without asking direct questions from test subjects. The more companies know about their customers, the more likely they are satisfying their needs (Holz-Clause 2010). Based on the real time neuromarketing reaction data from consumers, researchers are able to discover what corrections could be done to fulfil customer needs (Yun 2019). However, neuromarketing has its challenges as the ethicality of this topic has been under constant discussion as the technology probes the human brain and has the potential to reveal information what customers might not otherwise want to expose (Murphy, Iles & Reiner 2008). Especially nowadays with the protection of personal data privacy and the need for companies' transparency, this might awake contradiction among consumers.

Whereas marketing methods are known widely, neuromarketing is still fairly unknown field in Finland and one could say its benefits are not in the general knowledge of the public. Then, why is not neuromarketing utilized commonly despite the fact that companies who have complied with the study results, have shown to improve their business activity (Sung, Wilson, Yun & Lee 2019)? This may have its roots in the fact that there is only a little information among Finns about the added value it generates or what possible brand damage – if any – it may hold. The significance of addressing these gaps is necessary, as neuromarketing holds potential of altering the game of marketing by generating added value, which would otherwise be unobtainable. During upcoming years, companies may hold the possibility of separating themselves from the competition with the aid of neuromarketing. However, in order for neuromarketing to develop sufficiently, there should be more suppliers in the market in Finland (Hakanen 2019).

According to recent studies conducted by many academics, neuromarketing has grown from its early stage of having potential contribution to the field of marketing, to scientifically proven facts, that it can make a change (Karmakar & Yoon 2016; Lin, Cross, Jones & Childers 2018; Yadava, Kumar, Saini, Roy & Dogra 2017; Sung et. al. 2019). On this basis, the hypothesis of this study is that neuromarketing can bring monetary benefit and unveil information on the consumers which creates added value for the people who take advantage of neuromarketing. To add, as neuromarketing is predicted to grow in the near future, the

ethical dilemmas have not shown to impact the field significantly (Mordor Intelligence 2020). Therefore, ethical issues are expected not to be an obstacle neither in Finland.

## 1.2 Research context

*“To predict the impact of an advertisement or a product, based on neurological predispositions and real-time brain activities, is the purpose of the field of “Consumer Neuroscience” or in simple terms “Neuromarketing”.*

-Abhijit Naskar

Author of the best seller *The Art of Neuroscience in Everything*

Since the born of the field of marketing, it has grown into highly competitive field as companies try to separate one from another to gain a place in consumers’ minds as a choice of preference. The method of neuromarketing is one tool to achieve this goal and has increasing attention drawn to it. However, some critical basic aspects of neuromarketing still remain underexplored, as for common crowd what it includes and how it works in practice are fairly unknown. For some, even the term “neuromarketing” is somewhat vague. (Fisher, Chin & Klitzman 2010; Hakanen 2019)

The goal of neuromarketing is to take advantage from neuroscience and to apply these methods and findings to birth theories that can be brought together to the field of marketing. More specifically, to develop neuroscientifically reasonable explanations on what the impact of marketing is to the target customer preferences and -behavior. (Lim 2018) As said, the field of neuromarketing is still quite unexplored and can unveil new positive or negative consequences as the commercial use is shaping to its form. It is therefore important to conduct further research on the proportions of where neuromarketing stands today and what can it grow into.

During the brief existence of neuromarketing, technological growth and progress in neuroimaging has played a great role in the development and generalization of neuromarketing. From early 2000’s to today the machinery and methods can obtain even more specific and reliable information to combine with more comprehensive knowledge of human brain. The discussion on this field has shifted from whether neuromarketing could be

used to take advantage for domains in marketing, to statements and facts that companies will gain competitive edge when applying the findings of neuromarketing methods in their strategy (Ariely & Berns, 2010; Sung, Wilson, Yun & Lee 2019). According to Jai, Fang, Bao, James, Chen & Cai (2020) even the choice of whether to buy or not to buy can be predicted by neuromarketing during the product assessment phase, which is another example of the shift of discussion in the topics of neuromarketing.

The available methods and machinery for conducting a neuromarketing research will be briefly presented later in this thesis. As the number of possible methods are wide and fairly irrelevant in Finland, the method of EEG and the added value it brings to marketing was chosen to study further. This specific area of the field has aroused interest among academics and companies, shown concrete examples of the method, but also raised concerns on the ethicality of this marketing method. This proposed research aims to contribute to expand the knowledge on the advantages and disadvantages and to shed a light on the added value it can bring to marketing of companies in Finland.

### 1.3 Research objectives and research questions

As described in the literature review, many of the scientific articles address neuromarketing in theory and just past recent years the literature has shifted towards empirical studies. Some of the newest publications discuss how neuromarketing can benefit the end users by gaining insights on concrete marketing actions (Sung et. al. 2009 & Lin et. al 2018). Despite recent publications, the emphasis still remains on more conceptual level rather than empirical and the knowledge in Finnish market is vague.

The trend and hype of neuromarketing seem to have been declining over the past few years based on the publications and news articles on the field. However, this gives an opportunity to look beyond the trend to what the current state and future of neuromarketing looks like in Finland and what benefits and disadvantages it may hold that companies could take advantage of. Despite at least one research focusing the benefits and challenges of neuromarketing in Finland (Hakanen 2019), there is still a need to gain further understanding of the potential that neuromarketing holds – from monetary benefits to ethical issues concerning the companies utilizing the method. Therefore, the main objective of this study

is to discover what added value neuromarketing - mainly by EEG can offer for Finnish companies, in order to fill in the research gaps.

This thesis seeks to answer the following research question:

*What added value can Finnish companies gain from utilizing neuromarketing by EEG method?*

The study approaches to answer this question by filling the research gaps that lies within this fairly new field in this context - the monetary benefits and the potential insights in neuromarketing. Thereby, the research question is fractioned into approachable supplementary questions:

*“What kind of economic benefits can companies achieve in their marketing decisions through neuromarketing?”*

*“What potential insights can be found with neuromarketing?”*

Finally, as the two earlier questions delve into the beneficial aspects of the topic, neuromarketing still has its downsides. The following research question therefore seeks to view the phenomenon comprehensively by taking into consideration the detrimental perspective.

*“How can ethical issues effect the brand and marketing outcome in Finland?”*

#### 1.4 Literature review

This chapter describes what has been found in the earlier studies of neuromarketing. As mentioned earlier, the main topics of this thesis are neuromarketing, marketing and consumer behavior in Finland. Ethics of neuromarketing is also discussed as it has raised concerns among consumers and researchers; if a business chooses to conduct market research using neuromarketing as a tool, it might backfire and be harmful for the image and the brand.

When searching of existing information and research of neuromarketing, it came quite clear that this field is relatively new despite of rapidly grown amount of data and plentiful accessible publishes. However, most of the research and their findings concern the prevailing customer preferences abroad and thus must be critically considered whether they can be applied in Finland. A literature review is necessary to conduct as it is a tool for finding gaps or discrepancies in existing literature, giving headers to future research, exposing unsolved issues and finally, it can provide fresh perspectives (Imel 2011).

As a word, neuromarketing has not come up until early 2000's, but methods of neuromarketing have been used many years earlier. Marketing has long traditions of investigating consumer behavior. According to Levallois, Smidts & Wouters (2019), it was a matter of time for neuromarketing to be born as new technologies and hunger to insights grew rapidly along swift cognitive neuropsychology and neuroimaging development. This eventually led to marketing academics familiarizing themselves with new method of functional magnetic resonance imaging (fMRI) used for brain scanning (Levallois et. al, 2019). Since those days, methods for neuroimaging (also shown in Figure 2.) has also grown into subsections and even more creative ways to gaining insights out of consumers.

In early 2000's there is scattered literature about neuromarketing, as it had just emerged as a term and early research outline the possibilities and development of neuromarketing. Erk, Spitzer, Wunderlich, Galley & Walter (2002) ran a marketing research to examine brain stimuli when showing photos of different vehicles associated with wealth and social dominance. The outcome of this research proved that brain regions that are associated with reinforcement and reward (right ventral striatum, left orbitofrontal cortex, left anterior cingulate and bilateral prefrontal cortex) show higher activation when shown a picture of a sports car, rather than a small car. Even though this was not considered a "neuromarketing" research, it merely scraped the surface on what could be discovered with more research and even more advanced technology.

The earliest usage of word "neuromarketing" seems to be in the summer of 2002 by a press release in courtesy of Atlanta advertising company BrightHouse. They launched a new division of the firm specializing in marketing research using fMRI machinery. (Fisher, Chin & Klitzman 2010) According to Morin (2011), the first scholarly research of neuromarketing was conducted back in 2003 when Professor of Neuroscience Read Montague was trying to find out how brains handle choices of brands. Despite Montague ending up with reliable

conclusions on decision making in the test, he found out that different sections of brains activate on the grounds of whether test subjects know or do not know which brand they are consuming. The study furthermore suggests that especially strong brands could “claim” pieces of humans’ frontal cortex. (Morin 2011) This, and many more ethical issues arise along development of neuromarketing, which are discussed later on.

In 2004, Emily Singer published an article on neuromarketing with an ominous title: They know what you want. This publication underlines the concerns regarding manipulation and possession of consumers. As the field of neuromarketing had not shown any remarkable development over the few years, it is also discussed whether it is just another hoax or might it have the potential to identify consumer behavior. Overall, the article does not lean too heavily on scientific evidence but weighs ups and downs of the potential of neuromarketing as the future cannot be foreseen. (Singer 2004)

Fisher et. al. (2010) brings up the concerns over the free will of consumers. Because the majority of neuromarketing studies are commercial, the transparency is non-existent and could thus pose a threat to consumer autonomy drastically, not to mention professional and scientific concerns. This is a great example of a complicated issue on commercial ethics being applied with academic-industrial relationships. (Fisher et. al. 2010) Despite numerous amounts of concerns that neuromarketing has raised, Touhami, Benflakih, Jiddane, Cherrah, Malki & Benomar (2011) views the bright side: neuromarketing is not just for commercial usage but could also be used to guide consumers without monetary benefit. Neuromarketing might therefore be effectively used to progress sustainable development and social comfort through convincing sensitizing messages.

As the field of neuroimaging and -marketing had much potential and room for growth and development, the number of scientific articles proved that neuromarketing was not to be ignored. Neuroimaging has not been around for a long time, and neuromarketing even less and both of them are considered to be only in their infant stages. Marketers have just woken to countless possibilities of ways to finding information of consumers’ information seeking, product preferences and buying decisions (Morin 2011). Despite the method of EEG having been used for decades for marketing preferences, there seems to be little doubt that a new age had been entered (Murphy, Iles & Reiner 2008).

Lee, Broderick & Chamberlain (2006) state that there is no reason for neuromarketing not to benefit from the development of neuroimaging and that future research should focus on gaining understanding of human behavior. Neuroimaging in marketing could in fact also be used more cost efficiently than traditional marketing tools with possible hidden consumer preferences to be found and therefore seems like an attractive tool. However, Ariely & Berns (2010) doubt that neuromarketing will ever become more cost efficient and lucrative as traditional marketing tools, even though they admit that neuroimaging can have advantages in many domains of marketing. (Lee, Broderick & Chamberlain 2006, Ariely & Berns 2010) Although the studies of neuromarketing are mainly commercial and cannot be fully compared with academical studies, in 2011 there has already been enough evidence to prove neuromarketing functioning in action. A few core neurocognitive precepts have been recognized when advertising messages were exhibited to consumers (Morin 2011).

As discovering deep information about consumer preferences is a great part of neuromarketing, Karmakar & Yoon (2016) found out pointers to potential opportunities for measurement of neural activity. This basically meant that the ability to study consumer behavior showed progress as multiple brain areas could be examined to find “hidden” information on preferences. For locating and uncovering insights from consumers Sung, Wilson, Yun & Lee (2019) also suggest a combination of neuromarketing, survey and qualitative techniques. These insights, along with consumers responses to specific type of marketing stimulus and psychological mechanism determining their preferences, even include the before mentioned “hidden” subconscious responses that consumers may not report or be aware of. Obeying the recommendations of neuromarketing studies have even shown to increase business traffic and the outcomes of marketing of companies (Sung et. al. 2019).

According to study by Lin et. al. (2018) especially the method of EEG could be deployed in a manner which would bring advantages to consumer research over traditional methods. This supports the statement of Karmakar & Yoon (2016) that consumer neuroscience provides complimentary features to traditional marketing- and research methods via analytics into concealed mechanisms that are not available through basic observations. For example, Lin et. al. (2018) suggest that the temporal precision of EEG also provides researchers the tools for capturing deep insight concerning marketing topics such as brand, pricing and advertising.

Because of evolving technology, the costs are declining in the field of neuromarketing which leads for the companies to gain accruing access into consumer insights (Sung et. al. 2018). Today these insights can be done with relatively affordable setting costs and machinery of EEG and therefore it is suggested that the method will attract popularity among academics and businesses (Lin et. al. 2018). According to Sung et. al. (2018), these businesses will most likely harvest the rewards over their competitors. Another key point along low cost - which makes EEG suitable for lab and field experiments - is its minimally-evasiveness and movability when obtaining findings and recommendations regarding the improvement of marketing decisions (Bazzani, Ravaioli, Trieste, Faraguna & Turchetti 2020).

Today neuromarketing has spread into unpredictable measures and basically, it is not discussed whether neuromarketing can be a useful tool, but rather what is the best way to utilize it and whether it is cost efficient. Karmakar, Shiv & Knutson (2015) discovered that during a purchase decision, the order of acquired information can change the mechanisms in product evaluation in addition with possibly affecting product selection behavior. Their study also suggests that products are evaluated by if they are worth their price rather than if it is liked or disliked. Even the buy/not to buy button in the brain is beginning to take shape as Jai, Fang, Bao, James, Chen & Cai (2020) found that the choice of consumer could be foreseen accurately through brain activity while consumer is evaluating the product. In commercial usage this information can be used for example in deciding the most efficient presentation of products in online shopping (Jai et. al. 2020). The method of neuromarketing provide us the tools to see inside consumers' brains for hidden information, therefore providing the possibility to discover the "black box" of consumers (Sung et. al. 2018).

## 1.5 Research gaps in neuromarketing studies

Neuromarketing is a relatively new field that has gained popularity steadily from its beginning. Controversially neuromarketing first emerged in 2002 and in March 2020 a search from Google Scholar displayed an amount of 20 300 studies with keyword "neuromarketing" (Morin 2011). The first alleged scholarly study about neuromarketing was composed by professor of neuroscience, Read Montague in 2003. The research was published the next year in 2004. In the study by Montague, the test subjects were asked to



drink either Coca-Cola or Pepsi as an fMRI machine was scanning their brains whilst drinking. Despite failing to find a secret on how our brains select certain brands, the study revealed that different parts of the brain activate when consuming a brand they are, or are not familiar with. Ultimately the study by Montague suggests that strong brands have the ability to dominate, or even own a sector of our brain. (McClure, Li, Tomlin, Cypert, Montague & Montague 2004; Morin 2004)

Since then, the number of studies about neuromarketing has grown rapidly and new insight about the subject is discovered on a daily basis. However, the field of neuromarketing is still relatively unknown in Finland and there are not many companies utilizing the technology and opportunities available. Morin (2011) states that the consumer neuroscience consists of a mixture of marketing, economics, decision theory, neuroscience, and psychology. The versatility of knowledge required to utilize neuromarketing might be one of the main reasons for it being fairly unknown in Finland. In addition to neuromarketing requiring wide knowledge and skillsets from the personnel, it also requires machinery for measuring the activity of the brain and can cost up to USD 1M depending on the device (Ariely & Berns 2010). However, by outsourcing from a marketing agency focusing to neuromarketing, costs would be affordable.

Overall, there is plenty of information and knowledge available on neuromarketing and its implementation. Its benefits are widely known and used by many companies worldwide in their market research and marketing campaign planning. Despite the costs and some ethical dilemmas, which are discussed later in this thesis, neuromarketing can be and is becoming an important tool even in Finland for creating marketing campaigns and searching for insights on consumer preferences. According to forecast by Mordor Intelligence (2020) a CAGR (compound annual growth rate) of 15.6% is expected in the timespan of 2020-2025 in the field of neuromarketing, which leads to the suggestion that the use of neuromarketing will eventually be inevitable for companies in Finland to retain competitiveness. Due to utilization of neuromarketing being in its early steps in Finland, more knowledge and comprehension of the benefits and disadvantages should be gained.

The first research gap considers the unawareness of neuromarketing in Finland. There are not studies focusing on the profitability and monetary value of neuromarketing in Finnish market area. It is among possibilities for Finnish marketer to gain access to such method, but it is still a niche in the field of marketing. This situation requires more understanding of the

benefits and quality-price ratio in this certain market area for neuromarketing to become popular or even mandatory. The already discovered information with neuroscience about consumer preferences has made changes in the way we see consumers and their decision making, but so far it has not quite reached its full potential in Finland. Thus, the benefits and monetary value of neuromarketing should be examined whether they apply in Finnish markets as well.

Secondly, share of the consumers have formed negative associations regarding brain imaging and neuroscience. If this is to become the prevalent opinion in neuroimaging and therefore neuromarketing, the usage of such method will affect negatively to the brand of companies utilizing the method. Again, there is plenty of information available on the ethical issues and how consumers react with neuromarketing. This available information suggests that the pros outweigh the cons and hence the field of neuromarketing is growing and more marketers are discovering this opportunity. Yet, this is not necessarily the prevailing situation in Finnish markets and the local lack of research becomes fundamental. Earlier studies have focused on the methods and the benefits that neuromarketing has to offer, but ethical issues and the public opinion regarding neuromarketing in Finland has not been fully examined making it uncertain option for the companies and the impact on their brand.

## 1.6 Research strategy and organization of the study

To be able to answer to the main research question about the added value neuromarketing by EEG provides for Finnish companies, in-depth comprehension of the matter is required. Therefore, a qualitative research method was chosen for this study as it is the best way to get explanatory and multidimensional answers. This study is conducted as a semi-structured interviews to gain insight to fairly new and unstudied field, and it enables the possibility to answer to specific questions about monetary benefits of neuromarketing, potential new insights, and ethical dilemmas.

A before structured questionnaire pattern is presented to two interviewees, who has a background of working with neuroimaging methods with different neuromarketing companies. Interviewees from different companies and background enables the opportunity

for considered generalization of the results. The interviews were executed as conference calls.

This thesis is structured as follows. First, a brief introduction of existing literature is presented to gain comprehension of the development of neuromarketing as a science and to find out the potential gaps in research. The following chapter aims to set up the essentials about the benefits and disadvantages of neuromarketing in order to gain the most comprehensive view of this topic. The final chapter of this thesis discusses the empirical findings of the conducted interviews and concludes the thesis with findings and suggestions for future research.

## 1.7 Delimitations and definitions

This thesis focuses on the potential added value neuromarketing provides for Finnish companies. The companies from which the interviewees have background in mainly focuses on the Finnish markets and customers. Therefore, the geographical delimitation has been selected to concern Finland only. That said, Nordic countries usually have the same features in behavior and culture due to similar social structure and the results of this thesis can therefore partially be applied in other Nordic countries as well.

The sample for this study is only two interviewees as the size of neuromarketing field in Finland is still relatively small and the number of experts is not that high. The small sample size means that the reliability of this study can be questioned. However, the interviewees are experts in their own field and the qualitative research method brings out the opportunity for more comprehensive viewpoints which provides the tools to answer the research questions.

As the amount of available neuroimaging machinery used for neuromarketing have grown into great measures, this study is limited only to EEG imaging to focus more deeply into the matter. This is decision is also supported by the fact that the chosen interviewees have more experience and insights about the method of EEG. For the rest of the imaging methods, only a brief overlay of them is given as they present potential in the future of neuromarketing in Finland.

When proceeding with this thesis, the following definitions of used terms are explained concisely to understand the topics and discussion.

**Neuromarketing** can be described as a relatively new field that brings together the research of consumer behavior and neuroscience. In the center of neuromarketing is examining consumer behavior from the perspective of the test subjects' brains' conscious and unconscious responses to different marketing stimulations. Ultimate goal is the same as in traditional marketing: to develop companies marketing strategy and advertising with market research. (Ariely & Berns 2010)

**Neuroimaging** or **brain imaging** is a dynamic and ever developing field, in which neural activity can be studied inside or outside of the brain with various technologies, for example with fMRI, EEG or MEG. Each of these methods provide an image of a subject's brain and visualizes the area of the brain, that certain stimuli activate. According to Ariely & Berns (2010) brain imaging could tell researchers not only consumers' preferences, but also the ideal product they would be ready to buy. (Fulham 2004; Ariely & Berns 2010; Lim 2018)

**EEG (Electroencephalography)** is a method where a helmet or band with electrodes inside is placed on the scalp of a test subject. The device then tests and records the changes in the electrical field of the brain. EEG can be used to discover brief changes in brain activity to help marketer assess the stimuli they are creating. The advantage of EEG in comparison with fMRI scanner and MEG is that the cost is relatively low, starting at under USD 10.000. (Ariely & Berns 2010; Lim 2018) Due to limits of this study, the method of EEG is mainly discussed.

**fMRI (Functional magnetic resonance imaging)** is a tool of neuroimaging used to measure and map brain activity by the blood flow changes in the brain with an MRI scanner (Huettel, Song & McCarthy 2009). To be more specific, an MRI scanner tracks the oxygen level of blood in the brain which correlates to underlying neuronal activity (Lim 2018). The cost of

an MRI scanner can be up to USD 1M and costs annually from USD100.000 up to USD 300.000 to operate (Ariely & Berns 2010).

**MEG (Magnetoencephalography)** is a similar method with EEG, in which magnetic activity of the brain is tested and recorded with a helmet with 100 – 300 superconducting detectors inside it. MEG has the same advantage as EEG of discovering brief changes in brain activity, but with better spatial resolution resulting in more insightful tests. The downfall of MEG is that the set-up is more expensive as the methods requires magnetically shielded room with superconducting detectors, costing approximately USD 2M. (Ariely & Berns 2010; Kenning & Plassmann 2005; Solnais, Andreu-Perez, Sanchez-Fernandez & Andreu-Abela 2013)

**Market research** is an essential part of companies marketing and decision-making process to maximize value for their investment. It is important to understand what kind of marketing research is done in each company and what it involves. Market research is typically conducted on a one-time basis, periodically or continuously and Investopedia (2020) defines its goal as to determine the viability of an existing or a new service or product through questionnaires directly from the consumers. This offers companies the tools to make best possible strategic decisions. (Puusa et. al. 2013; Investopedia 2020)

## 1.8 Theoretical framework

As this research delves into the additional value that neuromarketing can provide for marketing usage, with ethical issues taken into consideration, the proposed theoretical framework is as follows in Figure 1.

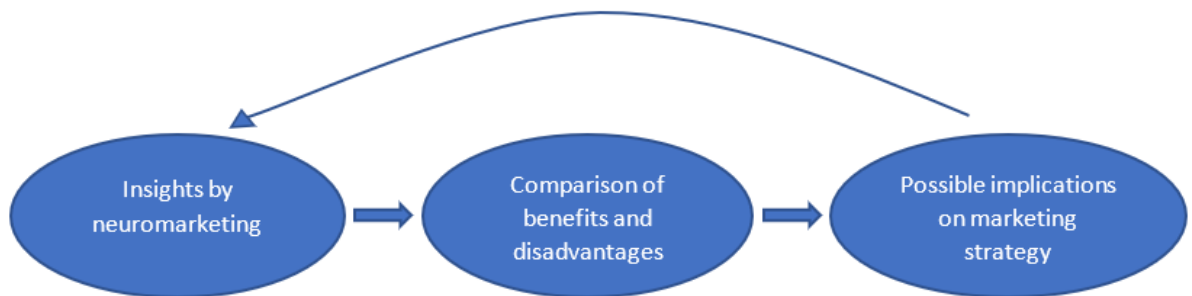


Figure 1. Theoretical framework

The process of evaluating whether neuromarketing brings added value to companies marketing strategy and implications. First, a neuromarketing study is conducted with a main objective of finding possible insights to deploy. The process then moves on to comparing the benefits and disadvantages. Ethical issues and potential insights are assessed whether they bring monetary benefits or not. The final step is to possibly implicate mentioned findings into marketing strategy if it is found lucrative. The process may then be started over from the very beginning to discover new insights on different matter. The aim of this framework is to comprehend the added value - negative or positive - that neuromarketing can provide to marketing in Finland.

## 2. NEUROMARKETING

Neuromarketing is a rapidly evolving field of marketing, in which the method of neuroimaging enables the researchers to possibly find in-depth information about the consumers, based on the activity of their brain when being exposed to different marketing stimuli. (Lin et. al. 2018; Ariely & Berns 2010)

### 2.1 What is neuromarketing?

American Marketing Association (2017) defines marketing as follows: “Marketing is the activity, set of institutions, and processes for creating, communicating, delivering, and exchanging offerings that have value for customers, clients, partners, and society at large.” Kotler & Keller (2016) state that identifying and meeting humane and social needs is the basis of marketing, to put it bluntly, marketing is about meeting needs profitably. Finally, Ariely & Berns (2010) state that marketing is basically matching the right products with right consumers.

Understanding the purpose and definition of traditional marketing becomes important when discussing about neuromarketing. Surely, with the methods of neuromarketing it is possible to gain access to undiscovered information and insights about consumer preferences, map the sequence of their gazes wandering on ads and billboards, and to select the most suitable music for a commercial (Zurawicki 2010). But essentially all the means in neuromarketing point to the same objectives as in traditional marketing – to develop companies’ marketing strategy and advertising with market research to match the right products with the right consumers.

As a term neuromarketing was defined for the first time in 2002 as follows: The study of brain mechanisms to understand consumer behavior in order to develop more efficient marketing strategies (Boricean 2009). Despite the relatively young age of this field of science, the amount of published scientific articles concerning neuromarketing have grown rapidly over the past few years and is gaining a steady foothold among academics and businesses.

The study of neuromarketing concerns different scientific fields as it combines neuroscience, psychology, and business in order to gather data, interpret the findings and grasp the potential strategic pointers for businesses decision making process (Morin 2011). To conduct a neuromarketing study, a machinery to record brain activity is required. The variety of different machinery and methods nowadays is wide and takes advantage of modern healthcare technology. However, as the more advanced machinery can cost up to millions of dollars, the common and more affordable machinery of EEG is mainly used in Finland due to investment costs.

According to Touhami et. al. (2010) neuromarketing has the potential of transferring messages in a way that improves social comfort and sustainability, but that is not really what drives companies as they are searching for effective methods for monetary benefits. However, as mentioned in the literature review, many academics fear that neuromarketing will become too powerful for commercial usage, as it has the potential to bend the consumers into their will by locating the “buy button” in their brain. (Lee, Broedrick & Chamberlain 2007) To break it down, the marketing message would be so strong and conform senses in a way that consumers would purchase products they necessarily do not need nor even want.

## 2.2 The process of neuromarketing study

To understand how neuromarketing can benefit the marketing researchers, it is important to know about the process flow of common neuromarketing research. The key process in neuromarketing is in fact to translate the data and brain activity into usable insights for marketing decisions (NewNeuromarketing 2017). To gain better understanding of the possibilities and opportunities that neuromarketing has to provide it is necessary to walk through the generic process of neuromarketing research. Lee, Brandes, Chamberlain & Senior (2017) present a generic conceptual schematic of neuromarketing research, which is displayed in Figure 2.



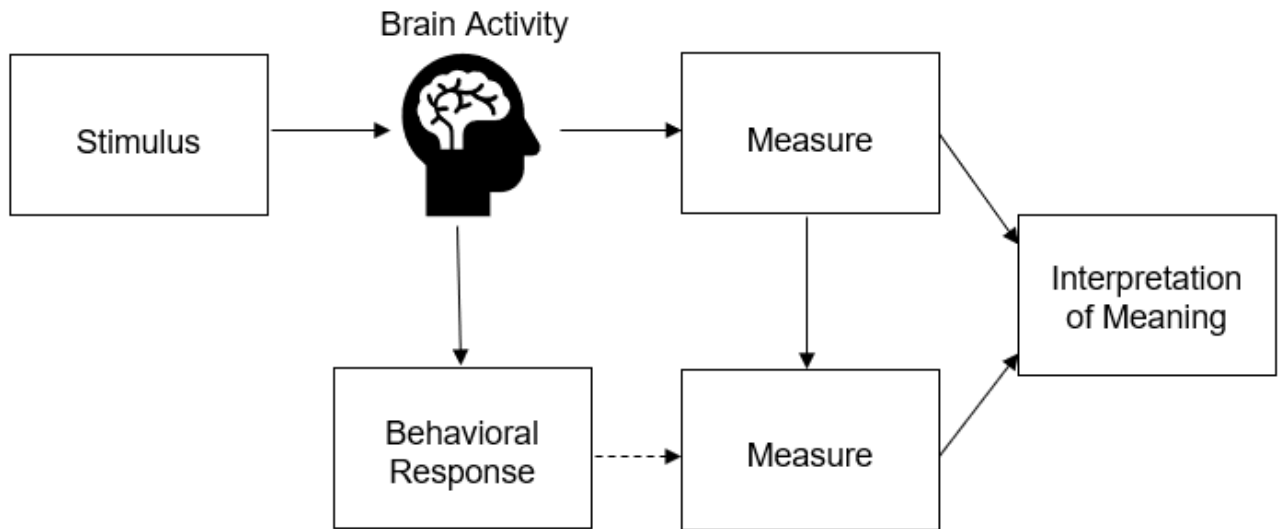


Figure 2. Conceptual schematic of neuromarketing research. Lee et. al (2017)

According to Lee et. al (2017) the beginning of the common process is event-based, also known as stimulus-based method, in which a stimulus is inflicted to the subject's brain. Such stimulus could be a set of questions, smells, noise, or packaging of product etcetera. Meanwhile subject's brain is scanned usually along with behavioral responses to measure for example excitement. Simultaneously eye-movement can also be tracked to find out which part of the picture or product excited them the most. Later in the process some other variables may also be measured, for instance psychological or physiological or both, on the basis of which the theoretical framework is created. (NewNeuromarketing, 2017; Lee et. al., 2017)

A neuromarketing research is a qualitative method and the sample size required for a reliable research can vary. According to Ariely & Berns (2010) the minimum amount of test subjects should be at least 30 individuals. Hensel, Iorga, Wolter & Znanewitz (2017) suggest, that the optimal sample size for a neurostudy with EEG is 30 to 40 people and Lin et. al. (2018) state than it can be up to hundred. However, the amount of test subjects should be higher when testing subjects or groups under different conditions in order to detect abnormalities between groups and different methods (Ariely & Berns 2010).

## 2.3 Neuroimaging methods

The field of neuromarketing is bound to the machinery and methods of which a certain research is conducted with. Therefore, the existing literature addresses a lot of different neuroscientific methods and what kind of data can be obtained with each method. It is also important to understand the outline of different methods, as they can unveil different points of views from the same topic. The following Figure 3. displays the variety of neuroscientific methods for conducting a neuromarketing study. The data obtained by some of these methods are also observable almost in real time during a study (Lim 2018; Lin et. al. 2018).

As this study delves into the method of EEG, it will be looked into in a slightly more detailed manner, as for the rest of common neuroscientific methods are displayed more superficially to provide context of the field. Note, that Figure 3. also involves a section of “record neural activity outside the brain”, which is also considered as a neuroscientific method.

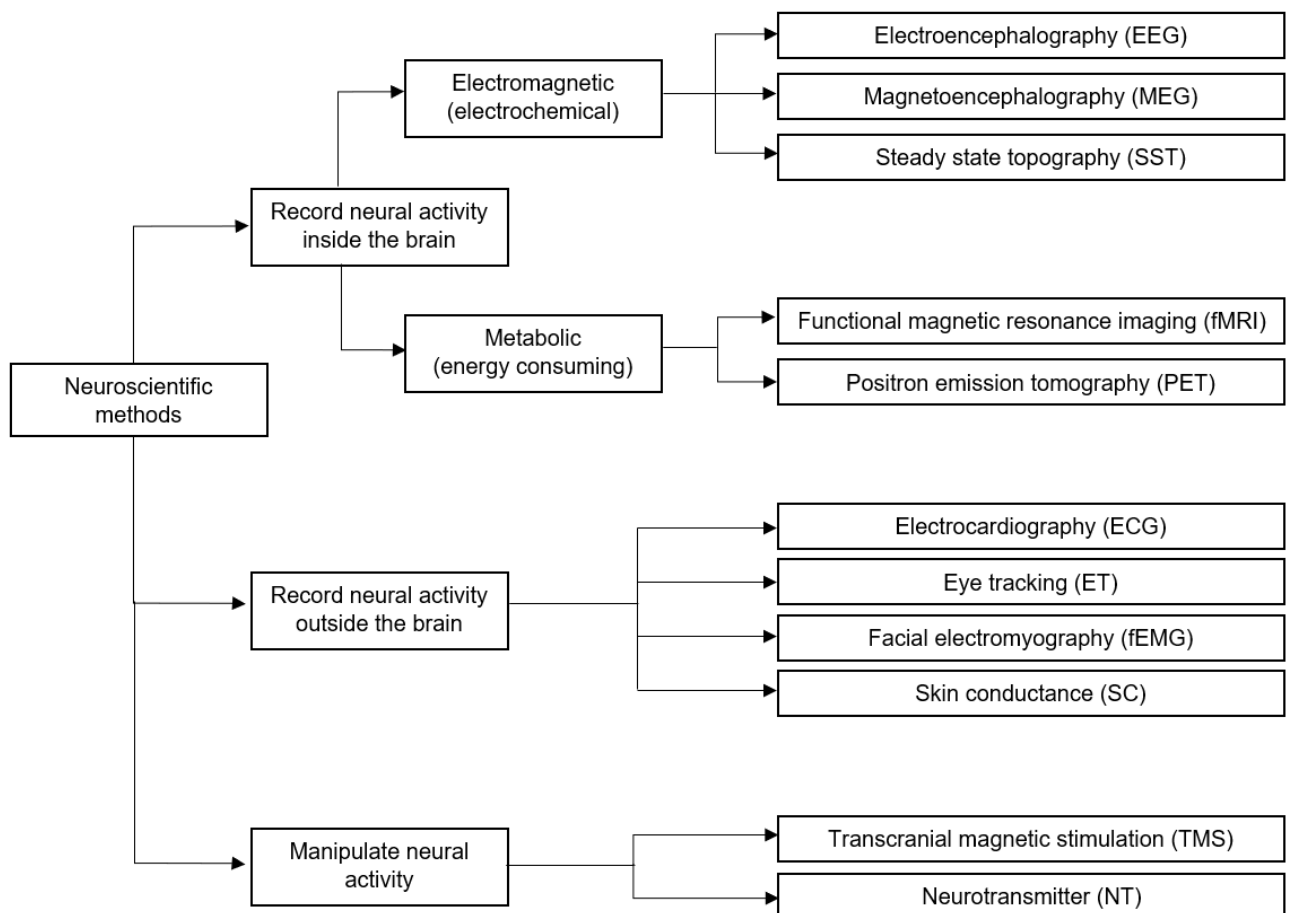


Figure 3. Common neuroscientific methods for neuromarketing. Lim (2018)

The method of electroencephalography (EEG) is a device for testing and recording electrical activity inside the brain by helmet or band, which contains small electrodes that are in contact with the test subjects scalp (Lim 2018). According to Bazzani et. al. (2020), EEG technique is based on brain-generated electrical waves, which are measured with sensors that can be placed directly on the scalp or as integrated in before mentioned helmet or band. The number of sensors in a helmet or band can vary from one electrode up to hundreds of electrodes depending on the type of study, as they measure the electrical voltage potentials in addition with frequency of oscillations from the brain (Bazzani et. al. 2020).

The first known recording on human brains with EEG was as early as in late 1920's by Hans Berger. Since then, EEG has drawn attention among academics due to its versatility, high temporal resolution for detecting minimal changes, relatively low cost, and easy transportability (Berger 1929, Bazzani et. al. 2020; Lim 2018). Plassman, Ambler, Vraeutigam & Kenning (2007) have described the advantages of EEG that its non-invasive for the participant, the temporal resolution is very good, and that the method is very cost-efficient. However, the disadvantages of EEG are that spatial resolution is limited, and the complexity of data analysis is moderate to high complexity (Plassman et. al. 2007). Finally, Plassman et. al. (2007) find common ground in EEG, MEG, PET, and fMRI as all of them are fairly complex methods, that take a person with expertise to analyze the data and conduct the study and have some differences due to their advantages and disadvantages. Each one of these neuroscientific methods fall under section 'record neural activity inside the brain' (Lim 2018).

## 2.4 Benefits of neuromarketing

*“It's not just the advertisement that matters in a product's impact on the consumer brain, but also, something as subtle as the color scheme of a product's packaging matters a great deal. Each color triggers certain emotional responses in the human brain, so the color-scheme of the packaging of a product must match correctly with the product's nature and purpose.”*

-Abhijit Naskar

As a science, marketing is said to be born in the 1960s and come into being from a Harvard Business Review's article "Marketing Myopia", in which Red Levitt describes the dynamics between competition and customers in business. The key principle of marketing is to identify, predict and satisfy customer needs in a cost-efficient way. (Puusa, Reijonen, Juuti & Laukkanen 2012) What better way to study competition and consumers, than to access deep and intuitive information that is not accessible via traditional methods?

The principles of neuromarketing are the same as marketers hope that neuromarketing provides a new approach between costs and benefits in marketing. By neuromarketing, companies can discover deep information on directed different elements of their marketing message or -appearance, underlying psychological information on consumers and find subconscious preferences that are not reported by study subjects (Sung et. al. 2019). On top of potential hidden information of customer preferences in their brain, this argument is founded on the presumption that consumers cannot or will not express their preferences in marketing research (Ariely & Berns 2010).

Karmakar & Yoon (2016) state, that neuromarketing provides the means to support common research methods and analytics by studying obtained neuromarketing data that is not accessible by reports or observations. Also, according to Lin et. al. (2018) by traditional marketing methods researchers can only discover conscious preferences of consumers, as neuromarketing can offer the possibility to observe and to measure the neural processes in the decision-making process. Neuromarketing therefore offers the possibility to find out what consumers actually like and also theoretically, what they will purchase (Ariely & Berns 2010).

On a more concrete level, the utilization of neuromarketing can prove to be a real difference maker in common marketing decision companies has to make. According to Lin et. al. (2018) and Hakanen (2019) by EEG it is possible to gain insight from consumers regarding marketing topics, such as pricing, brand development, advertising, packaging development and the launch of product. These aspects are the ground elements and foundation of a successful marketing strategy or -tactic. Hakanen (2019) also states that neuromarketing is well suited for the development of advertising and especially video advertising using the EEG method.

Neuromarketing has great potential of becoming widely used support function to common marketing methods, as it is recommended that neuromarketing is used as a support function among various marketing tools. A study by Sung et. al. (2019) state that the combination of different methods (including neuromarketing) can give the edge in analyzing consumer insights data regarding sales and the performance of a businesses. As a complementary method, neuromarketing can also give marketers fresh viewpoints into encountered marketing challenges by interpretive frameworks (Yorke Communications 2021).

To sum up the benefits of neuromarketing, companies following the recommendations and findings of neuromarketing research significantly increases positive business and marketing results. (Sung et. al. 2019) Neuromarketing also provides the tools for possibly to predict the future success of a product in the market and to develop more efficient marketing strategies. (Yadava, Kumar, Saini, Roy & Dogra 2017) Additionally, the affordable price of EEG scanners and the operation costs to collect data is said to allure widespread use of the method from marketing companies and researchers. Eventually the costs of using EEG as a marketing method will drop down in form of growing amount of service providers. (Lin et. al. 2018)

## 2.5 Ethical issues in neuromarketing

One of the ultimate goals of neuromarketing or any form of marketing is to sell the highest number of products or services. Despite all the opportunities and possibilities in the field of neuromarketing, one must consider the ethical aspects of commercial neuromarketing as businesses have access to consumers' minds via modern brain imaging technology. Then, how will the consumers see and accept a product or a brand once they learn it has been designed and improved with neuroimaging methods?

In fact, issues and ethical issues are one of the most discussed and discreet challenges in what comes to utilizing neuroscience in marketing (Pop, Dabija, & Iorga, 2014). The fear of neuromarketing has even driven France to ban neuroimaging methods for commercial purposes, as it is said that locating a 'buy button' inside consumers mind violates human rights and existence (Yun 2019). According to Lim (2018), the issues of neuromarketing can be broken down to two larger subsections: "protection of test subjects" and "scientific

reliability, validity, and transparency”. Ariely & Berns (2010) and Odekerken (2008) break these two subsections even further to smaller and more specific issues regarding the ethics of neuromarketing, which are compiled in Figure 4.

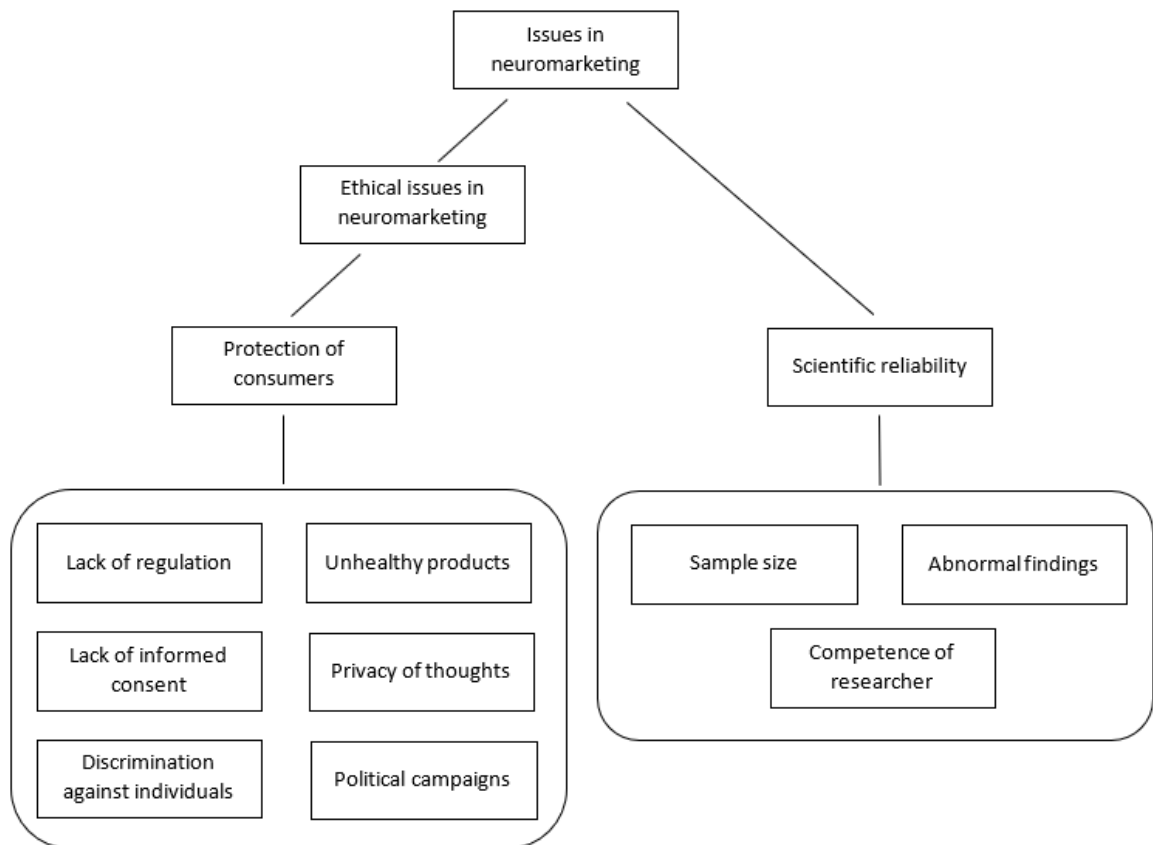


Figure 4. Issues of neuromarketing

### 2.5.1 Protection of consumers

The businesses are now basically able to read the minds of the consumers. The privacy of thoughts is at risk in what comes to the test subjects and their responses. To add, many neuromarketing studies have even succeeded to collect data from the subliminal and unconscious levels, which understandably may raise concerns (Yun 2019).

As companies select test subjects, the purpose of the research they are conducting may not be clear to the subjects, even though they should know what they are participating to.

According to Yun (2019), especially loss of privacy has turned out a problematic topic at the industry level, as subjects' brain data is collected in the name of conducting experiments, under informed consent though. As test subjects consent to taking part of the process, they waive of certain rights to information that is obtained - and are now at the use of neuroscientists. (Murphy, Illes & Reiner 2008; Ariely & Berns 2010) The real issue emerges with informed consent, which includes the benefits and the risks. In the risky case, the neuroscientists do not acquire subjects' consent which protects their privacy and thoughts (Ariely & Berns 2010). However, Farah (2005) suggests that it is not seen as an issue when the research process is conducted with appropriate protection of privacy and by following ethical principles.

Lack of regulations refers to common marketing not being seen as an experimentation, so neither marketing nor neuromarketing has been overviewed by institutional review board. This gives the opportunity to avoid certain requirements set up by institutions and therefore faces lack of regulations. (Ariely & Berns 2010) According to Ariely & Berns (2010) in the growing field of neuromarketing, the answer to staying away from misconducts and abuse, is to develop standards and regulations. Also, clients should be advised to know their affiliates methods and standards. (Ariely & Berns 2010)

Discrimination against individual in neuromarketing is a situation, where neuroimaging data can be directed to target specific type of consumers or groups in order to maximize the profits by increasing or decreasing the price based on how much the consumer is willing to spend money on that product. Many consumers find this tactic unpleasant as it can exploit biological, personal features. (Ariely & Berns 2010) Price discrimination is already taking place in certain services or products based on current employment status i.e., student, pensioner, worker etcetera. By the means of neuromarketing, Ariely & Berns (2010) consider the opportunity that discrimination could be taken even further to concern biological states as well.

With a higher body mass index comes a higher vulnerability to purchase a product based on its appearance and visual look. This is due to labels and texts influencing obese peoples' decision-making process, making it more impulsive. (Oderkerken 2018) According to World Health Organization, in 2016, more than 1,9 billion of 18 years of age or older were overweight and of those over 650 million were obese (WHO 2020). This tells us that more than a third in world population is affected by more impulsive purchasing decisions. Ng,

Stice, Yokym & Bohon (2011) even state that with obese people certain regions of the brain activate more aggressively when the labeling of a food product displays high number of calories in the product, rather than low. It is also possible to find even more dimensions and methods to resonate highly with obese people in addition to the display of the label (Oderkerken 2018). This is where the question arises: is it ethical to abuse and exploit the weaknesses of a group of people to sell them more of unhealthy products and weaken their quality of life?

There is a possibility that neuromarketing can and will be used in political campaigns. A research by Spezio, Rangel, Alvarez, O'Doherty, Mattes, Todorov, Kim & Adolphs (2008) suggests that looking at the losing party activates part of the brain (insula) that associates with pain. Spezio, et al. (2008) conclude that the appearance of a political candidates' appearance affects the decision of voters primarily through negative motives. It is seen in the future whether neuroimaging can find even more influential methods to know more about voter behavior. Ethically this can rise to a problem as parties can figure out for example the best possible type of pictures or the best structure for a speech to gain voters despite of differences in political views (Oderkerken 2018).

### 2.5.2 Scientific reliability of neuromarketing

The second subsection of ethical issues emerge in scientific reliability, validity, and transparency (Lim 2018). It is questioned whether a professional marketing personnel has the competency to conduct reliable, valid, and transparent results for marketing using a complex neuroscientific method (Ulman, Cakar, & Yildiz 2015). Even further, when the findings have been acquired, is a marketing personnel without proper neuroscientific knowledge the right person to interpret them?

According to Lim (2018), the competency of the researcher is in the key position when assessing the scientific reliability. Mooney-Somers & Olsen (2017) state that only researchers with relative experience, qualifications and competence can engage in ethically conducted research. When the researcher is not competent enough to understand the integrity of the method, it can end up in estimating the findings incorrectly, false marketing discoveries, and implementation of ineffective marketing strategies. On the other hand, a



competent marketing researcher with proper knowledge on the scientific methods assessing the results can lead to new marketing method discoveries and the selection of correct strategic implementations. (Lim 2018) However, according to Hakanen (2019) interpreting and utilizing the results in your own business can be challenging, as organizations are not used to monitoring the results of neuroimaging and there is not enough understanding of the levels of results. In addition, transparency is needed for EEG measurement and data processing in order to understand how the results are generated. To conclude, EEG measurement is not suitable for all test situations. (Hakanen 2019)

Abnormal findings in MRI are said to appear with 1% of the population. With a population with no known clinical symptoms, the significance of an MRI abnormality is also unknown. This will result in false findings among the significant and there is not a standard on how to deal with this dilemma. Failure to have a policy for abnormal findings will result to medical liability to neuromarketing firm and its clients. (Ariely & Berns 2010) Even though these findings regard the method of MRI, the same topic can emerge as an issue in the method of EEG as well.

The method of EEG has its limitations in what comes to the sample size of the study as it is common to use fairly small sample sizes and has received criticism over that matter. As known, this can lead to low statistical power in common research. However, in the case of neuromarketing with EEG, the variability of human brain does not have a wide range like other behavioral variables do. In addition, according to Lin et. al. (2018), the stimuli that is produced to a single test subject is far more controllable in neuroscientific studies than it is in behavioral experiments, which leads to more reliable test results. Finally, in EEG studies, it is common to run the experiment multiple times with the same test subject to help invalidate the relatively small amount of test subjects. (Lin et. al. 2018)

## 2.6 Neuromarketing in Finland

As discussed earlier in this thesis, neuromarketing is still fairly unknown for marketers and common people in Finland. The field has had its operators over the years, but none of them have gained a steady foothold as a leading operator in the market. This might be due to the before mentioned lack of knowledge for the field, lack of knowledge from the added value

it can generate, or that neuromarketing in Finland does not have enough evidence to show off their impact on marketing.

Two firms that have recently operated in the field of neuromarketing in Finland - Exakti Intelligence Oy (Exakti) and Neurorank Oy – from which the interviewees were obtained. According to Hakanen (2019), Exakti mainly used the method of EEG in their business and he also states that the method excels in examining consumer responses to video material. It should be mentioned, that both of the before mentioned firms have shut down their businesses. As Suomela (2021) mentioned in the interview for this thesis: “the business didn’t take off as planned, despite gaining some costumers”. This suggests, that neuromarketing in Finland has definitely not reached its potential that recent literature has shown its capable of. In addition, the number of academic publications in Finland is relatively low. Hence, it can be concluded that the field of neuromarketing has room for growth, development, and competition in Finland, but has already taken the first steps for breaking into common utilization.

### 3. METHODOLOGY AND DATA COLLECTION

*“In concert with archival study and oral histories, the semi-structured interview offers great potential to attend to the complexity of a story in need of contextualization.*

– Anne Galletta

This study aims to gaining more detailed information on what added value can neuromarketing create, which is seen necessary as the field is still relatively unknown, growing, and developing. In this case, the research context is neuromarketing by EEG in Finland, as there lies hidden potential for companies’ marketing. The interviews for this study seek to provide additional information and insights for theoretical framework presented earlier. Some of the core interview questions addresses the topic directly, such as: *“What kind of insights has neuromarketing revealed to you that traditional marketing methods would not have?”* and *“What kind of benefits have you discovered in neuromarketing so far?”*. However, some of the questions seek to uncover the future sights of neuromarketing: *“What possible potential benefits could emerge when neuromarketing evolves further?”* and *“How do you see the ethical issues of neuromarketing presenting themselves in the future?”*

#### 3.1 Qualitative research

As mentioned earlier in this thesis, neuromarketing is a complex field and in order to answer the research question, in-depth information of this topic is required. Therefore, the method of qualitative research was the best option for accessing the necessary insights, as quantitative methods would not have given the answers to “how”, “what” and “why” regarding the benefits and issues of neuromarketing. The study was thereby followed through by open-ended research questions which seeks to fulfill the main purpose of this thesis.

According to Bogdan & Biklen (2006), qualitative research is focused on the process itself, rather than the outcomes and products. Kylmä & Juvakka (2007) state, that the amount of people studied with qualitative methods is not the key factor so much as the outcomes and relevant information that are obtained. Therefore, this research utilizes qualitative methods

only, as the field does not have too many experts skilled in the art of neuromarketing – yet the level of knowledge is high.

According to Alasuutari (1999) the methods of qualitative research and quantitative research can be overlapping as the same data can be utilized in both methods despite answering to different questions. Therefore, these methods can be seen as complementary approaches instead of mutually exclusive options. Alasuutari (1999) also states, that a study is not a qualitative research if the research data is coded into a structured figure, and only statistical analysis is conducted by a researcher.

The obtained data in qualitative methods is most commonly interpreted as an entirety. As unstructured interview can be up to 30 pages when littered, it is not seen as added value to involve too many interviews especially in this occasion, as the topic has limited experts in the field. On contrary, quantitative analysis require as much data as possible to achieve statistically valid status. (Alasuutari 1999)

### 3.2 Semi-structured interview

Hirsijärvi, Remes & Sajavaara (1997) state that there exist three types of interviews: structured, unstructured, and semi-structured. Semi-structured interview can be seen as an intermediate model between structured and unstructured interviews and has a before planned framework that has been created prior interviews. As perceptions are the point of interest in this study, it is a valuable method for gaining insights into deep thoughts considering the topic.

As the topic of neuromarketing is wide and even covers multiple cross-academical fields, this study was conducted as a semi-structured interview to stay on specific topic of neuromarketing. Galletta (2012) suggests, that semi-structured interview has much to contribute due to its simultaneous flexibility and basic structure. It is enabling the participants to address multiple dimensions while leaving space for discussing new insights to the topics addressed in the study (Galletta 2012). According to Saaranen-Kauppinen & Puusniekka (2006), semi-structured interview is aimed to taking people's interpretations and their meaning of the discussed topic into account.

Therefore, semi-structured interview is suitable in this thesis with a goal of discovering information on relatively little-known topic. To gain further perspective and multiple approaches to the discussed matter, this study's interviews involve experts from this field with a background of two different neuromarketing companies, which can provide broader insights from different perspectives. In addition, it is expected that both of the interviewees have insights to contribute into proposed framework as 'pioneers' in Finland.

### 3.3 Data collection

The data collection strategy for this study was chosen to be semi-structured interviews, which first probes the background and competency of the interviewees and moves on to focus on themes "Benefits and potential insights by EEG" and "Ethical issues in neuromarketing". The questions in semi-structured interviews are open-ended in order to create space for interviewees to ponder their experiences and reflect them to questions, although the presented questions should be tied closely to addressed research topic. (Galletta & Cross 2013)

Qualitative and open-ended research usually examines a phenomenon that is not previously known, or a phenomenon for which in-depth information is needed – such as this thesis. Instead of focusing on what people are saying, the goal of qualitative research is to understand what people really mean. This is when the questions "how", "what" and "why" are usually answered. (Puusa et. al. 2012) Therefore, by utilizing semi-structured method in the empirical research it is achievable to have an open conversation while cutting into the benefits and insights of the addressed topic to answer the research question.

The questions for the interview were selected on the basis of getting as many angles and insights into theoretical framework as possible. The decision to separate the interview into three main categories mentioned before, was due to divided themes in neuromarketing that need to be looked at separately.

The first category of questions aims to map the interviewees background regarding work history, educational background, and general knowledge of the field of neuromarketing. This is seen important as neuromarketing requires certain skills from individuals working around this complex field. The following category seeks to create open contemplation on the

benefits and potential insights of neuromarketing by EEG. Again, the delimitation to consider EEG only, is due to interviewees specific knowledge on this method. Finally, the last category focuses on the ethical issues of neuromarketing and the interviewees related experiences and knowledge on that topic.

The interview questions drafted for this thesis are displayed in Appendix 1. As the interviews are live situations, some of the questions may have been presented in a different form, as the desired information was obtained from earlier conversation and questions. The interviews for this thesis were conducted as conference calls due to challenges that the ongoing pandemic has resulted in.

### 3.4 Reliability and validity

Patton (2002) brings up two factors, reliability, and validity, which should be taken into consideration by researcher when conducting a qualitative study. They are factors that judge the quality of a given study and should be taken into consideration throughout the whole process of a research (Patton 2002). According to Golafshani (2003) an indicator for a successful qualitative research is the generalizability of the test results. Finally, Lincoln & Guba (1985) state that in qualitative research credibility, neutrality, consistency, and applicability are the essential quality measurements.

In this study, the validity was increased by searching as many publications as possible and the most competence interviewees available regarding the discussed matters. However, as said, the amount of information considering Finland and neuromarketing is limited and therefore is not optimal. The interviews also might suffer from a slight bias, as the interviewees might want to represent neuromarketing in a positive light and their names are also disclosed. However, based on the perception of the discussions, this did not appear to be the case.

## 4. EMPIRICAL RESULTS AND FINDINGS

This part of this study contains the data obtained by semi-structured interviews which took place in March 2021. First, a brief overview of interviewees status and knowledge is composed in order to clarify the competence of the individuals. Thereafter, the benefits that respondents have experienced with neuromarketing are brought into frame and finally, the ethical issues are considered whether they have significant effects on the brand or business.

Two persons were interviewed to gain comprehension about the added value neuromarketing can generate. In this analysis the interviewees are referenced by their names. Respondent Jarkko Kotola has significant background in the commercial usage of neuromarketing, as respondent Jyrki Suomela has wide academic knowledge in addition with usage of neuromarketing for commercial use as well.

### 4.1 Subject backgrounds to neuromarketing

As neuromarketing requires a certain amount of experience and skills, in terms of reliability and validity of the outcome, it is important to understand the competence of the participants in the study to answer the questions posed.

#### 4.1.2 Exakti Intelligence Oy – Jarkko Kotola

The creator of Exakti Intelligence is a Finnish gentleman named Jarkko Kotola, who has an MBA from Washington and graduated in the early 1990s. He worked as a management consultant for several years, after which he started as an entrepreneur with Exakti Intelligence Oy. His main idea with Exakti was *“to measure the unconscious reactions of the consumer to various stimuli.”* (Jarkko Kotola 2021)

*“In 2011, I had to find a new career. Then I got contact from a university regarding neuromarketing – with the first impression of skepticism. It was later in 2011 when we founded Exakti Intelligence Oy. ... Neuromarketing was not familiar before the founding Exakti. My role in Exakti has been more*

*commercial than scientific. So, I have been trying to find commercial applications and good distributors for them. Sometimes we have wondered whether we were a market research company or not. From which we ended up with the latter - We are a technology company that provided market research companies with a neuroscience platform.”* (Jarkko Kotola 2021)

The common knowledge about neuromarketing in case of Jarkko is, that he recognizes the field of neuromarketing globally and the involved companies and personnel, which is considered high in comparison with neuromarketing in Finland. Through his work and e-mail feed, he has also observed that especially Latin America seems like a fertile ground for neuromarketing and is on its way to growth there. Also, for example in the Netherlands Heineken uses the method of neuromarketing in their business. (Jarkko Kotola 2021)

*“Within the framework of Exakti, we have done many projects in Finland and Sweden. In addition, we have had occasional projects elsewhere, such as in Russia and the UK.”* (Jarkko Kotola 2021)

The team of Exakti was always small, despite having a few additional people, mainly investors or advisors on the commercial side. In the actual team, they have had one psychology- oriented person who has developed techniques at the University of Helsinki. One person they happened to find has degrees in psychology and computer science. He has also honed Exakti’s software endlessly.

When the decision to enter the field of neuromarketing emerged to Jarkko, there were only a few operators that practiced neuromarketing, although mainly by eye-tracking methods. Therefore, they were among the first to enter the neuromarketing field by brain scanning. (Jarkko Kotola 2021)

*“Eye movement has already been monitored before we entered the market. Otherwise, I would say that there was practically no neuromarketing at the time in Finland. However, neuromarketing will certainly develop over time in Finland as well.”* (Jarkko Kotola 2021)



#### 4.1.3 Neurorank Oy – Jyrki Suomela

Interviewee Jyrki Suomela has a Master of Education and is an Adjunct Professor who specializes in digital learning environments. He has previously conducted many types of project research related to human behavior. He became acquainted with neuromarketing in Santa Barbara, where a brain research center was established. After returning to Finland, he continued at the forefront of the field of neuroeconomics in academic context. He co-founded NeuroRank Oy in 2007, which however did not “take off” even though they managed to make decent sales. He has also taught neuromarketing at Laurea University of Applied Sciences and acted as a consultant for Innoman Oy, where he discusses how neuroimaging can be applied in product development or service design.

The core idea of Neurorank was to *“to rank different marketing messages by measuring brain activity and to choose the best suitable option for end-use. It was examined which of the marketing messages is the most pleasant from the consumer's point of view by comparing different alternative marketing materials.”* (Jyrki Suomela 2021)

Suomela has a broad history of neuromarketing and based on the interview, has also wide oversight and knowledge about the literature of neuromarketing. When combined with the commercial aspect, Suomela has a great overall knowledge.

*“I consider that I know a lot about neuromarketing. I am a member of NMSBA (Neuromarketing science & business Association) and I have participated in organized events about neuromarketing. I have read a lot of literature about neuromarketing, as well as done research myself. I know that neuromarketing is very popular internationally. ...I consider neuromarketing to be a consultative activity in nature.”* (Jyrki Suomela 2021)

When asked about the state of neuromarketing in Finland when they entered the market, Suomela recalled that the market did not have any competition yet, which might seem as a good opportunity to enter the field due to having larger market area. However, that was not the case as *“we were not able to market neuromarketing so that we would have had enough customers. Neuromarketing was a new thing at the time, and customers did not consider that the added value (from neuromarketing) was big enough.”* (Jyrki Suomela 2021)

## 4.2 Benefits and potential insights

In the literature, neuromarketing has shown remarkable potential and measured evidence that one can gain additional information which can be implemented to marketing decisions. Thus, the following sections aims to clarify the interviewees opinion on how they consider the benefits of neuromarketing in action. The main sight on advantages revolved around the unconscious mind that can be measured by neuromarketing.

*“The biggest advantage (of neuromarketing) is being able to measure the unconscious mind. Usually, people’s decision-making is that a person decides unconsciously, after which he or she justifies the decision for himself or herself. When conducting interview surveys, the rationale for selection is often examined, but not the original mechanism. An example is electric cars - few buy an electric car because it reduces carbon emissions, but it is easy criteria to justify the purchase. However, the purchase may actually be based on looking like a dynamic guy with a rapidly accelerating car.”* (Jarkko Kotola 2021)

*“Brain research can be used to find out people’s true preferences. Through the brain signal, it is often possible to know preferences better than the person himself would know about them. This is the benefit of neuromarketing: providing more diverse information about the customer.”* (Jyrki Suomela 2021)

Thus, it can be concluded that the main advantage of neuromarketing according to the interviewees, is the ability to circumvent the limitations and taboos of test subject’s communication regarding certain sensitive issues.

*“In addition, an area that is hard to ask face to face or online - racism, sexuality, politics etcetera - are a good use for neuromarketing that could act as a “lie detector” ... We have also tested magazine covers with a query: How do you cheat on your husband unnoticed? No one raised this matter in the interview, but the survey seemed to work well based on brain activity.* (Jarkko Kotola 2021)

However, one has to keep in mind, that neuromarketing data is still somewhat fuzzy and in order to gain potential benefits, one has to interpret the data correctly.

*“I believe in the usefulness of neuromarketing; however, the data is not as miraculous as is commonly thought. The subconscious world is not clearly open to the researcher in neuromarketing research.” (Jyrki Suomela 2021)*

#### 4.2.1 Neuromarketing as a complimentary marketing tool

According to Karmakar & Yoon (2016) neuromarketing is often referred as a complementary tool for traditional marketing methods and it can expose the underlying mechanisms that are not otherwise accessible. Similar point of view dominated the answers when asked upon:

*“Another thing that has been talked about a lot: bringing stories to marketing and telling stories. In it, I see that neuromarketing can help. Often stories do not want to appeal to the rational side but more to the unconscious side behind it. So to speak, seeking love at first sight. ... A traditional marketing survey is a survey, one way or another. In this case, the conscious part is played with the brain, while in neuromarketing, the largely unconscious area is partly conscious. “It is like comparing apples and pears” (traditional marketing and neuromarketing) and these results should not be the same.” (Jarkko Kotola 2021)*

*“People are happy to answer oral questions, but when measured from the brain, the results of the brain do not lie. The brain is a whole and we form images subconsciously, which however, is not the opposite of conscious thinking. Decisions are made by the subconscious and conscious entirety of people. ... I see neuromarketing as a tool for marketing communications designers. A variety of marketing materials should be produced, in the testing phase of which neuromarketing should be utilized. Before launching a campaign is a particularly good time to test results with neuromarketing.” (Jyrki Suomela 2021)*

One could argue that the answers support the angle that traditional marketing and neuromarketing are used for the same purpose and should complement each other in order to choose the most effective way to display your message. However, the participants see that neuromarketing and marketing are not comparable with one another, as by utilizing neuromarketing methods the marketing message is evaluated by consumers unconscious mind while traditional marketing methods expose the conscious opinions – therefore forming an entirety of human mind that effects our decisions.

#### 4.2.2 Monetary results of neuromarketing

The monetary benefits – in other words actual statistical data of neuromarketing - proved to be a gray area of which data is not easily obtainable. However, Kotola (2021) had one comparable project in which they had tested neuromarketing on the cover of a magazine.

*“We were able to measure the correlation of neuromarketing to sales in a project that tested magazine covers. Unsold magazines are returned to the publisher, in which case the store only pays for the magazines sold. The price is the same everywhere for a particular magazine or issue. This allowed us to measure the correlation, from which we found good correlations for the effect of neuromarketing.”* (Jarkko Kotola 2021)

To conclude, according to Kotola (2021) neuromarketing can bring valuable monetary benefits to those who choose to complement their marketing decisions by neuromarketing. However, the monetary value of marketing decisions is one of the hardest key figures to measure and can often prove to be vague.

*“Anyone who claims that marketing can be measured in euros is, to some extent, a liar. The decision on whether or not to sell a product is not impacted by an awful lot of marketing. Advertising has an impact, but this often is hard to measure.”* (Jarkko Kotola 2021)

### 4.2.3 Applications for EEG

As marketing is a broad field, there exists many types of marketing messages that neuromarketing could be applied for. Therefore, it was found necessary to question to what forms of marketing messages neuromarketing is exceptionally well-suited for and can generate insights into. The interviewees came to the same conclusions, that the strengths of neuromarketing by EEG lie in analyzing video material but could be utilized for assessing other marketing messages as well.

*“Video advertising is a particularly good target to measure with EEG. Another good target is a testing environment where you have to test the same thing and the same question in different cultures.”* (Jarkko Kotola 2021)

*“With EEG, we were able to evaluate all possible messages - image, video, and communication. Current methods are able to evaluate a wide variety of marketing messages. The advantage of EEG is real-time data, which is well suited for video analysis.”* (Jyrki Suomela 2021)

However, EEG has its limitations in what comes to finding insights. As the EEG helmet or band is applied to the test subject, they have to remain stationary and avoid eating, drinking etcetera, in order to reduce the amount of fuss. Thus, the method is denied of observing how test subject would react to wandering around different places of which would like to be collected data of.

*“The problem is that a person should be stationary during the EEG test, i.e. cannot move, eat, or drink. That is, the EEG cannot be used to go through a store, for example, and see how different departments stimulate the brain, but this can be filmed and shown to a person.”* (Jarkko Kotola 2021)

Suomela (2021) delimited the method of EEG in behavior predictions, as with EEG it is not possible to collect data that would tell if someone will or will not buy a certain product.

*“The EEG can be used to weed out bad alternatives, but it is not possible to tell if someone is buying a product based on the measurements. However, with fMRI we are able to make more reliable predictions of consumer behavior.”* (Jyrki Suomela 2021)

#### 4.2.4 Neuromarketing in the future

When asked upon the sights and potential that neuromarketing may hold in the future, the answers differed from the point of perspective – commercial and academic. Although respondents saw neuromarketing developing rapidly in the future, they did not believe that neuromarketing would take giant leaps that could make neuromarketing a dominant marketing method for commercial usage:

*“I believe that neuromarketing will become more common in some form. However, I think it is still in its infancy. ... I think that there will be no terribly radical change. Neuromarketing is able to hone packaging or advertising in the direction that it attracts. Not only the conscious- but also the unconscious side of the human mind. I do not believe in a ‘buy button’ and I do not think you will find one in the future... no marketing can bypass human free will”*  
(Jarkko Kotola 2021)

*“I see that solutions that can manage a diverse space of behavior would be a step forward for neuroscience. These factors can already be measured in the brain. Brain research is one solution to the problem of the multidimensionality of human behavior. Brain research provides and will continue to provide more multidimensional responses than conventional methods in the future ... The future of neuromarketing is significant and will change marketing. However, I cannot estimate the timespan of this. As brain measurement technology evolves and becomes more affordable, this will become an everyday tool for business.”*  
(Jyrki Suomela 2021)

The idea of neuromarketing growing into such enormous proportions that it could eventually figure out the ‘buy button’ or that one could market products or services in a manner that they would bypass human free will therefore seems farfetched. However, neuromarketing is still seen as a possible ‘game changer’ in the field of marketing in the future, but to what extent is still unclear. To answer the common presumption that neuromarketing could become a divine tool for researchers to take advantage of was shut down by Suomela (2021) as he considered that the user data collected by individuals while browsing the web was far more powerful than neuromarketing.

*“Neuroimaging is a tricky area and the data it provides is not very comprehensive. Services that collect personal data, for example through a browser, work more strongly than neuromarketing. These readings and results cannot be achieved with neuromarketing studies even in the future.” (Jyrki Suomela 2021)*

### 4.3 Ethical issues in neuromarketing

After discussing the benefits and potential insights that neuromarketing can provide to its users, the next questions were tied to the ethical aspect of neuromarketing and whether it could have disadvantages that reduce the added value of neuromarketing. The questions were designed to discover, whether interviewees believed in ethical issues regarding neuromarketing and if they could result in brand damages or monetary losses. The ethical issues have been brought up earlier in this thesis and according to Pop, Dabija, & Iorga, 2014; Yun 2019; Lim 2018; Ariely & Berns 2010; Odekerken 2008, they should be considered carefully when conducting neuroscientific research.

#### 4.3.1 Perceived ethical issues

Despite the haunting ethical issues described in the former literature of neuromarketing, the test subjects did not consider the ethical issues as groundbreaking delimitations to neuromarketing as a whole. The answers had a similar tone of voice in them, as the ethical issues of neuromarketing could be reflected to any other type of marketing or business activities.

*“Compared to other research methods, I do not see any obstacles to the fact that the matter could not be studied by neuroimaging. The only thing that goes into all marketing, like tobacco and marketing- is this ever ethical? I do not think we can create needs from scratch but to steer the choice made in a certain direction. ... I do not see that the instrument is ever a moral or ethical problem, but what technology is used for. Not the technology itself, but the underlying motives.” (Jarkko Kotola 2021)*

*“I do not see neuromarketing as an ethical problem - at least in any other way than in traditional marketing. Brain data is not stranger or more mystical than any other data collected. If you can stand behind a product or service with a good conscience and at least the product is not dangerous, then I do not see ethical disadvantages.” (Jyrki Suomela 2021)*

Kotola (2021) also addressed a political issue that he had encountered while operating with Exakti. This is a good example of how some people might want to take advantage of neuromarketing to help their own political agendas.

*“Once we received a test request for the effectiveness of a certain country’s TV shows. The test proponent had a political agenda in the background. However, discussions did not continue after that. Political problems depend on the agenda, such as increasing community spirit or “good goals”. I see no obstacle to these, but on the other hand do we have universal common “good goals?” (Jarkko Kotola 2021)*

#### 4.3.2 Brand damage by ethical issues

Today, companies need to be as transparent and ethical as possible in order to avoid bad publicity that could have negative impact to their business. As neuromarketing is still an unknown area among the Finns, many people could misinterpret the purpose and methods that are utilized in neuromarketing – therefore possibly resulting in negative overall value of neuromarketing. Thus, this point of view was examined with the next questions and resulted in somewhat similar answers.

*“It is quite possible that neuromarketing may have a negative impact on the brand. Especially if we suddenly got information that we have helped to sell placebo-drug that has been tested with neuromarketing. This would look bad both for us and for the company selling this. People also have reservations about putting the hardware on their head and for us not asking any questions.” (Jarkko Kotola 2021)*

*“I believe that neuromarketing adds value to a brand. However, the processes need to be transparent, but I do not think this contains any mystique which is*



*a good thing. ... However, if big companies start to bring out that they have taken advantage of neuromarketing, this could be detrimental.” (Jyrki Suomela 2021)*

Even though it was implemented that neuromarketing could have a negative effect on the brand, the situations in which would happen appeared to be somewhat minimal. The fact that people might have reservations for the machinery used in neuromarketing indicates that the method is still relatively unknown in Finland. However, Suomela (2021) states that *“from the perspective of recruiting subjects, I do not think neuromarketing is harmful. People are happy to participate in the studies.”*, which gives the impression that public might not be so reserved after all.

#### 4.3.3 Monetary disadvantages by neuromarketing

As mentioned before, the monetary results of marketing are rather hard to measure with solid accuracy or even give loose indicators of. In the situation of whether the ethical issues of neuromarketing have led to financial losses, the answers turned out to giving outlines of the plausible disadvantages rather than actual concrete figures. However, the interviewees did not see that ethical issues could result in significant monetary losses, except of researcher’s incompetence to conduct the study or analyze test results. Therefore, the answers retell the ethical issues that Mooney-Somers & Olsen (2017) stated; only researchers with relative experience, qualifications and competence can engage in ethically conducted research.

*“As I see, the only negative aspects that neuromarketing can cause, the packaging goes wrong, or a bad ad starts spreading. However, nothing catastrophic. ... Mainly false research results that lead to false conclusions might be an issue here.” (Jarkko Kotola 2021)*

*“Researcher incompetence can lead to misunderstanding of basic research data. I do not see any problems other than over-interpretation or under-interpretation, which can happen in the research results of other methods as well. Businesses need a lot of neuromarketing knowledge to apply findings to actions.” (Jyrki Suomela 2021)*

However, in case of a competent and professional researcher conducting the studies, the answer is reversed as expected, creating added value through marketing decisions. According to Suomela (2021), this value could even be significant – rather than negative.

*“In this case, you take advantage of the rich information that brain research brings. The professionalism of the communicator / researcher adds value to neuromarketing and neuromarketing to marketing. Neuromarketing thus brings additional understanding to the marketing process. Neuromarketing thus adds value to the marketing process - even significant in some cases.”*  
(Jyrki Suomela 2021)

To conclude, the suggestion that utilization of neuromarketing could lead to significant monetary losses was not seen as likely scenario when the research person is a professional following the ethical codes of neuromarketing. However, as suggested in previous chapter, neuromarketing could in some cases perhaps cause damage to the brand and therefore result in monetary losses that could not be easily measured. Thus, the product or service that a company decides to boost by neuromarketing should be ethically appropriate, as it creates the foundation to whether neuromarketing have negative or positive monetary value.

#### 4.3.4 Trajectory of ethical issues

To conclude the interviews, the interviewees were asked how they see the ethical issues of neuromarketing evolving in the future and whether they see it possible that the field would have rising dilemmas to deal with as neuromarketing continues to grow. As the possibility to discovering the ‘buy button’ was pretty much ruled out, the ethical dilemmas and scenarios seemed to focus more on the ethical responsibility of the researcher conducting the studies rather than the technology evolving into direction that could expose hidden desires of individuals. Kotola (2021) seemed to think that ethical issues in the future concern the service providers which can unjustifiably claim that neuromarketing will lead to exaggerated results.

*“The buyer of neuromarketing often has no idea what they are buying, so somehow one should try to find gauges to verify that only ‘hot air’ is not being sold. I often hear big claims about neuromarketing that I think are completely impossible. There is no such thing as a sudden increase in sales by 50%. At*

*least the industry would need some way to verify that the methods and findings used are scientifically valid.” (Jarkko Kotola 2021)*

Suomela (2021) considered that the future ethical issues could be an outcome of evolved technology, of which would expose more detailed information on consumers and if researcher would somehow leak that information into public.

*“The worst ethical problems stem from the unprofessional conduct of research, in which, for example, the confidentiality of data and an individual respondent fails. That is, practically the same problems as in other studies. For example, if it can be shown that a person is a psychopath and this leaks to the public, neuromarketing can become an ethical problem. Thus, resolving an individual’s personality disorder may thus be one problem in the future, which however, can be prevented by adhering to ethical principles.” (Jyrki Suomela 2021)*

Therefore, the ethical issues of neuromarketing in the future are likely to revolve around the main themes that are as well on display today. By adhering the ethical code of conduct, the researcher can avoid the ethical disadvantages that neuromarketing can possibly expose to. However, as the technology is still evolving and it is impossible to predict into what extent, thus the scenario that neuromarketing could reveal sensitive information is still possible.

## 5. FINDINGS AND CONCLUSIONS

The purpose of this study was to discover what is the additional value of neuromarketing that companies can achieve in Finland. The best way to answer this question was to evaluate the potential insights that neuromarketing can reveal to aid marketing decisions, and to concern the potential damage it may simultaneously generate. Additionally, the financial figures to what extent can neuromarketing have an effect were also sought after, but as the value of marketing has an uninterpretable shape, the benefits could be only looked at through correlations. Some publications (e.g., Pop et. al. 2014; Yun 2019; Lim 2018; Ariely & Berns 2010) discuss the ethical issues and some (e.g., Bazzani et. al. 2020; Sung et. al. 2019; Lin et. al. 2018; Yadava et. al. 2017; Karmakar & Yoon 2016) the beneficial matters of neuromarketing. The evaluation of these sides reveals if neuromarketing – still an unknown area in Finland - should become more utilized, in other words, generates added value.

Karmakar & Yoon (2016) argue that neuromarketing provides a tool for complementing traditional marketing methods as it can reveal underlying mechanisms that are not accessible by traditional questionnaires - to access the unconscious side of the consumer. Furthermore, according to Sung et. al. (2019), by neuromarketing companies can discover deep information on directed different elements of their marketing message or -appearance, underlying psychological information on consumers and find subconscious preferences that are not reported by study subjects. After analyzing the results of the interviews, it can be stated that one of the benefits of neuromarketing indeed emerge from gaining the ability to monitor the subconscious perception of stimuli. The decision is made unconsciously, after which the decision is justified to itself using possibly false arguments. (Kotola 2021) Thus, the information that is unspoken of can be obtainable via neuroimaging methods and therefore, can in some cases act as a “lie detector”. This was also seen as the main benefit that came out in the interviews. By analyzing the silent as well as spoken output as a whole, marketers tend to receive richer insights than by just spoken output. Furthermore, one has to keep seeking for ever more creative methods to understand the consumers impulses – which certainly always are not conscious – and based on the findings, neuromarketing could be that decisive factor that reveals the entity of preferences.

Furthermore, as a reminder it is stated that neuromarketing is seen as a support tool for marketing and thus brings the added value to marketing. Neuromarketing does not

miraculously provide the right formula for succeeding in the competition but allows marketers to compare the alternative marketing material to choose the best option that stimulates the brain most conveniently in a testing phase. This is seen as valuable aspect of neuromarketing in general as well. The opportunity to get the best response for the money invested in marketing actions provides an advantage in highly competitive markets and as Kotola (2021) stated, the money companies in Finland invest in marketing is not that high. However, the current restrictions of machinery restrain the possible insights that can be found in Finnish soil, as mainly EEG is in use. By EEG, test subjects were also not able to participate in physical activities. Furthermore, Jai et. al. (2020) suggested that study by fMRI instead of EEG would be optimal in order to record more implicit responses in the process. Based on these findings, it can be suggested that as a support tool neuromarketing with EEG presents its best sides in fine adjustment of marketing materials – with before mentioned limits – but can be used for strategical decisions as well. However, additional methods such as fMRI could turn out to be fruitful on a longer run.

As it turned out in this study, neuromarketing is still an unknown area in Finland. This also affects the previously mentioned hardware limitation, with more expensive investments such as an fMRI scanner being uncertain alternatives to cost-effective operation. In the interviews, Kotola (2021) also pointed out that they were unsure whether they were a market research company or not. In addition, several terms such as "neuro" and "brain research" were used in the interviews, and neuromarketing was equated with consumer behavior. This also suggests that neuromarketing is still a rather undefined term in the Finnish market, which provides a basis for the fact that this method has not yet been widely used. Thus, the added value that neuromarketing brings to marketing has also not grown to the level to which it would have opportunities for.

According to literature (e.g., Lin et. al. 2018; Hakanen 2019) and the interviews, it can be also concluded, that the potential insights that neuromarketing provides are hints to marketing topics such as pricing, brand development, advertising – especially video material (with EEG), packaging and fresh viewpoints. In addition, Kotola (2021) states, that the usage of neuromarketing had strong correlation with the number of magazines that were sold in one of their projects they were involved in. Therefore, it can not be denied, that neuromarketing can have a significant impact in fundamental decisions which are the essence of a successful strategy. More efficient pricing, better branding and more tempting

advertising are just a few examples of things that can be improved by neuromarketing – even if just slightly. Nevertheless, improvements and benefits that may seem small tend to grow into decisive factors in highly competitive environment. If there comes a possibility to utilize neuromarketing, it should therefore be considered of.

Nevertheless, one has to consider that the product itself is not fully designed with neuromarketing, but as mentioned before, provides a great complementary tool to choose the best option. This is also supported by Sung et. al. (2019), as they state that by observing neuromarketing data one can gain insights concerning marketing decisions that competitors may not know of. Additionally, following the recommendations and findings of neuromarketing significantly increases positive business and marketing results (Sung et. al. 2019). Also, as discussed before, neuromarketing could be that decisive factor which dictates the success of selected marketing strategy with pricing, marketing material etcetera - even with slight adjustments or improvements. Therefore, based on the insights from the interviews and the literature it can be stated, that neuromarketing provides monetary value when it is utilized in an ethical manner and the agenda or the product itself does not contain any alarming signs.

This answers to the sub questions presented in the first chapter of this thesis:

*“What kind of economic benefits can companies achieve in their marketing decisions through neuromarketing?”*

*“What potential insights can be found with neuromarketing?”*

However, neuromarketing does have its downsides as ethical issues have raised concerns among academics and the interviewees had interesting points regarding the issues. The ethical issues were earlier in this thesis broken down into two categories: protection of consumers and scientific reliability. By the set of questions drafted for insights from both of these topics, it was sought whether the downsides of neuromarketing can be greater than the benefits and therefore result in a negative outcome.

Farah (2005) suggested that the subject's privacy of thoughts and private information is not seen as an issue if the research is conducted with appropriate protection of privacy and the data is handled correctly. Similarly, the interviews had the same approach to this issue as the main takeaway was that in comparison with other research methods, neuromarketing data was not seen to give radical information, and with proper handling would not have downsides. The neuromarketing data could therefore be seen as any other marketing data and should always be handled with care and by following the recommended code of ethics. The findings therefore suggest that the person conducting the research and his or her agenda are vital decisive factors of preventing ethical issues from emerging. Furthermore, it can be stated that in conducting neuromarketing research, also the data processing plays a big role in prevention of ethical issues. However, this is true for all data processing, so neuromarketing in this particular case is not seen to cause major ethical disadvantages on the brand.

In what comes to financial losses that neuromarketing can lead to, the main concern is the competence of the researcher. Lim (2018) suggests that the competence of the researcher is in the key position when assessing the scientific reliability. Kotola (2021) also states that the incompetence of the researcher may lead to wrong decisions with strategy or certain product, but to nothing too catastrophic. According to Suomela (2021), this very question does not concern neuromarketing only, but all the other methods as well – in every method the competence is needed in order to find the right interpretation. Otherwise, it would lead to misunderstanding of basic research data and leading to over- or under-interpretations. Therefore, based on these findings it can be stated that competence of a researcher indeed concerns the succession rate of a neuromarketing study. With competent researcher, the results can be reliable and implemented to strategies. However, there still lies an issue where companies taking advantage of neuromarketing might not be able to verify that the findings from the researchers are not just empty claims and by utilizing the suggestions, the results could have negative outcome.

As consumers might have biases towards the equipment of neuromarketing and the process itself, it was considered important to clarify the effects it might have on the brand of companies for taking advantage of this method. As there was not significant information found in the previous literature, it has to be settled to follow the data gathered from the interviews. Based on this data, it can be suggested that the actions of neuromarketing – better

ad, video, picture, pricing etcetera, - affects the brand in a positive manner, therefore adding value on the brand. However, it was also stated that neuromarketing can have a negative impact directly on the brand as well. In this case the agenda or the product itself that is being measured with neuromarketing has to be unethical or opaque as well. Therefore, when utilizing neuromarketing methods, one has to consider whether they stand behind their product or service or not and most importantly, is it ethical. Otherwise, it may affect the brand negatively.

Therefore, it can be concluded that the issues of neuromarketing might affect the marketing outcomes negatively by choosing the incorrect option from misunderstanding the data. However, as long as the researcher has the correct competence, this is not seen as an issue in neuromarketing and does not lead into negative marketing outcomes. It can also be stated, that neuromarketing can in some cases have a negative causation to the brand and should be thought thoroughly whether it adds value or decreases value before implementation. Also, the findings which are obtained with neuromarketing should be inspected thoroughly for validity, especially in the beginning of cooperative relationships.

This gives an answer the third sub research question:

*“How can ethical issues effect the brand and marketing outcome in Finland?”*

Based on these conclusions, a flow chart type framework (Figure 5.) is presented which describes the scenarios whether additional value is created or not.



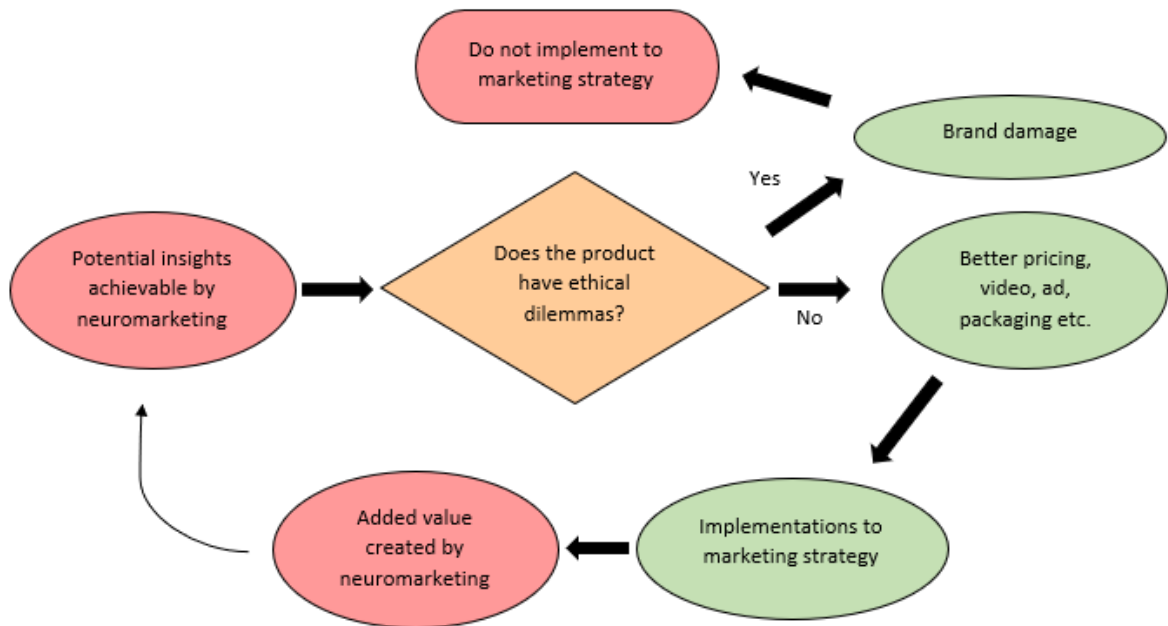


Figure 5. Value-added process in neuromarketing

This figure proposes that at all times, neuromarketing has the potential to gain at least some insights on studied subject that traditional methods would not discover. After gaining the insights one has to consider all the issues which might arise if the usage of neuromarketing were to become public information, as this could cause in brand damage. However, if any ethical dilemmas concerning the product does not surface, the added value comes by implementing the unconscious information to choose the best suitable material, pricing, packaging etcetera for marketing and by implementation to strategy. This is also the added value that Finnish companies can gain from utilization of neuromarketing by EEG.

This answers to the final and main research question:

*What added value can Finnish companies gain from utilizing neuromarketing by EEG method?*

## 5.1 Limitations and suggestions for further research

The limitations of this study revolve around certain themes that are general in topics which have limited data or evidence to show for. The sampling was also narrow as only two experts of the field were interviewed due to lack of competent persons in Finland. Furthermore, the actual data of cases that the effect of neuromarketing could be measured, was also limited. Thus, it has to be considered that the before mentioned correlation in sold magazines that neuromarketing aided was only a singular occasion. Although this shows significant potential that is achievable, the sample size is extremely small. Therefore, it cannot be generalized that the use of neuromarketing invariably correlates with sales and thus generates added value for its users.

It was also assumed that neuromarketing generates added value when comparing the alternative options of marketing material. This fact may have been based on the presumption that one of the material stands out from the others as a “good option”. However, the possibility that even if a single material stands out from the other options, it still might be rather terrible – in other words, all of the materials are poor. This suggests, that neuromarketing does not generate value for its use in all scenarios, as none of the materials to begin with are cost-effective and the use of neuromarketing would only increase the costs.

Finally, despite ethical issues and brand damage that the use of neuromarketing can and is highly probable to lead to, there was no actual data or cases to show for. Even though the issues are discussed in previous literature and this is one of the only restrictions that has to be kept in mind while conducting a neuromarketing research, the data obtained for this thesis regarding the matter was narrow. Therefore, in this thesis it cannot be accurately verified, that the ethical issues of neuromarketing can result in significant brand damages and thus to negative added value.

As this study involves a few limitations, it is on the other hand an advisable indicator for further research. The findings from this study suggests that proper use of neuromarketing allows companies to discover additional insights to their marketing strategy and therefore holds a remarkable potential when proceeding to the future. Therefore, with proper data obtainable from companies that have utilized neuromarketing in their market research, one could discover the legitimate monetary value neuromarketing provides. Thus, it would be ideal if the same study were conducted by interviewing companies which have utilized

neuromarketing in Finland. However, the situations with different companies are unique and by following the same process the outcome might be different with each reiteration. Additionally, it could be interesting to see the outcome of the proposed framework (figure 5.) by products or companies which operate in the so called “grey area” of ethics. Such research however seems unlikely to be fulfilled as companies in “grey area” are probably not eager to participate in suggested research.

Furthermore, it would be interesting to conduct a field study on the consumers brand awareness concerning companies that have and have not taken advantage of neuromarketing. As discussed in this thesis, neuromarketing can provide the slight edge on the competitors and as the brand logos nowadays are visually somewhat similar, that slight edge might just be the divisive factor. How does brands that have utilized neuromarketing stand out from the sea of brands? For instance, this could be conducted as quantitative analyzes by structured questions in a form of survey. However, as a brand of a company consists of countless of other factors than just the visual aspects, this would require a much deeper comprehension and research from the researcher to be able to examine all those factors.

Finally, as Kotola (2021) stated that neuromarketing had strong correlations in selling of magazines but did not really have an impact on the memorability of the cover, this would be an interesting topic to study furthermore. It is common that people buy magazines or something similar impulsively and do not halt to think of the purchase decision. Yet, magazines and whatnot are designed to awake momentary interest and they do not have to be memorable for the consumer – yet that exact magazine was selected from the pile of similar magazines and it might be the marginal advantage as a result of neuromarketing. This ultimately leads us to other marketing decisions such as branding or marketing material as neuromarketing had strong correlations in selling, but low in memorability. To what extent should neuromarketing be utilized in decisions that seeks for memorability, and in what extent for pure selling purposes – what is the optimal amalgamation of neuromarketing for both, memorability and selling?

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## **APPENDICES**

### **Appendix 1. Interview questions**

#### **Background questions**

1. Introduce yourself shortly
2. Describe your educational background
3. Describe your occupational background
4. In general, what do you know about neuromarketing?
5. Was the neuroimaging sector familiar to you before founding your company?
6. How?
7. Describe shortly the idea of your company and the service you are offering
8. Why did you end up working with neuroimaging/marketing?
9. What occupational and educational backgrounds do your staff have?
10. At what point was the field of neuromarketing in Finland when you entered the market?

#### **Benefits and potential insights by EEG**

11. What kind of benefits have you discovered in neuromarketing so far?
12. Is there some form of marketing that neuromarketing with EEG applies exceptionally well for?
13. How does neuromarketing by EEG fit in as a complimentary tool for marketing?
14. From a monetary point of view, do you have any former cases showing great value for the input of neuromarketing?
15. What kind of insights has neuromarketing revealed to you that traditional marketing methods would not have?
16. How would you compare these insights with insights from traditional marketing?
17. What possible potential benefits could emerge when neuromarketing evolves further?
18. Does limiting yourself only to EEG method restrain possible benefits?

**Ethical issues in neuromarketing (Protection of consumers & scientific reliability)**

19. Have you encountered challenges and what kind, related to ethical issues in neuromarketing?
20. What do you personally think about ethical issues regarding neuromarketing?
21. How does the privacy of consumers effect neuromarketing?
22. What effects can neuromarketing have to the brand? (pros and cons)
23. Has the problem of ethical issues caused monetary losses in your operations?
24. What does it take from a regular marketing professional to conduct a neuromarketing study?
25. If the study is not done by a competent person for neuromarketing, what kind of damage and incorrect findings can it cause
  
26. How do you see the ethical issues of neuromarketing presenting themselves in the future?