Master of Science in Marketing

Neuromarketing –
Fundamentals and insights for advantageous advertising in a luxury watch context

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

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Declaration

I declare that all the work in this dissertation is entirely my own, unless referenced in the body of the text indicating the source. Bibliography gives the full reference of the source consulted and used in the dissertation. Further, I declare that no portion of the dissertation has been submitted in support of an application for another degree or qualification in any other university or institute of learning.

Katinka Hengsberg

30-12-2014

Date:
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Abstract

Advertising effectiveness has received attention from academic researchers in the neuromarketing field. However, the emerging character of the discipline implicates that research has been limited and many key areas remain insufficiently explored. Possible applications of neuromarketing techniques to generate data whose analysis results may enable practitioners in the luxury watch industry to create more effective advertisings and drive purchasing behaviour represents one such critical area that remains underdeveloped.

This dissertation examines the potential of neuromarketing techniques to inform the effectiveness of luxury watch advertising.

In order to build a more cohesive understanding of a potential neuromarketing practice in the luxury watch industry, possible applications of neuromarketing techniques to inform the various components or stages of advertising effectiveness are determined and contrasted with areas for amendment and improvement that luxury watch advertisements exhibit. In this regard, the researcher unveils various findings that have not been addressed in previous academic literature.

The research methodology undertaken is underpinned by a mixed methods research design which entails exploratory and descriptive components.

In-depth interviews as the first stage of research are utilised as qualitative data collection technique in order to receive detailed responses to complex issues revealing the correspondents logic and thinking process. A subsequently conducted web survey affords the researcher to generate quantifiable data that supports the generalisation about the phenomenon under study.

The outcome of this endeavour is the presentation of several conceptual and contextual insights into the applicability of neuromarketing techniques to inform the effectiveness of luxury watch advertisements which are hoped to provide a point of reference for future research pertinent to academics and practitioners alike.
Chapter 1: Overview

1.0 Introduction

Methods and insights from the field of neuroscience have received much interest and attention in the field of marketing and consumer research from academics and practitioners alike. During the last decade, this fostered the emergence of a new discipline composed of both elements, firmly known as neuromarketing. Simplistically, neuromarketing can be defined as any marketing or market research activity, which uses methods, techniques or insights from the field of brain science (Genco, Pholmann and Steidl, 2013, p. 8).

As the discipline of neuromarketing continues to evolve, its methods are becoming increasingly important to deliver meaningful data to effectively create targeted advertising campaigns and influence purchasing behaviour.

Likewise, luxury watch brands, seek to create target-group specific advertisements emphasising facets of luxury that refer to exclusivity, premium quality and aesthetic aspects.

Just as both luxury watch advertising and neuromarketing techniques as a mean to measure advertising effectiveness continue to evolve as separate phenomena, the literature surrounding this area has evolved accordingly.

Recently, Tungate (2009, pp. 56-58) examined the importance for luxury watch brands to establish a relationship with its customers by innovative experience design as well as the generation of brand-specific associations in order to encourage purchase.

The recall of these memory associations also plays an important role in the burgeoning field of neuroscience research. Relevant brain areas for the recall are well-known (Wilson, Gaines and Hill, 2008, p. 391) and a before/after comparison of data allows to determine a brand’s potential to induce a re-evaluation of a product through a previously shown advertisement (Perrachione and Perrachione, 2008, pp. 309-310).

The neuromarketing literature evolved addressing individual advertising relevant problems with methods and insights from brain research without basing the research on an underlying framework that demonstrates effectiveness on this subject.

This dissertation seeks to add to the currently existing literature in academia. It takes secondary literature findings into account and strives to build on this existing knowledge by conducting primary research. The literature review runs like a common thread through this topical area. Moreover, it helped to group and structure themes that are under research and lead to an identified lack in secondary research as logical consequence. This has aided the research aim of this work and provided a viable basis for the subsequent development of research objectives.

The following study is both exploratory and descriptive in nature. Firstly, it endeavours to explore, identify and probe the subject matter through the use of in-depth interviews. In-depth interviews allow the author to generate high quality information also providing insight and guidance in the quantitative stage.
Subsequently, descriptive research strives at providing systematic, factual and accurate information about a social phenomenon through the use of a web survey. This allows the author to document attitudes and characteristics of a group of individuals in order to provide measures of a situation.

Applying an inductive approach compliments this study since an analysis of patterns in the data collected allows to develop new theory which is based on empirical evidence and relevant for both the luxury watch industry and neuromarketing research.

1.1 Justification for Research

Although advertising effectiveness has received attention from academic researchers in the neuromarketing field including branding (Walvis, 2008, pp. 176-177), consumer decision-making (Yoon et al., 2012, pp. 474-475; Ratnayake, Broderick and Mitchell pp. 1295-1296) and brand equity (Plassmann, H., Ambler, T., Braeutigam, S., Kenning, P., 2007, p. 151) few scientific neuromarketing studies have been published yet that adequately document in which way neuromarketing tools can inform the various components or stages of advertising effectiveness. Indeed many academics readily recognise that neuromarketing as an emerging discipline will continue to reveal specific new insights into unconscious and automatic processes that influence human behaviour more deeply in the future (Hubert and Kenning, 2008, p. 272), accompanied by advances in neurology and techniques of conducting neurological research (Grimes and Kitchen, 2007, p. 197).

Moreover, little literature exists regarding luxury watch advertising and studies investigating consumer’s perceived luxury watch advertising effectiveness have not been published at this point in time.

Even though the available literature has provided a solid foundation and exercised a direction in predominant thought, it is apparent that a gap in the literature exists to both ends. Thus, no particular framework is in place that clearly depicts weak points in luxury watch advertising effectiveness which may be improved by applying neuroscientifically supported marketing research at certain stages. By presenting a cohesive work that is strictly concerned with neuromarketing tools and luxury watch advertising effectiveness, this piece of research enriches existing academic works.

The present research unveils a foundation that neuromarketing academics need to build upon by conducting studies that examine and scientifically prove the sphere of influence which neuromarketing tools can exert on specific advertising effectiveness components that have not been investigated in this regard yet.

Likewise, the present work investigates luxury watch consumer’s perceived advertising effectiveness and identifies room for improvement on this subject. This implies demonstrating possible applications of neuromarketing techniques to generate data whose analysis results may enable practitioners in the luxury watch industry to create more effective advertisings and drive purchasing behaviour.

The combination of luxury watches and creating more effective advertisements by investigation consumer’s unconscious processes is of particular personal interest to the researcher. Neuromarketing as a very interesting and still emerging field of marketing offers the researcher high
potentials to enhance personal knowledge. This acquisition of knowledge can constitute an advantage in connection with a career aspiration in the neuromarketing industry as well as in regard to a potential application of neuroscientifically supported market research. Likewise, luxury watches and particularly luxury watch advertising is an area which evokes the investigator’s commitment. Luxury marketing and its demanding consumer base is a fascinating and challenging marketing cornerstone with which the researcher had minimal points of contact before providing a basis to deepen and extent existing knowledge.
Chapter 2: Literature review

I. Academic Review

2.0 Introduction
Saunders, Lewis and Thornhill (2012, p. 75) highlight that reviewing literature critically provides the foundation on which the research is built. A good literature review is comprehensive, critical and contextualised. Thus, it provides the reader with a theory base, a survey of published works that pertain to the investigation and an analysis of that work. The review helps to provide a critical and factual overview of what has gone before (Hofstee, 2006, p. 91).

2.1 Content of the Literature Review
This literature review is divided into two parts.

The academic review, as first and most expansive part of the review provides a holistic picture of neuromarketing by examining different perspectives on this sub-category of neuroeconomics. Prominent brain structures in neuroscience are investigated which serves as foundation crucial to deduce the relevance of main neuroscientific functions and methods applied in neuromarketing. The review incorporates insights on the most commonly used neuromarketing techniques, firmly known as fMRI, EEG and MEG and scrutinises potential professional challenges and ethical issues which the application of these techniques may entail. Significant means of communication to advertise luxury goods, in particular watches, are ascertained to examine the scope of data generation and measurement by neuromarketing tools and the extent to which an interpretation of data generated by neuromarketing techniques can influence advertising effectiveness.

The second part of the literature review is an industrial review addressing the global jewellery and watch market and the global luxury watch market since these markets are closely linked together. Furthermore, the global consumer interest for luxury watches is examined and the main players on the global luxury watch market are identified. Both parts of the literature review flow into each other and provide evidence for the subsequent research question.

2.2 Neuromarketing
Neuromarketing emerged as a sub-category of neuroeconomics which applies neuroscientific findings and methodologies into economic research in order to investigate economically relevant behaviour (Hubert and Kenning, 2008, p. 272; Zurawicki, 2010, p. 287). Neuroeconomics as an interdisciplinary field crosses boundaries between economics, psychology and neuroscience originally providing a test for a large number of competitive theories of decision making (Rusticini, 2009, p. 672).

However, instead of just focussing on better understanding decision-making processes of individuals, neuromarketing techniques address marketing relevant problems by testing and recording a subjects’ reaction to a certain stimulus with the intend to reveal consumer preferences (Marci, 2008, p. 473; Yoon et al., 2012, pp. 474-475). Data gained through the employment of neuromarketing techniques can deliver meaningful insights for building targeted advertising campaigns, designing new products or shopping environments and ascertaining the reasons behind consumer preferences for certain...
brands. Thus, neuromarketing can be considered as a more radical and much more specific sub-area of neuroeconomics (Belden, 2008, pp. 249-250).

The first studies conducted under a neuroscientific approach date as far as 1979 when neuroscientific tools were used to link affect and electrical patterns in the brain (Morin, 2011, p. 133). The earliest reported use of the term neuromarketing is stated to be in a press release by the Atlanta advertising company Brighthouse in 2002, in which the creation of a business division using the neuroscientific technique fMRI for marketing research was announced (Fischer, Chin and Klitzman, 2010, p. 231).

2.2.1 Neuromarketing as academic scholarship and business activity

Researchers propose conflicting definitions of neuromarketing by considering it as a scientific field or a business activity. Lee, Broderick and Chamberlain (2007, p. 200) argue that neuromarketing should be considered as academic scholarship and a valid field of study and not simply as an application of neuroimaging techniques to sell products. The authors attempt to widen the scope of neuromarketing beyond commercial brand and consumer behaviour applications, to include a wider conceptualisation of marketing science, and conclude that neuromarketing is an important area for future research in order to try to fully understand human behaviour.

In contrast, Hubert and Kenning (2008, p. 285) see neuromarketing as a business activity rather than an academic field focused on scholarship. They propose that the broader field of neuroscientific consumer research, to which Lee, Broderick and Chamberlain (2007, p. 200) refer to as neuromarketing, should be considered as consumer neuroscience. The authors define neuromarketing more narrowly as an application of these findings within the scope of managerial practice. By reviewing current literature, the authors state the assumptions that neuroscience is beneficial to determine which consumer segments are reached by advertisement strategies and to ascertain the probable future purchase of brand. Furthermore, consumers are seen as likely to benefit from neuromarketing by being presented with better products. In regard to these premises, the authors conclude that consumer neuroscience can confirm, reconfigure, or improve conventional marketing theories and identify the need for further validation and expansion of neuromarketing experiment outcomes (Hubert and Kenning, 2008, pp. 287-189).

2.2.2 Prominent brain structures in consumer neuroscience

The field of neuroscience is based on investigating the structure and function of the brain (Perrachione and Perrachione, 2008, p. 304). Certain brain structures are associated with the processing of products, prices, advertisements and brands (Hubert and Kenning, 2008, pp. 285).

Nevertheless, neural activation patterns have to be interpreted with caution since the activation of a certain area can have a different meaning depending on the context (Sanfey, 2007, p. 601). To better understand the functionality of the brain, prominent brain structures are outlined as follows:

Rewards

The encoding of human reward responses that positively reinforce behaviour is dependent on learned expectations, context, timing, and the reward dimension (McClure, York and Montague, 2004, p. 260). The umbrella term for brain structures involved in processing rewards is the "reward system", a
complex network of different brain areas that are essential to for the understanding of consumer behaviour.

Generally, the reward system is a complex evaluation system that stimulates especially goal-directed behaviour by seeking out rewards and avoiding punishment. It responds to a closely linked network of different brain structures that carry out various functions such as the orbitofrontal cortex, the amygdala, and the nucleus accumbens as component of the ventral striatum which belongs to the mesolimbic dopamine system (Hubert and Kenning, 2008, p. 285).

The reward system can be triggered through appealing advertisements (Kenning et al., 2007, cited in Hubert and Kenning, 2008, p. 285), price reductions (Knutson and Peterson, 2007, p. 310), beautiful faces (Aharon et al., 2001, p. 547), or status symbols emphasising social dominance and rank (e.g. sports cars) (Erk et al., 2002, pp. 2500-2503). Furthermore, the reward system plays a crucial role in forming product preferences and customer-/brand loyalty (Plassmann, Kenning and Ahlert, 2007, pp. 737).

Punishment

Encoding of punishment in the human brain symbolises another area of investigation for neuroscientists. Punishment stimuli can be described as motivations that are expended in order to reduce or avoid a certain event (punishment) (Seymore, Singer and Dolan, 2007, p. 300). Stimuli inducing punishment include physical pain, aversive odors or tastes as well as disgust (Hubert and Kenning, 2008, p. 286).

Consumer neuroscience studies revealed that punishment stimuli can also be activated from an economic perspective by perceived unfair offers and financial losses (Sanfey et al., 2003, p. 1756) as well as high prices (Knutson et al., 2006, p. 152). The major brain structures involved in the processing of punishment are the orbitofrontal cortex, the amygdala, and the insula cortex (Hubert and Kenning, 2008, p. 286).

Decision-making

Hubert and Kenning (2008, p. 286) describe decision-making as the evaluation of a situation and the subsequent choice of an adequate action. The understanding of this process is relevant for consumer research since consumers are confronted with decision-making in nearly every shopping situation (e.g. choosing between two brands).

The essential aspects of a decision-making process and a certain choice are the interpretation of an approaching stimuli, a reasoned and rational consideration of both immediate and future consequences of an action as well as emotional processing (Bechara and Damasio, 2005, p. 339). An important brain structure associated with decision-making is the prefrontal cortex. The prefrontal consists of three parts that exert different responsibilities: the orbitofrontal cortex, the ventromedial cortex and the dorsolateral cortex (Hubert and Kenning, 2008, p. 286).

Table 1 provides an overview of the previously mentioned brain structures and their corresponding role(s) associated with reward, punishment and decision-making.
Table 1: Prominent brain structures associated with reward, punishment and decision-making and their corresponding functions (own illustration based on Hubert and Kenning, 2008, pp. 285-287).

The table indicates that several brain structures such as the orbitofrontal cortex, the amygdala and the insula cortex have overlapping roles and correspond to both reward and punishment system. However, it is not possible to precisely demarcate the two systems (Hubert and Kenning, 2008, p. 286).

2.3 Neuromarketing techniques

In this section it is attempted to provide an overview of the main functions and methods which are involved in the neuroscientific part of neuromarketing. Fugate (2007, p. 385) describes neuromarketing as the synergy of marketing and neuroscience. Thus, the object is that neuroscientific methods allow to observe physical surrogates of the consumer decision-making processes as well as certain emotional behaviour.
In a general sense, neuroscientific methods are used to study consumer behaviour and decision-making processes in purchasing acts. It is aimed to better understand psychological phenomena, emotions in purchase decisions and marketing phenomena such as advertising, consumer competitions and product placement through an analysis of the underlying neurobiology (Javor et al., 2013, p. 2).

According to Perrachione and Perrachione (2008, pp. 303-304) neuroscientific tools are used in neuromarketing to provide a greater understanding of the classical relationship between stimulus and response. The techniques seek to grasp the neural mechanisms underlying complex thoughts such as decision-making, reasoning, object representation, emotion and memory, that overlap with marketing conceptions such as positioning, brand loyalty, hierarchy of effects and consumer response.

Morin (2011, p. 133) emphasises that there are many ways to measure physiological responses to advertising. However, currently only three well-established non-invasive methods exist for measuring and mapping brain activity: functional magnetic resonance imaging (fMRI), electroencephalography (EEG) and magnetoencephalography (MEG). Due to their non-invasive nature, all three imaging techniques can be safely used in marketing research and symbolise the bulk of studies that have been published within the field of neuromarketing.

2.3.1 Functional Magnetic Resonance Imaging

Functional Magnetic Resonance Imaging (fMRI) is currently the most popular neuroimaging technique for academic neuroscience research (Reimann et al., 2009, p. 568; Vecchiato et al., 2011, pp. 1-2). The technique measures the blood oxygen level dependent (BOLD) which varies by region in the brain since blood delivered to active brain regions requires more oxygen than blood delivered to those regions with low neural activity.

In a standard fMRI procedure, the test subject is placed in the MRI scanner, surrounded by powerful magnetic fields, to take a series of baseline images of the brain region of interest (Koller, 2010, p. 428; Zaltmann, 2003, pp. 117-118). Subsequently, another series of images is taken while the subject performs a cognitive task such as watching different advertisements. The first set of images is then subtracted from the second set to identify which brain areas are most visible in the resulting image and therefore were activated during the cognitive task (Zaltmann, 2003, p. 118).

According to Reimann et al. (2011, p. 609), who focus on fMRI as methodology exclusively, the advantages of brain imaging include an immediate interpretation of psychological processes in the brain as they are taking place. Furthermore, the technique offers the possibility to localise and differentiate emotional responses that subjectively may seem similar but are actually processed differently. Since fMRI can image even deep brain structures, a measurement of the simultaneous activation of two antithetical conditions and processes such as positive and negative emotions or feelings can be achieved (Reimann et al., 2011, p. 609; Senior and Lee, 2008, p. 268). Thus, it can be derived that one particular advertisement more effectively activates certain brain regions, elicits positive emotions and past memory and encodes new memory (Zaltman, 2003, p. 118).
However, a problem which fMRI as neuromarketing technique faces symbolises the limited temporal resolution which is the minimum amount of time that it takes to produce one observation or scan. Even though fMRI creates images that average brain activity over a duration of two to eight seconds, blood flow to active brain areas occurs with a lag of about six seconds. Furthermore, fMRI is very sensitive to subject movement since a head movement of more than 2 mm in the scanner causes blurred and unusable images (Koller, 2010, p. 429).

2.3.2 Electroencephalography

The Electroencephalogram (EEG) measures the electrical activity (brainwaves) which is evoked by neurons producing electrical potential differences across the scalp. These potential differences can be detected using an electrode helmet or band containing numerous electrodes (up to 256 electrodes are placed in various locations of the scalp) which is connected to a signal amplifier (Morin, 2011, p. 133; Zurawicki, 2010, p. 48). EEG technology makes it possible to record brainwaves at very small time intervals, up to 10,000 times per second. In the presence of a particular stimulus, such as a piece of advertising, neurons fire and produce a tiny electrical current, which can be amplified. The observed brainwaves can be linked to different states of stimulation such as wakefulness (beta waves), relaxation (alpha waves), calmness (theta waves), light and deep sleep (delta waves). Thus, the electrical potential measured and compared to a baseline level can provide a lot of information about a subject’s mental state (Zurawicki, 2010, p. 48).

An advantage which EEG as neuromarketing technique entails is that it offers a high temporal resolution so that researchers can detect changes in the brain activity precisely, connected to rapidly changing stimuli (Bercea, 2011, pp. 4-8). Furthermore, EEG is simpler in use than fMRI and technology allows EEG to be a portable device that can record brain activity in many circumstances, as for example in supermarkets (Morin, 2011, p. 133).

Nevertheless, EEG also brings along limitations such as a low spatial resolution which means it cannot precisely locate where the neurons are firing in the brain, especially in deeper structures. The low spatial resolution is attributable to the electrodes on the scalp which cannot pick up electrical signals that reside much beyond the cortex (Morin, 2011, p. 133).

2.3.3 Magnetoencephalography

Magnetoencephalography (MEG) is an electrical technique similar to EEG. Contrary to EEG, magnetometers (detectors) in a helmet are placed on the subject’s head to measure magnetic potentials in order to record brain activity at the scalp level (Zurawicki, 2010, p. 50). Braeutigam et al. (2001, p. 241) argue that neural processes associated with a particular brand-choice stimulus can be separated into different stages through the observation of MEG responses. Brain activity as a function of electrochemical signals between neurons creates a magnetic field that can be amplified and mapped by MEG (Morin 2011, p. 134). The use of MEG also allows to study the specific frequency at which neurons in a particular cluster fire together. This frequency either increases or decreases
during an experimentally salient period of time, such as when the subject views a visual stimulus (e.g. recognises a face) (Senior et al., 2007, p. 159).

Wang and Minor (2008, pp. 208-209) identify the ability to detect changes in the flow of fluids in the brain as an advantages that MEG as neuromarketing technique comprises and which makes it a reliable and valid measure for cognitive and affective responses. Furthermore, it offers superior signal quality and a very high time resolution in comparison to EEG.

Limitations of MEG include that like EEG, MEG is to some extent limited to picking up activity at the surface of the brain which does not make it a good method to image subcortical areas (Morin, 2011, p. 134). Furthermore, MEG involves comparably high cost and a high complexity of its equipment. Liquid nitrogen is used to cool the machines at near absolute zero temperatures which requires a complex and expensive support infrastructure (Samuel and Prasanth, 2012, p. 80).

The following figure simplifies a comparison of the most commonly used and previously mentioned neuromarketing techniques:

<table>
<thead>
<tr>
<th>Neuromarketing Tool</th>
<th>What is measured</th>
<th>Complexity of data analysis</th>
<th>Cost</th>
<th>Business Application</th>
</tr>
</thead>
<tbody>
<tr>
<td>functional MRI (fMRI)</td>
<td>Changes in metabolism</td>
<td>Relatively high complexity</td>
<td>MRI scanners cost Approx. €1 million per Tesla¹ and have annual operating costs of €75,000-€225,000.</td>
<td>Used to study branding, advertising, shopping and entertainment</td>
</tr>
<tr>
<td>Electroencephalography (EEG)</td>
<td>Electric fluctuations</td>
<td>Moderate to high complexity</td>
<td>Equipment cost &lt;€7,500.</td>
<td>Used in branding, product innovation, product and packaging design and advertising studies</td>
</tr>
<tr>
<td>Magnetoencephalography (MEG)</td>
<td>Magnetic fluctuations</td>
<td>Moderate to high complexity. Superior signal quality and very high time resolution in comparison to EEG</td>
<td>Setup costs approx €1.5 million. The other operational costs adds up to make MEG costlier than fMRI</td>
<td>Used in branding, product innovation, product and packaging design and advertising studies</td>
</tr>
</tbody>
</table>

Table 2: Comparison of different neuromarketing techniques (own illustration based on Samuel and Prasanth, 2012, p. 80; Plassmann, Ambler, Braeutigam and Kenning, 2007, p. 156)

Kenning (2008, p. 472) emphasises the importance of a multimodal approach in neuromarketing to validate findings. Reimann et al. (2011, p. 611) share this point of view in respect to fMRI and emphasise that “[…] fMRI is best viewed in the context of other methods and measures to provide a balanced picture of this methodology” (e.g. fMRI provides a good spatial resolution of the brain while EEG offers advantages in terms of temporal resolution).

2.4 Ethics and professional challenges

Neuromarketing offers the possibility to carry out marketing research on a subconscious level and is therefore circumventing cognitive consumer biases. However, critiques on the topic have been expressed by several parties including consumer groups, scientists and scholars (Murphy, Illes and Reiner, pp. 293-294).
Some scholars hold the opinion that neuromarketing can provide advertising agencies, market researchers, and their corporate clients with insights that allow to manipulate purchase-decisions (Lewis, 2007, cited in Eser, Isin and Tolon, 2011, p. 860) or pave a way of unconsciously suggesting the purchase of an otherwise unwanted item (Ziegenfuss, 2005, cited in Eser, Isin and Tolon, 2011, p. 860). Additionally, Ruskin (2004, p. 30) suggests that the use of neuromarketing techniques by companies producing tobacco, alcohol, junk food or fast food should be banned due to a potential risk for public health.

However, exploratory research addressing the perceptions of marketing academics, neurologists, and marketing professionals regarding neuromarketing studies revealed that neuromarketing is not considered as a manipulative technique for selling a product or service (Eser, Isin and Tolon, 2011, p. 844).

Moreover, ethicality issues have been addressed in the scientific literature. Pure neuroscientists reject the critique of a commercialised use of neuroimaging technology (Morin, 2011, p. 133) arguing that the current state of technology is still imprecise and not accurate and deterministic enough to predict human decision-making (Hubert and Kenning, 2006, p. 288; Fisher, Chin and Klitzmann, 2009, p. 231).

### 2.4.1 Ethics in neuromarketing

Murphy, Illes and Reiner (2008, pp. 293-294) identify the goal of neuromarketing studies as to obtain objective information about consumers’ brain reactions in relation to diverse marketing stimuli. Taking advantage of technology, neuromarketing goes beyond traditional tools of quantitative and qualitative research to investigate consumer preferences. The information obtained through this measurement technique is not influenced by consumer biases or an unwillingness to reveal the truth.

Due to this subconscious investigation of customer preferences, neuromarketing technologies raise a range of ethical issues, which can be divided into two major categories: protection of various parties who may be harmed or exploited by neuromarketing and protection of consumer autonomy. These two areas regarding ethics in neuromarketing can be further distinguished into: protection of research subjects, preventing exploitation of niche populations, responsible business-to-business advertising and public representation (Murphy, Illes and Reiner, 2008, pp. 293-297).

#### Protection of research subjects

Senior, Haggard and Oates (2009, p. 2) consider respect for autonomy and dignity of individuals involved in the research process as the core principle for all ethical considerations.

In order to protect the privacy of individuals taking part in neuroscience researches conducted in medical institutions, legal framework regulated by law are usually in place. However, when moved into commercialised and private enterprise only loose restrictions that surround studies are present, making the privacy of research subjects dependent on the moral values of the researcher (Murphy, Illes and Reiner, 2008, pp. 295-296).

#### Preventing exploitation of niche populations
The second ethical neuromarketing concern addresses research that either involves or targets vulnerable populations. These audiences include children, persons with neurological disease or psychological disorders as well as other members of legally protected groups. Neuroscience researches could equip marketers with information about vulnerable consumers derived from neuroscience technologies. Marketers in turn could be able to manipulate these niche audiences easily with this obtained information. For instance, electronic game companies exploring new technology which potentially allows them to stimulate key emotional centres of the brain as children play their games (Murphy, Illes and Reiner, 2008, p. 296; Acuff, 2005, pp.68-69). Rapp et al. (2009, p. 57) also support this view by recommending a cautious use of information obtained through brain scanning in order to avoid a widespread sharing of this data for use in promotions and other communications.

**Responsible business-to-business advertising and public representation**

Responsible business-to-business advertising addresses neuromarketing research companies and the advertisement of their services. The human brain is a very complex organ which makes it difficult to provide a comprehensive, wholly and most importantly accurate explanation of how it works (Murphy, Illes and Reiner, 2008, p. 296; Kenning, 2008, p. 472). However, members of the public tend to find neuroscientific explanations and findings more persuasive when research descriptions are accompanied by colourful brain images, even though these images have no actual impact on an objective validity. Furthermore, publicly presented website information of companies offering neuromarketing services often lacks transparency since these companies barely list costs or used methodologies and tend to exaggerate the capabilities of neuromarketing e.g. by promising to reveal the “truth” or what customers “really” think (Fisher, Chin and Kitzmann, 2009, pp. 231-233). This “neurohype” which is conjured up can lead to an over-interpretation of neuromarketing results among corporations also encouraging marketers to spend budgets without considering the validity of their results. However, if neuroscientific advertising does not serve the own business interests, companies might suffer from a potential misspending of advertising budget (Murphy, Illes and Reiner, 2008, pp. 296-297).

### 2.4.2 Neuromarketing code of ethics

Murphy, Illes and Reiner (2008, pp. 298-299) highlight the importance of a code of ethics to be adopted by the neuromarketing industry which shall aim at “[…] promoting research and development, entrepreneurship, and profitable enterprise alongside beneficent and non-harmful use of neuroimaging technology at all stages of development, deployment, and dissemination”. An industrywide code of ethics voluntarily adopted by all researchers and vendors of neuromarketing is both justified from a moral perspective and can also prevent the neuromarketing industry from accusations of irresponsible behaviour and increase the public understanding of the subject as a science.

Particularly, academic-industrial partnerships play an important role in order to guarantee a responsible conduct of research and to foster the public understanding of the brain.
However, neuromarketing companies as for-profit businesses barely release their results due to a potential loss of strategically useful information. Thus, scientifically important findings often remain unpublished which could otherwise contribute to the academic literature (Fisher, Chin and Klitzmann, 2009, p. 235).

Wilson, Gaines and Hill (2008, p. 390) consider legally enforceable policy regulations to avoid potential ethical dilemmas caused by neuromarketing technologies as pioneering in order to incorporate advantages of neuroscience within the boundaries of ethical marketing.

2.5 Communicating luxury

The market for luxury brands has grown considerably since the 1990s, influenced by factors such as a rising demand for luxury from emerging luxury markets (e.g. India and China) and an expansion of the luxury category itself. Furthermore, an increased spending capacity also enabled the middle classes to spend more money on luxury brands which makes the luxury segment no longer an exclusive domain of the elite. Due to this trend, luxury brands featuring premium price, prestigious name and global market play an increasingly important role in profit generation for corporations (Tsai, 2005, p. 429).

Luxury brands are often associated with characteristics including exclusivity, uniqueness, scarcity, premium price, excellent quality and aesthetics. However, these characteristics are not met by all luxury brands which makes the criteria not sufficient to categorise a brand as luxurious. Furthermore, a lack of consensus exists regarding the definition of luxury brands due to the subjective status of these brands and the fact that not all consumers ascribe the same characteristics to luxuries (Chevalier and Mazzalovo, 2008, pp. 7-8).

Hudders, Pandelaere and Vyncke (2013, p. 391) investigated the luxury brand meaning from a consumer perspective by conducting a large-scale survey in the Flemish part of Belgium and revealed three facets of luxury brand meaning which include “[…] an expressive facet that refers to the exclusivity of luxury brands, an impressive-functional facet that refers to premium quality and an impressive emotional facet that refers to extraordinary aesthetic aspects” (Hudders, Pandelaere and Vyncke, 2013, p. 391). Furthermore, the survey results emphasise the importance for luxury companies and marketing practitioners to understand how consumers perceive luxuries and why they perceive a certain brand as a luxury. This understanding is considered as crucial to be able to successfully position a brand as a luxury brand and to develop successful advertising campaigns (Hudders, Pandelaere and Vyncke, 2013, p. 408).

2.5.1 Advertising luxury brands

Luxury brands are niche brands with advertisements tailored towards a specific consumer market. Advertisements of luxury brands are a mean to communicate the brands story starting from their development and history to their image and personality as well as services and products. Thus, advertisements are highly important in the luxury goods sector to enhance a luxury brand’s visibility, and consequently luxury brands allocate a large percentage of their earnings to advertising (Okonkwo, 2007 p. 145).
The following figure illustrates the luxury communication model (Kapferer and Bastien, 2009, p. 213) and its different layers:

**Figure 1:** Layers of luxury communication (Kapferer and Bastien, 2012, p. 258)

Kapferer and Bastien (2009, pp. 212-214) emphasise an explicit focus on printed advertising and consider mass media TV advertising in luxury communications as minimally since consumers perceive it as a medium through which brands communicate in order to sell. Luxury brands in turn seek to create a personal relationship with the consumer and advertise in order to communicate the dream surrounding the brand. Hence, advertisements of luxury brands are mainly featured in business publications, fashion magazines, airline in-flight magazines and other high end publications most widely read by the target audience (Okonkwo, 2007, 145).

Communication through experiential marketing is a relatively new a form of advertising which focuses primarily on connecting with the luxury consumer using brand-related experiences. In comparison to traditional marketing frameworks which view consumers as rational decision-makers focussed on the functional features and benefits of products, experiential marketing views consumers as emotional beings, focussed on achieving pleasurable experiences (Atwal and Williams, 2008, p. 344). The main differences that experiential marketing incorporates in comparison to traditional marketing are summarised as follows:

1. Focus on customer experiences and lifestyles which provide sensory, emotional, cognitive and relational values to the consumer;
2. Focus on creating synergies among meaning, perception, consumption and brand loyalty;
3. Customers are not seen as rational decision-makers but rather as driven by a mixture of rationality and emotion;
4. Experiential marketing requires a more diverse range of research methods in order to understand consumers (Atwal and Williams, 2008, p. 345).

Thus, innovative experience designs will become an increasingly important component of luxury marketing in order to be able to capitalise on the unique nature of luxury consumption (Atwal and Williams, 2008, p. 345).
2.5.2 Luxury watch advertising

A luxury watch brand has a strong focus, to be more precise, a focus on selected segments such as watches and jewellery by using a limited range of materials including e.g. gold, platinum and precious stones. Furthermore, a high end price and low levels of production emphasise exclusivity and expertise (Tungate, 2009, p. 56). Patrick Heiniger, CEO of Rolex also outlines this specificity of luxury brand management by emphasising three facets to be taken into account when positioning a brand as luxury brand: “If a brand scores high on perceived functional and emotional value, and on perceived exclusivity, it is more likely to be perceived as a luxury brand by consumers” (Hudders, Pandelaere and Vyncke, 2013, p. 408).

Luxury watch advertising is to a certain extent limited since brands tend to avoid mass media TV advertisement and concentrate on print ads in glossy magazines instead. Traditionally, luxury watch advertisements illustrate ‘the product as a star’ by positioning the watch front as focus point. This type of advertisement also entails a line at the very top which emphasises the fine materials and precision engineering necessary to manufacture the watch.

Celebrity endorsement, as a more costly option, is a strategy which brands such as Rolex avail since 1927 when Mercedes Gleitze swum the English Channel wearing a Rolex Oyster. Further examples include Pilot Chuck Yeager who wore a Rolex when he broke the sound barrier and Sir Edmund Hilary who conquered Mount Everest wearing a Rolex. Omega capitalises on the fact that astronauts wore its watches during the Apollo space flights (Tungate, 2009, p. 56). More recently the emphasis has shifted from stressing performance to generating glamour by association. For instance, Rolex concentrates on figures from sport and the arts and Breitling established a relationship with John Travolta in order to expand the aviator-friendly positioning. Furthermore, product placement in movies is another marketing option for watch brands featuring stars such as Brad Pitt and Uma Thurman (TAG Heuer) as well as James Bond and Nicole Kidman (Omega) (Tungate, 2009, p. 57).

Moreover, an attractive website plays a crucial role in order to connect with the predominantly young target market. However, instead of using e-commerce, luxury watch brands typically focus on providing customers with in-store store experiences since stores offer an accurate image of the brand (Tungate, 2009, p. 57-58).

2.6 Neuromarketing and advertising

Every year, over €320 billion are invested in advertising campaigns globally making advertising one of the most expensive elements in the marketing mix. However, conventional methods for both testing and predicting the effectiveness of those investments have a limited validity since they depend on the willingness and competency of the consumer to describe feelings when exposed to an advertisement (Morin, 2011, p. 131). Without requiring cognitive or conscious participation neuromarketing techniques are increasingly becoming important tools to determine precisely what kinds of marketing campaigns and products appeal to a potential consumer in order to increase advertising effectiveness and influence purchasing behaviour (Samuel, Prasanth 2012, p. 84). Subsequently, the components of advertising effectiveness, direct and indirect advertising effectiveness, are exemplified and an up-to-date model to measure consumer’s response is introduced.
2.6.1 Direct Advertising effectiveness

Historical roots of the direct route to advertising effectiveness can be found in classic persuasion models such as the AIDA model. The model defines persuasion as a four-step process: attention, interest, desire and action (purchase) (Rogan, 2011, p. 250). Consumers first re-evaluate their opinion of a product, then they change their attitude and finally act. Thus, the process begins with cognition that is translated to affect which in turn then translates to behaviour. In accordance with this view, the purpose of advertising is to communicate an argument which persuades consumers to buy a product, either by reinforcing current product preferences or by changing preferences from a competing product. Therefore, the direct route describes a conscious and logical way of thinking based on a rational behaviour of the consumer (Hall, 2002, p. 23).

Daniel Kahneman (cited in Wood, 2012, p. 31) has used Systems 1 and 2 to describe the two mental processes that are used to make decisions. System 1 is the brain’s perceptual and intuitive approach, generating involuntary impressions and feelings that do not need to be expressed in words. This system is fast to react, automatic, associative, and effortless and learns through repeated experiences and gradually over time. In contrast, System 2 is slow to react, effortful, analytical, and rule-governed but flexible enough to assimilate and process new information, all processes are consciously invoked and monitored. Consequently, Systems 1 and 2 have different implications for the way how customers process about advertising. The AIDA model of brand communication and hierarchy-of-effects models assume that viewers of advertising ultimately buy the advertised product after going through a series of cognitive phases which make these approached based entirely on System 2 thinking. However, many decisions and judgments in real life are not guided by System 2 but by System 1 processing which makes emotion or affect (System 1) an important component of customer decision-making (Wood, 2012, p. 32).

Many authors within the marketing community rejected the traditional models since consumers do not engage in this conscious way of thinking (Hall, 2002, 23-24; Wood, 2012, pp. 31-32). Furthermore, recent developments in neuroscience and cognitive psychology suggest a more complex process of perception, experience and memory which assumes that emotions and feelings are the main drivers of purchase behaviour through which advertising operates (Hall, 2002, 23-24).

2.6.2 Indirect advertising effectiveness

In contrast to traditional economic thinking which aims at triggering an immediate response, the indirect route to advertising effectiveness is a two stage model: Advertising affects brand equity by changing attitudes, memory and intentions toward the brand and brand equity in turn, later drives purchase behaviour (Plässmann, H., Ambler, T., Braeutigam, S., Kenning, P., 2007, p. 151). This effect is obtained through conditioning as an implicit learning process. Conditioning creates a positive emotional connection with a brand which in turn is reinforced by advertising (Gibson, 2008, p. 178). Figure 2 provides an overview of the human memory systems in order to illustrate the categorisation of conditioning as implicit component of the long-term memory.
Since conditioning operates through the repeated exposure of a stimulus, advertisements have to be seen several times before it can occur. Subsequently, when the brand is encountered at the point of sale, the positive emotional connection is activated and can influence consumer attitude, choice and purchasing behaviour (Baker, 1999, pp. 31-32).

Thus, the way to indirect advertising effectiveness as a process of priming and choice is attributable to Kahneman’s System 1 processing since it is driven by emotion or affect, non-conscious, automatic and effortless (Wood, 2012, pp. 31-32).

Since explicit and implicit memories are highly networked it necessary to understand how brand-related memory is stored and retrieved in order to determine the relevance of episodic and semantic memory distinctions in consumer research (Hall, 2002, p. 24). In furtherance of understanding sensorimotor, cognitive, and affective response to marketing stimuli neurocognitive methodologies are increasingly used in marketing research (Lee, Broderick, and Chamberlain, 2007, cited in Ratnayake, Broderick and Mitchell p. 1296).

2.6.3 The model of the consumer's response

Hall (2002, pp. 22-34) encounters the question of how to measure effectiveness of the advertising with a theoretical framework, the P/E/M model, which demonstrates the intervening role of emotions in shaping attitudes toward a brand.

The model of the consumer's response to advertising consists of a process based on three key elements: perception, experience, and memory.

The most important characteristics of this model include that the role of cognition is reduced and dominated by emotions, feelings, affect, and experience at every stage of the process. Furthermore, perception is considered as a dependent variable which is influenced by advertising, experience as well as by the consumer's priors. Advertising and perception are connected through multiple loops at every stage of the process that enable to receive feedback. In two of the overall three phases which the model entails advertising is directly operative: the pre-experience exposure and post-experience exposure.
Figure 3: The Three Phases and Flow of the Perception/Experience/Memory (P/E/M) Model of Advertising (Hull, 2002, p. 24)

Pre-experience phase
The critical function of advertising in the pre-experience phase is to frame perception which has three effects on the consumer:

1) To create an expectation for the brand by putting the product into a particular frame of reference which enables a meaningful perception to take place;
2) To create anticipation of a certain experience;
3) To provide a rationale for this anticipation through pre-experience advertising.
   Subsequently, cognition (interpretation) enters the process as a third-level effect.
   The receiver will create an own interpretation of the advertising message if the advertisement fails to deliver (Hull, 2002, pp. 24-25).

Enhancing experience
The next key phase in the process is enhancing experience which has two effects on the consumer:

1) To enhance sensory experience both when exposed to the consumer before the experience and when exposed afterward (in retrospect). Therefore, both pre- and post-experience exposure flow into enhancing experience;
2) To establish social experience a basis for trust and a relationship with the consumer through pre-exposure advertising (Hull, 2002, p. 25).

Post-experience exposure
The critical function of advertising in the post-experience exposure phase is to organise memory and entails three effects on the consumer:
1) To provide the exposed audience with verbal, visual and aural cues that enable to recall the advertisement, the brand and the product;

2) To create a brand related recall which is related to cueing but seen as a separate effect due to its critical role in advertising;

3) To influence the consumer to feel that the sensory or social experience was a good one and to provide a reason to believe it was (interpretation).

The receiver will create an own interpretation of the advertising message if the advertisement fails to deliver (Hull, 2002, p. 25).

The P/E/M model puts an emphasis on how consumers actually 'feel' and 'think' and explicitly incorporates a role for cognition that is accordant with both modern psychology and neuroscience and is consistent with business reality (Hall 2002, pp. 26).
II. Industrial Review

2.7 The global jewellery and watches market

The global jewellery and watches market comprises jewellery made from gold, silver and other precious metals such as platinum, diamonds. Further materials included are other precious stones such as sapphires, emeralds and rubies, pearls and semi-precious stones some of which are quartz, opal, topaz, amethyst and coral.

The market grew by 6.5% in 2013 to reach a value of €210,439 million. Jewellery was the largest segment of the global jewellery and watches market, accounting for 83.9% (€176,505 million) of the market's total value in 2013. The watches segment accounted for the remaining 16.1% (€33,934) of the market.

Asia-Pacific accounted for 47.6% (€100,231.38 million) and Americas for a further 30.4% (€64,045.76 million) of the global market accordingly.

With annualized growth in excess of 9%, Asia-Pacific was the main driver of expansion in the global jewellery and watches market during the 2009-2013 period. The pace of growth is predicted to remain the same going forward to 2018. The global jewellery and watches market is forecasted to have reached a value of €294,055.12 million in 2018, which symbolises an increase of 39.7% since 2013 (MarketLine, 2014, pp. 1-10).

Five Forces Analysis

The jewellery and watches market is analysed taking jewellery and watches retailers as players. The key buyers include consumers, manufacturers and key suppliers comprise suppliers of raw materials.

Figure 4: Forces driving competition in the global jewellery and watches market, 2013 (MarketLine, 2014, p. 11).

It was noted by MarketLine (2013) that the global jewellery and watches market is fragmented. Furthermore, retailers of these non-essential and luxury items face a very strong threat from substitute products. Buyer power is moderate, with a large number of potential customers but
switching costs hardly exist. The prevalence of vertical integration between manufacturers of jewellery and retailers tends to weaken supplier power. Moreover, the market has low entry barriers, so incumbents may face new entrants. Rivalry is considered as moderate, with a large number of relatively small companies present in this fragmented market.

2.7.1 The global luxury watch market

Twenty markets across the globe are identified as major markets for the luxury watch industry. These markets include;

**South America:**
- Brazil and Mexico

**North America:**
- United States

**Europe**
- Germany, United Kingdom, France, Spain, Switzerland and Italy

**Asia**
- Japan, Taiwan, Singapore, Thailand and China with Hong Kong regarded as a separate market

**Africa**
- Saudi Arabia, Qatar and the United Arab Emirates

**Russia and India**

The following figure illustrates the 20 global major markets for luxury watches and allocated consumer interest rates during the 2012-2013 period.

*Figure 5: Global consumer interest for luxury watches (Worldwatchreport.com, 2014a)*
In this period global demand was driven by the BRIC markets (Brazil, Russia, India and China) with the highest year-to-year increases in China (+59.4%), Russia (+20.4%) and India (+12.0%). Historically established and mature markets such as Germany (-9.2%), the United States (-7.9%), and Japan (-5.5%), experienced a demand decline, whilst Italy (+8.8%) and the United Kingdom (+3.1%) saw growth in interest compared to 2012.

The Brazilian market experienced a decline (-2.9%) ahead of an important year for luxury watch brands in the market due to the Soccer World Cup which is identified as a key event driving important brand related investments.

Taking into consideration the growth rates regarding interests in Ladies’ watches separately, it can be noted that timepieces for women experienced a 7.5% increase in popularity. The United States accounted for over one quarter of all demand for ladies’ watches but the category was booming in China, with an increase of +145.5% versus the previous year. India and Russia demonstrated the highest growth after China, rising 27.7% and 11.7% respectfully during the 2012-2013 period (Worldwatchreport.com, 2014a).

2.7.2 Major players on the global luxury watch market

According to a market study published in the world watch report 2014 (Worldwatchreport.com, 2014a), Rolex, Omega and TAG Heuer were the most searched luxury watch brands globally in 2013 (Jan 2013- Dec 2013). Among 62 luxury watch brands analysed in the report, Rolex as a brand was leading representing 20.79% of all searches, followed by Omega (10.78%) and TAG Heuer (7.42%).

Figure 6: Top 15 most searched luxury watch brands globally (Worldwatchreport, 2014a)

Taking into consideration the most searched luxury watch models world wide, the brands Omega (Seamaster, 5.03%), Rolex (Submariner 4.89% and Daytona 3.86%) and TAG Heuer (Carrera, 3.56%) were again positioned as leading brands during the 2010-2012 period (Worldwatchreport.com, 2014b).
The high demand for these three world leading brands and their models induces the need to further investigate these companies.

### 2.7.2.1 Rolex SA

Rolex SA is a currently independent major luxury watch manufacturer and distributor of high-end luxury timepieces with its headquarters based in Geneva, Switzerland. The company is the largest single luxury timepiece brand in the world and its products are regarded as very recognisable status symbols throughout the world. The Rolex brand itself is widely recognised as one of the most valuable global brands. The company was the first to manufacture a waterproof, airtight and dust proof watch and is best known for its high-end products often featuring the extensive use of gold, diamonds and other precious materials.

As a very exclusive brand, all Rolex products are positioned as super premium products in luxury goods categories. The company has a long history of prestigious associations such as its partnership with the Wimbledon and Australian Open tennis tournaments which serve to strengthen the brand’s prestige and international appeal (Passport, 2014a).

### 2.7.2.2 Omega SA

Omega SA is one of the Swatch Group’s luxury brands with its headquarters based in Biel, Switzerland. Omega is one of the most familiar watch brands at the luxury and high-end range of the market with its collection including gents’ and ladies watches, chronographs, complications and jewellery watches which are available in different sizes and materials.

Luxury timepieces make up the vast majority of Swatch’s sales in luxury goods worldwide. The Omega brand is recognised worldwide as certified marine watch, world leader Olympic timekeeping, choice of the NASA and the first watch on the moon. The brand continued its title sponsorship of the European Masters and World Cup of Golf in 2009. In the same year the company renewed the Omega Official Timekeeper contract with the International Olympic Committee up to and including the 2020 Olympic Games.

Omega tries to highlight an incomparable accuracy and product quality through its presence on sporting and space projects. Omega brand ambassadors in advertising campaigns which include Cindy Crawford, George Clooney, Nicole Kidman and Michael Phelps represent a fashionable and the same time prestigious brand image target different types of customer lifestyles (Passport, 2011).

### 2.7.2.3 TAG Heuer SA

The TAG Heuer brand is a branch of LVMH Swiss Manufacturers SA with its headquarters based in La Chaux-de-Fonds, Switzerland. The brand is purely in the personal luxuries market and its major focus is on timepieces. However, the company does also sell branded mobile phones, eyewear, leather goods and other accessories (Passport, 2014b).

As the official partner of motor racing events such as the Monaco Grand Prix, Le Mans 24 Hours and the Indy 500, TAG Heuer is positioned as a world-leader of luxury sports watches and chronometers by emphasising quality, precision, avant-garde design and advanced technology.

The brand is one of LVMH’s key interests in luxury jewellery and timepieces. Thus, building a more vertically integrated watchmaking operation has been a key focus for LVMH in 2013.
LVMH’s growth in recent years has been to a large extent driven by expansion in China where it has established its own store retail network with particular success for the TAG Heuer brand (Passport, 2014c).

2.8 Conclusion

The literature review highlights a literature gap concerning neuromarketing and luxury watch advertising which is aimed at being closed by conducting primary research, in particular by employing a pluralistic primary research approach. As yet, little market research has entered luxury watch industry marketing on this subject, there is a need to ascertain if the interpretation of measures generated by neuromarketing research can improve advertising effectiveness or more precisely can improve the experience which has been previously identified as being crucial for luxury advertisements to deliver. Furthermore, this implies the necessity to determine the functional relevance of the application of neuromarketing techniques in comparison to traditional research methods in order to anticipate the need for evolution of neuromarketing in advertising for luxury watches.


Chapter 3: Research Methodology and Methods

3.0 Introduction

According to Saunders, Lewis, Thornhill (2012, p. 5) research can be described as an action undertaken by people which aims at finding out things in a systematic way, thereby increasing their knowledge. Blumberg, Cooper and Schindler (2011, p. 4) highlight the importance of a clear methodological framework to any research since it provides the researcher with ideas, instruments and models in order to obtain the knowledge and skills crucial to answer the research question.

This study has the main purpose to describe to which extent an analysis of data generated by neuromarketing techniques can inform the effectiveness of luxury watch advertisements in Cologne, Germany. In order to obtain the required information to fulfil the research's purpose, this chapter covers several points including the methodology of design, the universe, sample selection, data collection methods and the corresponding analyses to answer the research question as well as ethical considerations which underpin the research.

3.1 Research problem definition

Ary et al. (2014, p. 47) point out that the research problem must be considered as the first step in systematic research since it lays the foundation for all further elements of the investigation. Blumberg, Cooper and Schindler (2011, p. 67) highlight the importance of a problem statement being narrowly defined in order to address the study adequately and distinguish the primary research problem from related ones. For this investigation, the general research question is posed as follows:

“Do neuromarketing techniques have the potential to inform the effectiveness of luxury watch advertising in Cologne?”

3.1.1 Research objectives

Saunders and Lewis (2012, p 21) suggest to develop the research objectives from the research question in order to add an element of precision to the research question. The objectives as clear and specific statements help to identify what the research process seeks to achieve as a result of undertaking research. Due to the difficulty to deliver a precise and set definition of advertising effectiveness, the following research objectives for the purpose of this investigation are derived from the previously mentioned P/E/M model of advertising effectiveness (Hall, 2002):

1) To investigate neuromarketing techniques as an alternative research method tool.

More specifically:

To analyse the operational framework of neuromarketing techniques in comparison to traditional market research methods such as survey and focus group on the basis of the following reference points:

- Added values of neuromarketing techniques;
- Shortcomings of neuromarketing techniques;
- Supplementary/substitutional characteristics of neuromarketing techniques;
• Proximity of neuromarketing techniques to a quantitative approach/qualitative research approach.

2) To investigate the potential added value of neuromarketing techniques in framing consumer perceptions of advertisements.

In particular:

To gain a precise understanding if data generated by certain neuromarketing techniques can influence framing consumer perceptions by means of the following effects of the pre-experience exposure phase of an advertisement:

• Expectation;
• Anticipation;
• Interpretation.

3) To ascertain if neuroscientifically tested advertisements can enhance sensory and social experience.

Specifically:

To evaluate the operational framework of certain neuromarketing techniques in delivering data to create advertisements which enhance customer experiences by the means of effects including:

• Sensory enhancement before the experience;
• Sensory enhancement in retrospect;
• Social enhancement.

4) To examine the role of neuromarketing techniques in creating advertisement related brand equity.

Particularly:

To obtain a precise understanding if neuroscientifically tested advertisements can affect organising consumer memories by means of the following effects of the post-experience exposure phase of an advertisement:

• Cueing;
• Branding;
• Interpretation.

5) To investigate luxury watch consumers' perceived effectiveness of luxury watch advertisements.

More specifically: To explore luxury watch consumer’s opinion regarding the effectiveness of luxury watch advertisements in the pre-experience exposure and post-experience exposure phase by the means of the following functions:

• Framing Perception;
- Enhancing experience;
- Organising memory.

3.2 Proposed methodology and its structure
The aim of the research is to demonstrate in both a qualitative and quantitative way if neuromarketing techniques can inform luxury watch advertising effectiveness in Cologne, Germany. The research methodology adopted in the dissertation was derived from the Research Onion (Saunders, Lewis, Thornhill, 2012, p.128) in order to achieve this goal in a structured way. The Research Onion and its different layers served as guideline throughout the research process.

![Figure 7: The Research 'Onion' (Saunders, Lewis and Thornhill, 2009, p. 138)](image)

The outer layers of the Research Onion contain thinking about research philosophies and approaches while the central layers reflect the need to consider research strategies and choices. The centre of the onion involves data collection and analysis.

3.2.1 Research philosophy
According to Saunders, Lewis and Thornhill (2012, p. 128) the overarching term research philosophy refers to the development of knowledge and the nature of that knowledge in relation to research. Johnson and Clark (2006, cited in Saunders, Lewis and Thornhill, p. 128) argue that "[…] the important issue is not so much whether our research should be philosophically informed, but how well we are able to reflect upon our philosophical choices and defend them in relation to the alternatives we could have adopted." Maylor and Blackmon (2005, pp. 155-156) emphasise that there are many different ways of defining the term since the emphasis given by the researcher leads to differing definitions depending on the individual ideology and the research question that researcher is seeking to answer.

Saunders, Lewis and Thornhill (2012, p. 140) describe three different major ways of thinking concerning research philosophies, which influence the way in which the researcher approaches the research process. The different research positions include epistemology, ontology and axiology:
• **Ontology**: The researcher’s view of the nature of reality or being;
• **Epistemology**: The researcher’s view regarding what constitutes acceptable knowledge;
• **Axiology**: The researcher’s view of the role of values in research.

The position which was adopted in this dissertation is **epistemological** since the researcher is concerned about what constitutes acceptable knowledge in the neuromarketing discipline. Moreover, people’s opinions were considered as acceptable knowledge and were treated as information in this field.

According to Blumberg, Cooper and Schindler (2011, pp. 16-18) the three different positions with regard to ontology, epistemology and axiology are reflected in different research philosophies, in particular positivism, interpretivism and the most notable additional philosophy realism. The selection of a key paradigms in the first layer of the onion underpins the research strategy employed and methods used as part of this strategy.

The position adopted in this study was interpretivism, benefiting from a good understanding of social processes as well as the allowance of complexity and contextual factors (Bryman and Bell, 2011). Blumberg, Cooper and Schindler (2011, p. 17) highlight that interpretivism integrates human interest into a study. Thus, interpretivism is considered as a research philosophy which advocates the need to understand differences between humans in their role as social actors. For the purpose of this research, the knowledge generated focussed on meanings being relative (time, context, culture, value bound). Qualitative data collection techniques included in-depth investigations putting an emphasis on what interviewees think and do, what kind of problems they are confronted with, and how they deal with them. The functional interaction between the researcher’s epistemological view and the applied research philosophy interpretivism allowed to derive knowledge from subjective meanings and social phenomena (Malhotra and Birks, 2006, p.160). A focus was lied upon the details of a situation, the reality behind these details and subjective meanings motivating actions (Hair et al., 2011, p. 291).

### 3.2.2 Research Approach

Maylor and Blackmon (2005, p. 149) emphasise the importance of the chosen research approach being consistent with the posed research question. Furthermore, the choice of the research approach limits the appropriate research methods. The authors suggest to choose between two logics; the deductive approach or the inductive approach.

Saunders and Lewis (2012, p. 108) consider deduction as a research approach which involves the testing of a theoretical proposition by using a research strategy specifically tailored to the purpose of its testing. This implies that given reasons lead to a conclusion (conclusion is drawn logically from premises) and thus, act as a proof. Consequently, deduction is based on logic and not depending on observation or experience (Blumberg, Cooper and Schindler, 2011, p. 21).

Contrary, induction as a research approach is based on empirical evidence which involves the development of theory as a result of analysing data which was already collected (Ghauri and Grønhaug, 2005, p. 15). Compared to the deductive approach, induction is not considered to have the same strength of relationship between reasons and conclusions. Known premises are used to
generate untested conclusions. Thus, the conclusion explains facts, which in turn support the conclusion (Saunders, Lewis and Thornhill, 2012, pp. 144-146).

An inductive approach was applied in this study which started by collecting data to explore a phenomenon and generate theory. Since an inductive approach is concerned with the context in which such events are taking place, a small sample of subjects is considered as more appropriate than a large number as with the deductive approach (Saunders, Lewis and Thornhill, 2012, p. 146). Due to time limitations to the research, a small number of subjects was approached which made the inductive approach suitable for this research. Another justification for induction in the present work was the desired use of qualitative data. Easterby-Smith et al. (2008, cited in Thornhill, Saunders, Lewis and 2012, pp. 146-147) highlight that researchers using an inductive approach will be more likely to work with qualitative data to establish and collect this data by using a variety of methods to identify different views of phenomena.

Additionally, Saunders, Lewis and Thornhill (2012, p. 170) refer to three different natures of research which are exploratory, descriptive and explanatory studies.

- **Exploratory study:** Discovery-oriented research that aims at seeking new insights, asking new questions in order to develop a fuller understanding of an issue or situation (Hair et al., 2005, pp. 57-58);
- **Descriptive study:** Experience and performance related research designed to produce an accurate representation of persons and to provide measures of events or situation (Hair et al., 2005, p. 60);
- **Explanatory study:** Cause-oriented research that focuses on studying a situation or a problem in order to explain the relationship between variables (Saunders and Lewis, 2012, p. 113).

Both exploratory and descriptive research were used for the purpose of this dissertation. Exploratory research allowed the researcher to ask open-ended questions in order to gain more insights on neuromarketing techniques and possibilities to inform advertising effectiveness through an interpretation of the generated data. Descriptive research was used in extension of the exploratory research through the involvement of measurable, quantifiable data in connection with luxury watch consumer’s perceived effectiveness of luxury watch advertisements.

### 3.2.3 Research Strategy

Saunders, Lewis and Thornhill (2012, p. 173) state that a particular research strategy may be associated with particular previously mentioned research philosophies as well as with a deductive or inductive approach. The choice of a research strategy should be guided by the research question, the objectives and coherence in order to create a link to research philosophy, approach and purpose. Furthermore, the extent of existing knowledge, time horizon and resources available as well as access to participants and other data sources should be considered. The strategy layer of the Research Onion entails various strategies which are not mutually exclusive including: experiment, survey, archival research, case study, ethnography, action research, grounded theory and narrative inquiry.
For the purpose of the dissertation, the researcher developed a \textit{survey} in order to collect quantitative data to be used for descriptive research purposes. According to Saunders, Lewis and Thornhill (2012, pp. 177) a survey strategy has the advantages that it is perceived as authoritative by people and is easy to explain and understand. Furthermore, a survey strategy allows more control over the research process through sampling and offers the possibility to generate findings representative for an entire population (Grill and Johnson, 2005, pp. 164-165) which includes lower costs than collecting data for a whole population (Saunders, Lewis and Thornhill, 2012, p. 177).

\textbf{3.2.4 Research Choice}

Saunders, Lewis and Thornhill (2012, pp. 160-166) distinguish the methodological choice between a mono-method and a multiple methods research design. Two methods, a quantitative and a qualitative one, were applied in this dissertation which depicts a multiple methods research design. Multiple methods can be further divided into multilist methods research and mixed methods. Since the researcher aimed at combining both quantitative and qualitative research in the research design, a \textit{mixed methods} research design, in particular a mixed model research design (convergent), was considered as the adequate choice. According to Creswell and Plano Clark (2011, p. 5) mixed method designs comprise at least one quantitative method (designed to collect numbers) and one qualitative method (designed to collect words) with the advantage that this combination provides a better understanding of research problems than either approach alone. The following figure provides a classification of methodological choices and the previously mentioned methods selected for this research:

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{methodological_choice.png}
\caption{Methodological choice (Saunders, Lewis and Thornhill, 2012, p. 165)}
\end{figure}

For the purpose of this investigation, qualitative methods were used by conducting individual in-depth interviews with neuromarketing experts in a German and English speaking environment in order to gain in depth information on how neuromarketing techniques can inform advertising effectiveness. Quantitative methods were employed in form of electronic mail surveys targeting luxury watch consumers as a follow up on the qualitative research to answer occurring questions and lacks of knowledge, in particular to investigate their perceived effectiveness of luxury watch advertisements.
3.2.5 Time horizon
The selected time horizon to answer the research question allows to distinguish between cross-sectional and longitudinal studies. Cross-sectional studies are conducted only once and reveal a snapshot of one point in time whereas longitudinal studies are repeated over an extended period of time which makes it possible to track changes in variables (e.g. panels or cohort groups) (Blumberg, Cooper and Schindler, 2011, pp.490-495).

Cross-sectional research was employed since the time frame to collect data was constrained to four days and three days for qualitative and quantitative data collection accordingly. Both data collection methods were employed within a time frame of 3 weeks which did not allow to track changes over a longer period of time. The overall working time for the dissertation is fixed to be sixteen weeks which also symbolises a time limit.

3.2.6 Data collection
Two variables, validity and reliability, have to be taken into consideration to establish a high quality research design. The term validity involves the extent to which a data collection method accurately measures what it was intended to measure and it refers to the research findings being really about what they profess to be about (Blumberg, Cooper and Schindler, 2008, p. 344). Reliable research must employ data collection methods and analysis procedures which produce consistent findings. A variety of threats to research validity (e.g. effects of data collection process on subjects, loss of subject during research) and reliability (e.g. subject error and bias, observer error and bias) exist and need to be identified and controlled (Saunders and Lewis, 2012, p. 127).

3.2.6.1 Secondary Data Collection
According to Maylor and Blackmon, secondary research refers to that sort of data which has already been collected and recorded by other people for their own research projects or commercial purposes. Using this kind of data saves time and cost since the data is already available and own research does not have to be conducted to obtain information. However, secondary data should be used with caution since it was not collected with the researcher’s specific research problem in mind and should be tested to fit the requirements for the individual research (Blumberg, Cooper and Schindler, 2011, pp. 236-237). Saunders, Lewis and Thornhill (2012, p. 307) classify secondary data in three main subgroups including documentary, survey-based and those compiled from multiple sources (Figure 9).
The researcher mainly relied on multiple sources such as snap shots (data compiled in books, journals) and longitudinal sources (data compiled in industry statistics and reports, books, journals) for the purpose of this research. The electronic academic database of Dublin Business School served as the main source to access secondary data.

### 3.2.6.2 Qualitative Primary Data Collection

Qualitative research procedures can be classified in indirect (disguised) methods including observation techniques as well as projective techniques and direct (non-disguised) methods containing the procedures focus group and individual in-depth interviews (Bryman and Bell, 2011, pp. 389-390).

The researcher conducted semi-structured in-depth interviews and telephone interviews with three selected neuromarketing experts at the first stage of research. According to Hair et al. (2011, p. 191) this informal interview style allows the researcher to exercise own initiative in following up on interviewees’ answers to a question which can include probing answers by letting the interviewees explain or build on their responses. Furthermore, discussions in areas that were considered previously can turn out to be valuable for the personal understanding and helpful to address research question and objectives. A high level of significance and in-depth data is unlikely to be obtained in focus groups since it is not possible to concentrate solely on an interesting and knowledgeable individual (Ghauri and Grønhaug, 2005, p. 114).

Saunders, Lewis and Thornhill (2012, p. 391) identify three types of questions including open questions, probing questions as well as specific and closed questions whereas the appropriate formulating of these questions is considered as crucial to achieve success in semi-structured and in-depth interviews. The researcher made use of mainly open questions in the qualitative primary research approach since this type of questions permitted an unlimited number of possible answers. Furthermore, and according to Ely et al. (2003, p. 66), respondents are given the opportunity to
answer in detail and to qualify/clarify responses to complex issues. Additionally, open questions reveal a respondent’s logic and thinking process which is crucial for an adequate interpretation of responses. Probing questions were asked to receive more detailed information if needed whereas specific and closed question only served for introductory purposes. The questionnaire for this investigation contained an overall amount of 17 questions which were derived from the first four research objectives (Appendix 1: Questionnaire and interviews qualitative primary research).

3.2.6.2.1 Population
The researcher interviewed three neuromarketing experts through audio recorded (dictaphone) one-to-one in depth interviews and audio recorded (dictaphone) telephone interviews:

1) Prof. Dr. Bernd Weber - Head of NeuroCognition | Imaging (Life & Brain GmbH in Bonn, Germany) (Cens.uni-bonn.de, 2014) - One-to-one in depth interview.

2) Dr. Christian Holst - Head of Advertising Media Consulting & Neuro Insights (Siegfried Vögele Institut in Frankfurt, Germany) (Sv-institut.de, 2014) - Telephone interview.

3) Dr. Thomas Trautmann - SalesBrain Certified Instructor & Business Partner (SalesBrain, in San Francisco, CA, USA) (Salesbrain.com, 2014) - Telephone Interview.

The three interviewees were selected to receive answers from different professional backgrounds. Dr. Thomas Trautmann looked at neuromarketing as a business activity and Prof. Dr. Bernd Weber, who also lectures at the University of Bonn (German: Rheinische Friedrich-Wilhelms-Universität Bonn), treated neuromarketing as academic scholarship. Dr. Christian Holst, who cooperates closely with neuromarketing research organisations provided answers incorporating both perspectives.

3.2.6.2.2 Analysing qualitative data
According to Ghauri and Grønhaug (2005, p. 109) the main difference between qualitative and quantitative research does not concern the actual ‘quality’ of data but the findings which in qualitative research are not reached by procedures of quantification such as statistical methods. In order to prepare the data for analysis, the interviews were audio-recorded and subsequently transcribed to which Corti et al. (2014, p. 63) refer to as reproducing a written version using the actual words. Saunders, Lewis and Thornhill (2012, pp. 556-578) describe five inductively based analytical procedures to analyse qualitative data comprising the grounded theory method, template analysis, analytic induction, narrative analysis and discourse analysis. For the purpose of this research a template analysis was used to which Cassell and Symon (2004, p. 256) refer to as not a single, clearly outlined method but rather a variety of related techniques that assist in thematically organising and analysing textual data. A template is essentially a list of codes or categories representing themes identified in the textual data that have been collected. Some of the codes are usually predetermined and then amended or added as the researcher reads and interprets the texts (Saunders, Lewis and Thornhill, 2012, pp. 572-573). The template analysis helped the researcher to structure data into different themes, identify relationships between these themes and compare perspectives of different interviewees (Cassell and Symon, 2004, p. 256).
3.2.6.3 Quantitative Primary Data Collection

Quantitative data collection involves gathering numerical data by applying two methods, observation or survey (Hair et al., 2005, p. 197). The major data collection method is the survey (Saunders, Lewis and Thornhill, 2012, p. 176) which was also employed in this dissertation, with a questionnaire being used to collect data within this method. The design of a questionnaire differs according to the delivery method and how it is returned and collected. Methods of collecting quantitative survey data fall into two categories which include interviewer-completed questionnaires (telephone questionnaire, structured interview) and self-completed questionnaires (internet-web-based- and intranet mediated questionnaires, postal-mail- questionnaire) (Hair et al., 2005, p. 197; Saunders, Lewis and Thornhill 2012, p. 420). According to Malhotra (2007, p. 299) any questionnaire should aim three specific objectives that include to (1) translate information through a set of specific questions that respondents can and will answer (2) uplift, motivate and encourage the respondent to participate and cooperate (3) minimise response error.

The survey questionnaire for the purpose of the dissertation was a self-completed, web-based questionnaire. Web surveys comprise numerous advantages as well as disadvantages in comparison to other modes of survey administration. The major disadvantage of this data collection method is the comparably low flexibility of data collection and a low control of the data collection environment. Nevertheless, web surveys are at a lower cost than traditional methods and require less time. Quick return times are possible with web surveys that cannot be attained by traditional methods (Schutt, 2011, p. 176). Furthermore, the likelihood of an interviewer bias is perceived as low since an interviewer does not get involved to clarify questions. The absence of an interviewer might also increase the willingness of respondents to share personal information since they are not disclosing it directly to another person (Saunders, Lewis and Thornhill 2012, p. 421).

The design of each question should be determined by the data that is aimed at being collected. Thus, the researcher used closed ended questions that provided a number of alternative answers from which the respondent was able to choose. According to Bryman and Bell (pp. 203-104) closed questions are quicker and easier to answer and require minimal writing due to the limited choice of possible answers available. Furthermore, the potential for interviewer variability is reduced (e.g. misinterpretation of answers) since this procedure entails ticking a box which is assigned to the answers. Saunders, Lewis and Thornhill (2012, pp. 431-440) list different types of closed questions that may be taken into consideration including list questions, category questions, ranking questions, rating questions, quantity questions and matrix questions.

The questionnaire for this investigation contained nine questions on the effectiveness of luxury watch advertisings including five rating questions, two list questions and two matrix questions, illustrated on one page (Appendix 2: Questionnaire quantitative primary research). Rating questions were used to collect opinion data and contained a five-point Likert-style ranking, in which alternative 1 was for “Strongly Agree”, 2 was for “Agree”, 3 for “Neither Disagree nor Agree”, 4 was “Agree” and 5 was for “Strongly Agree”. The use of matrix questions enabled the investigator to record two or more similar questions at the same time whereas list questions put an emphasis on making the respondent consider all possible options.
3.2.6.3.1 Sample

According to Zikmund (2003, p. 387) a sample is described as a subset, a part of a larger population and the aim of sampling is to estimate an unknown characteristic of a population. The variety of different sampling techniques can be assigned to two different sampling techniques: probability sampling and non-probability sampling, whereby non-probability sampling methods are of particular relevance in exploratory research (Remenyi et al., 2005, p. 193).

For this research, a non-probability sample design was chosen since the probability of each member of the population to be selected as a component of the sample was unknown. Thus, the results may not be generalised and make valid inferences for the entire population (Cooper and Schindler, 2008, p. 395). As approach within non-probability sampling, the selection took place according to convenience, firmly known as convenience sampling. This selection of subjects due to their convenient accessibility and proximity symbolised an advantage the researcher due to the availability and the quickness of data collection (Cameron and Price, 2009, p. 228).

The population selected by the researcher was the German Facebook group “The watch collectors - Antique and modern watches of all kind” (German: Die Uhrensammler - Antike und neue Uhren aller Art). The group consists of 168 members\footnote{State 04/11/2014} comprising watch experts and enthusiasts that the researcher identified as consumer target group for luxury watch advertisements. The first 100 members that showed up in the list of group members were conveniently selected as sample and received the web survey link, which was created with SurveyMonkey and sent via private message. The link was open for responses from Thursday the 6th November until Saturday the 10th November and an overall number of 51 members participated in the survey. However, a total number of 50 questionnaires could be analysed due one incomplete questionnaire where a question was skipped. Thus, the web survey achieved a response rate of 50%.

3.2.6.3.2 Analysing quantitative data

According to Chambliss and Schutt (2013, p. 154) several common statistics are used in social research to make sense of the ‘raw’ data gathered and to discover and describe patterns in this data. Saunders, Lewis and Thornhill (2012, p. 457) depict that qualitative data can be divided into two different groups: categorical and numerical data. Categorical data, as the name implies, is grouped into categories including descriptive (nominal) data and ranked (ordinal) data. Descriptive (nominal) data can be described as categorical data that are grouped into sets and thus, have no obvious rank order while ranked (ordinal) data is categorical data with a definite order (McGivern, 2006, p. 457). The data generated consisted mainly of ranked (ordinal) data due to the five rating questions in the questionnaire that asked participants to pick alternatives on how strongly they agree with a statement on a five-point Likert-style ranking. Descriptive (nominal) scales were used to label variables, without any quantitative value (e.g. gender) and were obtained through list and matrix questions in the questionnaire. Categorical data can be illustrated by using e.g. a pie chart in order display relative proportions of a survey response (Hair et al., 2011, p. 454) or a bar charts to display absolute or
relative magnitudes, differences and change either horizontally or vertically positioned (Malhotra and Birks, 2007, p. 732)

3.2.8 Ethical Issues
According to Blumberg, Cooper and Schindler (2008, p. 92) ethical issues may occur in every single sort of investigation and all parties involved in the process should exhibit ethical behaviour, as in other aspects of business. Thus, research ethics refers to the moral principles and values that influence the way researchers conduct their research activities without causing actual or potential harm of any kind to anybody (Ghauri and Grønhaug, 2005, pp. 19-29).

Regarding this investigation, the researcher paid particular attention to an ethical code of conduct in order to avoid arising ethical issues throughout the different research stages. All information and data obtained by conducting in-depth interviews and issuing web surveys was only used for the purpose of this dissertation. The researcher demonstrated integrity and objectivity at all different research stages and the privacy of all parties involved was respected. Furthermore, the participation in both qualitative and quantitative aspects of this investigation was voluntary and participants had the right to withdraw at any stage.

3.2.9 Limitations to the research
Limitations are considered as those extraneous events that cause restrictions while conducting an investigation. Thus, researchers should be aware of the limitations surrounding the research in order to avoid a high impact on the findings obtained from the investigation (Hair, Bush and Ortinau, 2003, p. 639). This research is not an exception and some limitations were faced.

Firstly, it is important to highlight that the researcher was confronted with a lack of secondary data regarding both neuromarketing and advertising effectiveness as well as advertising luxury watches which influenced the desired structure of the literature review. Furthermore, this lead to two separate investigations on neuromarketing and advertising effectiveness (qualitative data collection) and luxury watch customer’s perceived advertising effectiveness (quantitative data collection) in order to be able to put both pieces together and derive information relevant to research problem statement and research question.

A limitation faced regarding the qualitative primary research symbolised the different professional background of interviewees and the connected difficulty to compare information on neuromarketing that originates from both academic and business perspective.

Limitations to the quantitative primary research involved that with non-probability samples, it was not possible to make valid inferences about the population which implied that the sample was not representative. Furthermore, time limitations to the research allowed to approach only a small number of subjects, symbolising a sample size which was smaller than ideal, and therefore further restricted the accuracy of the findings.
Chapter 4: Research findings

4.0 Introduction
Neuromarketing techniques are considered as becoming increasingly important tools in determining what kinds of marketing campaigns and products appeal to a potential consumer in order to increase advertising effectiveness and influence purchasing behaviour (Samuel, Prasanth 2012, p. 84). However, it is evident that existing neuroscientific literature lacks a conceptual framework that adequately documents in which way neuromarketing tools can inform the various components or stages of advertising effectiveness. Moreover, no literature exists which reveals consumer’s perceived luxury watch advertising effectiveness.

Hence, no particular framework exists that clearly depicts weak points in luxury watch advertising effectiveness which may be improved by applying neuroscientifically supported marketing research at certain stages. The findings in this research help to fill these lacks of information.

The result of this research presents the first cohesive work that is strictly concerned with neuromarketing tools and luxury watch advertising effectiveness. The researcher hopes that the findings can encourage particularly neuromarketing academics to conduct studies examining and scientifically proving the sphere of influence which neuromarketing tools can exert on specific advertising effectiveness components that have not been investigated in this regard yet.

4.1 Findings of the qualitative research
The first four objectives built the frame for the qualitative part of the investigation by conducting in-depth interviews with three neuromarketing experts that mirrored the subject from both an academic scholarship and business perspective. The qualitative investigation and thus, the research findings are strictly concerned with neuromarketing tools and advertising effectiveness while the connection to luxury watch advertising was created subsequently by employing quantitative research.

4.1.1 - Objective 1 Research findings
“To investigate neuromarketing techniques as an alternative research method tool”.

These research findings outline the applicability of neuromarketing techniques by making comparisons to traditional market research tools such as focus groups and surveys.

Firstly, subjective opinions on advantages and disadvantages that the techniques comprise were gathered systematically. This lead to an evaluation of the techniques having supplementary/substitutional characteristics. Finally, respondents were asked to classify neuromarketing techniques as either quantitative or qualitative approach to market research.

4.1.1.1 The added values of neuromarketing techniques
The research demonstrated that neuroscientific methods are fundamentally used to generate an additional marker for human behavior, more precisely, to have access to consumers’ reactions without the filter of a conscious response. This cannot be achieved by explicit questioning where the answers are driven to some extent since the questions may point towards a desired answer.
“We can ascertain reactions which consumers cannot express explicitly with the help of physiological methods such as magnetic resonance imaging or optical motion measurement”. (Prof. Dr. Weber)

This statement bears a close proximity to existing secondary literature emphasising a beneficial employment of neuromarketing techniques in delivering insights for building targeted advertising campaigns, designing new products or shopping environments and ascertaining the reasons behind consumer preferences (Belden, 2008, pp. 249-250).

4.1.1.2 The shortcomings of neuromarketing techniques

The secondary research points distinctly to the higher cost for equipment compared to traditional market research tools (Samuel and Prasanth, 2012, p. 94). The research findings complemented secondary data and highlighted the high but varying costs among neuromarketing techniques.

“The costs vary depending on the technique employed: EEG caps, MRI scanners, or eye movement cameras, etc.” (Prof. Dr. Weber)

The findings demonstrated parallels to advantages and disadvantages of individual neuromarketing techniques that were outlined in the literature review (Plassmann et al., 2007, p. 156).

“fMRT can look deeply into the brain but can only poorly illustrate processes. EEG measurement is very quick but can only measure information through tension differentials on the scalp surface. Thus, it cannot distinctly localise deeper brain regions”. (Dr. Holst)

What became more illuminating in the research findings was the parallels to academic theory on this subject which recommends a multimodal approach to compensate disadvantages of individual techniques (Kenning, 2008, p. 472; Reimann et al., 2011, p. 611).

“Using several methods is advisable to be sure that a reaction can be traced back to a certain stimulus. The procedure to detect this is call triangulation. It means to measure on and the same event from multiple perspectives”. (Dr. Holst)

4.1.1.3 Neuromarketing techniques as supplement to traditional market research

Respondents attested to neuromarketing techniques having a clear supplementary predictive power for behaviour by revealing additional variance. Thus, depending on the questioning it is more or less reasonable to employ neuromarketing techniques but it was expressed as obvious that neuromarketing techniques should complement and not replace traditional market research.

“Implicit methods can symbolise an added value for topics such as advertising effectiveness research by clarifying additional variance. This benefit could not be obtained through traditional interviewing techniques”. (Dr. Holst)

This assertion can be correlated with Hubert and Kenning’s (2008, p. 274) findings that indicate not to see consumer neuroscience as a challenge to traditional consumer research but a complementing advancement.
4.1.1.4 Proximity of neuromarketing techniques to a qualitative approach

Interviewees were consistent with the view that neuromarketing techniques are currently used as a qualitative approach which is a research finding reciprocated by Eser, Isin and Tolon (2011, p. 854) who consider neuromarketing as qualitative research technique, which applies neuroscience techniques to marketing stimuli.

Furthermore, respondents provided reasons for the classification as a qualitative approach including the previously mentioned necessity to be well-versed in the methods in order to interpret the results.

“There is a lot of room for interpretation through the methods and the results that they deliver. The results then induce qualitative evidence whereas quantitative data is desired due to the scientific background”. (Prof. Dr. Weber)

This finding can be correlated to Berca (2013, p. 8) who highlights that neuromarketing research does not yield quantitative data due to the small amount of subjects used to conduct research in this field.

Despite the fact that literature classifies neuromarketing as fitting more to the qualitative side of research, a respondent expressed the desire to employ the techniques in a more quantitative way.

“I think that neuromarketing techniques are mainly used qualitatively but could and should be used more quantitatively since the techniques allow it”. What I would like to have is that it is a quantitative approach. (Prof. Dr. Weber)

4.1.2 - Objective 2 Research findings

“To investigate the potential added value of neuromarketing techniques in framing consumer perceptions of advertisements”.

In the pre-experience phase the critical function of advertising is to frame perception. Framing has three effects on the consumer: Creating an expectation for the brand, creating anticipation, and providing a rationale for this anticipation (interpretation). The findings were grouped in accordance with these three effects of the pre-experience exposure phase of the P/E/M model of advertising effectiveness. Moreover, neuromarketing techniques relevant to the pre-experience exposure phase of an advertisement were identified.

4.1.2.1 Expectations for a brand and reference framing

Both a lack of secondary literature and the research findings indicate that no study has been conducted on this subject yet. However, the findings demonstrate that rather the inverse is possible to depict with neuromarketing techniques which is the mismatch or the conflict perception. In particular this means to contrast a desired framing reference point/a certain framing with the actual experience of the consumer/the perceiver.

“Certain conflict areas (conflict signals) in the brain state something about this fit. This measure could be used as something like a certain reference point. However, I do not know any study that has investigated this yet”. (Prof. Dr. Weber)
Respondents concurred that neuromarketing techniques can measure if something is perceived (e.g. reactions such as attention) through different test designs. This point of view complements the findings of Perrachione and Perrachione (2008, p. 306) who assign parts of the prefrontal cortex the responsibility for directing and focusing attention.

The findings demonstrate that, for instance, the registration of errors (something unexpected) can be measured in this way since levels of attention are established if things are not as anticipated.

“If I show subjects an advertisement and see that certain areas are activated then I can draw the conclusion that the people do not like the advertisement or that something is not understood”. (Dr. Holst)

The researcher hypothesises that it is not possible to identify if the advertisement did not appeal to people or if something was not understood or wrong since the anticipation with which people approach the advertising medium is unknown.

4.1.2.2 Creating an improved sense of anticipation of a certain experience

Respondents attested to there being the possibility to improve the anticipation by determining whether certain areas in the brain are active or not. For instance, if a subject is shown food, or is confronted with a scent or a certain haptic then the techniques can ascertain whether areas responsible for the regulation of the hunger feeling are active or not.

What became more illuminating in the research findings was the parallels inadvertently drawn between a respondent’s statement and academic literature on this subject.

“Especially such anticipation signals play a significant role in neuroscientific research. It is well-known that specific anticipations are associated with certain brain activity patterns. These patterns can be used as further marker in addition to explicit questioning”. (Prof. Dr. Weber)

What Prof. Dr. Weber revealed resembled Hubert and Kenning’s (2008, p. 281) findings who allocated the activation of the nucleus accumbens to an activation through the anticipation of gains (e.g. product preferences) and the activation of the insula to an anticipation of losses (e.g. high prices).

However, interviewees highlighted that it has to be considered if the neuroscientific method/the data can provide additional insights to the questioning. This is as previously outlined and supported by Morin (2011, p. 133-134) heavily dependent on the capabilities and suitability of the particular technique. Furthermore, a situation specific evaluation to apply neuromarketing tools was recommended.

“I think this is heavily dependent on the individual case. Basically, neuroscientific methods can be very well used for it (to improve anticipation)” (Prof. Dr. Weber)

4.1.2.3 The rationale for generated anticipations

The research indicated that respondents consider neuromarketing methods as advantageous in identifying processes behind the effect, in other words behind the behaviour. Particularly fMRI allows
to see which anticipations or reactions an advertisement, or more generally speaking a signal in the brain triggers in order to understand the background mechanisms more precisely.

“It is difficult to get this understanding with other behavioural analyses. This is why this neuroscientific approach is particularly useful for “why” and “how” questions”. (Prof. Dr. Weber)

Koller (2010, p. 429) also highlights the applicability of fMRI to identify and map brain activities that provide a better explanation of decision-making, processing of information or the perception of brand and advertisements.

“If we use neuromarketing research then we can see what is happening in the brain and therefore explain why the result of one advertisement is better than the other one”. (Dr. Thomas Trautmann)

An fMRI study on this subject was conducted by Santos et al. (2012, p. 69) who explored the neural correlates of a brand’s perception and revealed that preferred brands activate brain regions supposed to be emotional inducers.

A respondent provided the examples of a McClure study performing a blind taste test on Coca Cola and Pepsi which was followed up by a test revealing the brands' logos. The subjects' brains were scanned with an fMRI machine during both scenarios and results indicated that ignorant of which beverage they were sampling, the subjects favoured Pepsi while three out of four people said they preferred Coke being aware of the tasted brand. Thus, the study demonstrates that the difference is not due to the taste since a blind tasting does not make any difference.

“The difference lies in the fact that certain brain areas responsible for the formation of memory (esp. the hippocampus) become active when the brand Coca-Cola is revealed. McClure interpreted that Coca-Cola succeeded in establishing an image over decades which was continuously linked to associations and memories”. (Dr. Holst)

Belden (2008, p. 254) who addresses the same study, also refers to the fact that being aware of the tasted brand lead to scans which revealed activity in the hippocampus, midbrain and dorsolateral prefrontal cortex symbolising areas associated with memory, emotions and emotional information processing.

“This image becomes active when showing the logo or brand Coca-Cola which in turn has an influence on how the Coca-Cola taste is perceived”. (Dr. Holst)

4.1.2.4 Testing a meaningfully framed perception

The research indicated that the application of the various neuromarketing techniques is dependent on factors including the type of advertisement, what exactly is aimed at being analysed in this advertisement and the available budget. Particularly, fMRI is considered as a techniques that provides good markers for elementary cognitive states. The markers allow to capture attention processes and therefore to see if subjects have higher or lower levels of attention.

“Depending on how the research study to investigate attention processes is created or designed, it is possible to say a lot about the attention state of the subject due to activation patterns.” (Prof. Dr. Weber)
Kenning (2008, p. 472) emphasised the importance of a multimodal approach in neuromarketing to validate findings which was clearly reflected by the respondents.

The research demonstrated that fMRI is considered as the main technique on this subject which may be complemented with other techniques.

“Additionally (to fMRI), other methods such as eye-tracking, which can be employed in combination, are useful to see on what the attention of the subject is focussed (Prof. Dr. Weber”).

Similarly, Dr. Trautmann revealed the applicability of EEG as supplementary method that is comparably less expensive and easy to use on anyone. This has also been attested by Reimann et al. (2011, p. 611) who recommend to complement fMRI (good spatial resolution of the brain) with EEG which comprises advantages in regard to temporal resolution in order to provide a balanced picture of methodology employed.

4.1.3 - Objective 3 Research findings

“To ascertain if neuroscientifically tested advertisements can enhance sensory and social experience”.

The second key phase in the process of the P/E/M model of advertising effectiveness is enhancing experience in which advertising has two effects on the consumer: 1) enhance sensory experience when a) exposed to the consumer before the experience and when b) exposed afterwards (in retrospect) as well as 2) social experience enhancement. At this stage it is relevant to mention that both pre- and post-experience exposure flow into the enhancing experience. The finding were grouped in accordance with these two effects of the pre-experience exposure phase and neuromarketing techniques relevant to this phase were identified.

4.1.3.1 Enhanced sensory experience of an advertisement (before the experience)

Two respondents began to highlight that neuromarketing techniques do not serve as an active manipulation but are passive measurements and therefore do not influence the consumer.

“What can be used to improve anticipations, or evoke targeted anticipations, is the knowledge gained through studies in neurosciences or psychology”. (Prof. Dr. Weber)

Dr. Holst provided the distinct example of a market where an apple is being promoted for purchase by highlighting attributes such as “sweet, delicious and crunchy”. Humans can imagine these attributes before the inner eye, even before actually biting into the fruit which is called imagery.

Naito et al. (2002, p. 3689) who refer to PET\(^2\) and psychophysical results demonstrated that mental imagery reflects the effects of previous knowledge about a prognosticated sensory effect of a subject’s own actions on sensory processing areas in the absence of the actual sensory input. Thus, similar brain areas are activated to a similar extent through imagery than through an actual sensory experience.

\(^2\) Positron Emission Tomography (nuclear medicine, functional imaging technique)
If an advertisement succeeds in evoking associations through e.g. an intelligent language or nicely selected images then these associations are established in peoples’ heads before the product is even tested.” (Dr. Holst)

Respondents stressed that evoking associations and creating multi-sensory optimised advertising works particularly well for food products but becomes more difficult concerning abstract terms (e.g. the service facility of a copier).

4.1.3.2 Enhanced sensory experience of an advertisement (in retrospect)

Respondents unexceptionally adverted to the similarity between the retrospective enhanced sensory experience and the previously illustrated exposure to the consumer before the experience. Thus, the critical function of neuromarketing techniques regarding sensory experience enhancement is considered as to design the frame/the advertisement in a way that it most effectively influences experiences.

“If an advertisement builds on this or succeeds in recalling an experience then this experience becomes repeatedly channelled. This leads to an increasingly easy recall of the experience”. (Dr. Holst)

What Dr. Holst illustrated is a classical learning behaviour to which academic literature refers to as process by which new knowledge is generated as a result of experiences which are stored as memories in the brain (Kandel and Schwartz, 1982, p. 433).

Furthermore, the interviewees pointed out that the neurochemical foundation for learning functions through neural facilitation/paired pulse facilitation (PPF). The more these neural facilitations are activated the easier and faster they can be aroused.

“If I succeed in repeatedly addressing neural facilitations in a new way through a stimulus (advertisement) then the result can be improved or reactivated in retrospect”. (Dr. Holst)

4.1.3.3 Enhanced social experience of an advertisement

The research and lack in secondary literature indicated that no study has been conducted so far which demonstrates that neuromarketing techniques can identify social experiences in connection with an advertisement. However, the particularly high knowledge in social neurosciences concerning social interactions and the familiarity of relevant brain structures on this subject make an identification of social experiences theoretically possible.

“There are good studies on actual human interactions which give measures for trust. What I can well imagine is to apply this in a marketing/brand context. I do not know any study that did it but I can well imagine that it would work if it was investigated”. (Prof. Dr. Weber)

Interestingly, an interviewee referred to hormone oxytocin as a measure for trust in advertising in order to examine e.g. how trustworthy a brand appears.

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3Hormone that is, among others, released during pregnancy and symbolises and neurochemical foundation for basic trust.
“I can use oxytocin in advertising but I need relatively high dosages in order to have an effect. It is possible to measure trust since it is known which brain areas are addressed in connection with building trust”. (Dr. Holst)

Similarly, Zară and Tuță (2013, p. 97) correlate oxytocin to trust and tolerance of others with a consumer’s oxytocin level being higher in situations that a product or company is trusted than when fear and insecure situations occur.

However, Prof. Dr. Weber adopted a more reserved and critical attitude regarding oxytocin by highlighting that it does not generally reinforce social bonds or trust but only within the own reference group.

This assertion bears a remarkable similarity to research carried out by De Dreu et al. (2010, p. 1408) who contend that external oxytocin administration leads to in-group and out-group effects which comprises increased aggression towards out-group members but strengthened bonds within the group.

“The measurement of oxytocin is extremely difficult and probably not a meaningful measure to capture trust in a stimulus. The generation of oxytocin in the brain would probably be not strong enough to even measure reactions”. (Prof. Dr. Weber)

4.1.3.4 Testing sensory and social experience

Two respondents considered fMRI as the methods of choice to refine advertising related anticipations or evoke targeted anticipations in order to provide an improved sensory experience. If studies on actual human interactions that give measures for trust were applied to a marketing/brand context, which has not been done yet, fMRI would also most likely the best technique to indicate social experience.

“I think that functional magnetic resonance imaging is the method of choice for such complex issues where it is of importance to be able to assign which reactions take place where in the brain. I do not know how to do this meaningfully with EEG”. (Prof. Dr. Weber).

EEG was perceived as a disadvantageous method in this context due to its low spatial resolution and the connected inability to capture certain structures of the brain.

4.1.4 - Objective 4 Research findings

“To examine the role of neuromarketing techniques in creating advertisement related brand equity”.

The critical function of advertising in the post-experience exposure phase is organising memory which has three effects on the consumer: cueing of recall (advertising, brand and product), branding (brand related recall) and providing a rationale for the recall (interpretation). The findings were grouped in accordance with these three effects of the post-experience exposure phase of the P/E/M model of advertising effectiveness. Moreover, neuromarketing techniques relevant to the post-experience exposure phase of an advertisement were identified.
4.1.4.1 Tracking an advertisement related recall triggered by cueing

All three interviewees indicated that the field of memory research is one of the most advanced ones within the neurosciences and that it is possible to measure a recall or a recall performance.

“It is well known which brain areas play an important role for specific memory processes and also for the recall of memory associations”. (Prof. Dr. Weber)

This is a research finding reciprocated by Wilson, Gaines and Hill (2008, p. 391) who highlighted that memories triggered by an advertisement are stored throughout the cerebral cortex and recalled through the hippocampus whose activation can be measured.

However, Dr. Holst pointed out that neuromarketing techniques are not able to indicate how a deficient or insufficient recall can be improved.

“Neuromarketing techniques can only ascertain that subjects truly cannot remember certain things and do not just claim it”. (Dr. Holst)

This assertion lead to the finding that a researcher’s knowledge on of the function of memory processes and attention processes is considered as crucial in order to create an advertisement more effectively.

4.1.4.2 Improving a separate brand related recall (branding)

Interviewees attested to there being no difference between a general advertising recall and a brand related recall.

Cîrneci, Angheluță and Gheorghe (2014, p. 332) who conducted an fMRI study on brand related mental processes attest an activation of the hippocampus as being an indicator for a brand recall. The research findings therefore demonstrate that an activation of the hippocampus serves as measurement for an advertisement related recall and branding likewise and mirror the findings of the previous section on the advertisement related recall.

Again, it was highlighted by two respondents that the methods themselves do not bring any improvement but deliver insights if a specific advertisement causes a stronger recall in comparison to another one.

The methods deliver insights on attention processes which I can use to design the advertisement. The methods themselves do not serve to improve the memory but I can use them do design an advertisement better or differently. (Prof. Dr. Weber)

4.1.4.3 A rationale for the recall - Identification of emotions

Two of the three interviewees confirmed that neuromarketing techniques cannot identify emotions based on brain activity patterns at the current point in time. However, it is possible to read out basal processes such positive or negative arousal from brain data.

“This (identifying positive/negative arousal) seems to succeed but it is not possible to readout from brain data if a subject is experiencing disgust, fear, or other negative emotions with a reasonable reliability”. (Prof. Dr. Weber)
This has also been confirmed by Hubert and Kenning (2008, pp. 285-286) who localised important brain structures associated with reward and punishment processing and suggest to interpret neural activation patterns cautiously since the activation of a specific area can mean different things depending on the context (e.g. the amygdala can be activated by reward and punishment stimuli).

Interestingly, a respondent cited facial expressions analysis as a method to exactly determine what a person is feeling based on a person’s micro expressions. What the interviewee referred to is based on the work of Scherer and Ekman (2009, p. 321) who classify six facial expressions which correspond to distinct universal, cross cultural emotions: happiness, sadness, surprise, fear, disgust and anger.

“If you can identify these (micro expression), and yes we can with a software, then you know exactly what the person is feeling”. (Dr. Trautman)

Even though facial expression analysis was considered as an interesting method among all interviewees, the opinion on the validity and reliability of analysis results differed strongly.

“All scientific studies that I have seen so far diverge from what companies offering neuromarketing services say. The correlation between what can be expressed by emotions and what can be indicated with analysis methods is not very good”. (Prof. Dr. Weber)

4.1.4.4 Testing an emotional connection with a brand

The research indicated that neuroscientific techniques cannot capture the emotional state of a subject. This was emphasised in the previous section. A respondent highlighted the possibility to ascertain if a brand (before an advertisement was seen) evokes certain associations/brain reactions which can be compared to the state after the advertisement was seen. However, it was indicated that neuroscientific tools cannot translate these measures back to specific emotions.

Furthermore, respondents exemplified that, depending on the brand or product, a pure emotionalisation might not be meaningful to yield a purchasing stimulus.

“I have to evoke such associations that fit the needs of customers and not necessarily arouse emotions. It is not the aim to emotionalise a brand but to connect the brand with associations which improve the customer’s motivation to buy the product”. (Prof. Dr. Weber)

Georges, Bayle-Tourtoulou and Badoc (2014, p. 38) consider these associations as powerful marketing relevant tools which can promote consumer decision-making. Similarly, respondents cited studies on evaluation processes in the brain demonstrating that brands can be “loaded up” with associations through advertisements. Thus, it can be ascertained if the brand can induce a re-evaluation/higher valuation of the product through the previously shown advertisement.

“It is possible to measure this very well (with fMRI) whereas everything else is rather a qualitative interpretation of brain activity patterns which bring along a high degree of freedom for interpretation”. (Prof. Dr. Weber)

Furthermore, an interviewee cited the possibility to measure consumer attitudes based on reaction and speed via an implicit association test (IAT). The test was described as a method to derive how
close a certain term is to a certain emotion based on the speed with which the term is allocated to an image which symbolises this emotion.

“This can also be done regarding brands. It is possible to allocate this test, which is a reaction and speed test, to the neuromarketing techniques”. (Dr. Holst)

IAT as suitable method to measure consumer attitudes is a finding reciprocated by Maison, Greenwald and Bruin (2004, p. 405) who experimentally proved that IAT measures increase the prediction of behaviour relative to explicit attitude measures alone.
4.2 Findings of the quantitative research

The quantitative research findings demonstrate the analysis results of 50 valid questionnaires (web survey) that were completed by members of the German Facebook group “The watch collectors - Antique and modern watches of all kind” (German: Die Uhrensammler - Antike und neue Uhren aller Art). All contacted neuromarketing experts did not have sufficient knowledge on luxury watches which made it impossible to solely base the research on a qualitative approach. Thus, the quantitative research findings strictly concern advertising effectiveness and luxury watches and symbolise an addition to the qualitative research findings. The stages of the P/E/M model of advertising effectiveness also served as a guideline throughout the quantitative research in order to facilitate the comparability with the qualitative findings.

4.2.1 - Objective 5 Research Findings

“To investigate luxury watch consumers’ perceived effectiveness of luxury watch advertisings”.

The findings of the last objective aim at demonstrating luxury watch consumers’ perceived effectiveness of luxury watch advertisings in order to reveal weak points where an application of neuromarketing techniques may be considered to achieve an improvement.

4.2.1.1 Gender distribution of respondents

-Question: Please indicate your gender-

An actual number of 24 male and 26 female respondents participated in the web survey which symbolises a percentage of 48% and 52% accordingly.

4.2.1.2 The clarity of luxury watch advertisements in depicting new model attributes and purchase availability

-Statement: The advertisement of a new luxury watch model clearly depicts the attributes of this particular watch and its availability for purchase-
The question addressed the pre-experience exposure phase of luxury watch advertisements with the purpose to ascertain if the advertisements succeed in framing perception by creating an expectation for their brand. The majority of respondents (actual number of 19; 38%) neither agreed nor disagreed. 17 respondents (34%) rather tended to perceive a perceptual prompt that brings luxury watch advertisements in a certain frame of reference (strongly agree/agree) compared to 14 respondents (28%) that disagreed/strongly disagreed.

4.2.1.3 The ability of luxury watch advertisements to create anticipation
-Statement: The advertisement of a luxury watch creates a sense of anticipation of a certain experience which I connect with the product-

This question intended to identify if the pre-experience exposure of luxury watch advertisements creates anticipation. The majority of respondents (actual number of 20; 40%) strongly disagreed/disagreed. Comparatively, 19 respondents (39%) strongly agreed/agreed that luxury watch advertisements create a sense of anticipation of a certain experience while 11 respondents (22%) neither agreed nor disagreed.

4.2.1.4 The capability of luxury watch advertising to create a rationale for anticipation
-Statement: Product specifications or features of a luxury watch (benefit of the product) which are described in an advertisement encourage me to buy the product-
This question aimed at identifying if a luxury watch advertisement provides a rationale for the anticipation which it may generate in the pre-experience exposure phase. The majority of respondents (actual number of 21; 42%) which were considered as interpreters of luxury watch advertisements strongly disagreed/disagreed. Comparatively, 18 respondents (36%) strongly agreed/agreed on perceiving a rationale for luxury watch advertising anticipation as being created in an explicit or implicit way. 11 luxury watch consumers (22%) neither agreed nor disagreed on this subject.

**4.2.1.5 Senses most affected by luxury watch advertisements**

-Question: Which of your five senses do luxury watch advertisements affect most? (several answers possible)-

This question strived at ascertaining which senses luxury watch advertisements affect most in order to identify the scope for enhancing customers’ sensory experience. The majority of respondents (actual number of 48 clicks; 70.6%) felt most affected by sight, followed by 12 clicks (17.6%) regarding touch. Sound and taste received 7 clicks (10.3%) and 1 click (1.5%) accordingly while smell is not considered to enhance sensory experience in a luxury watch context.
4.2.1.6 The success of luxury watch advertisings in creating customer relationships
-Statement: Luxury watch brands succeed in creating a relationship (e.g. a basis of trust) with its customers through advertisements-

![Bar chart showing the distribution of responses to the statement about luxury watch advertisements creating customer relationships.]

This question sought to ascertain if luxury watch advertisements enhance social experience as straightforward extension of the sensory experience enhancement. The majority of respondents (actual number of 19; 38%) strongly agreed/agreed. Comparatively, 16 respondents (32%) strongly disagreed/disagreed that luxury watch advertisements successfully create customer relationships while 15 respondents (30%) neither agreed nor disagreed on this subject.

4.2.1.7 Cues that enable a luxury watch advertisement/brand recall
-Question: Which cues mainly enable the recall of a luxury watch advertisement and the brand in your case? (several answers possible)-

![Bar chart showing the distribution of responses to the question about cues enabling luxury watch advertisement and brand recall.]

The question aimed at identifying the most relevant cues which enable luxury watch consumers to recall the advertisement or the brand (post-experience exposure phase). The majority of respondents considered visual cues as most pertinent to enable both an advertisement and brand recall with 41 clicks each which symbolises 69.5% and 74.5% accordingly. Verbal cues were perceived as less relevant and were clicked 10 times in both advertisement and brand context representing 17% and
18.2% respectively. Aural cues were regarded as least important concerning a recall and were selected 8 times (13.5%) in an advertisement context and 4 times (7.3%) in a brand context.

4.2.1.8 Plausibility of luxury watch advertisement messages

-Statement: I usually believe the message that luxury watch advertisements try to deliver-

![Plausibility chart]

The question scrutinised if luxury watch advertisements provide a rationale and reason to believe that sensory or social experience are a good one. The majority of respondents (actual number of 23; 46%) strongly disagreed/disagreed. Comparatively, 19 respondents (38%) neither agreed nor disagreed on this subject while 8 respondents (16%) strongly agreed/agreed that they believe the message which luxury watch advertisements try to deliver.

4.2.1.9 Perceived advertising effectiveness of luxury watch brands

-Statement: Please evaluate your perceived advertising effectiveness of the following luxury watch brands-

This question addressed the TOP 3 luxury watch brands which were previously identified in the literature review with the purpose to ascertain the highest brand-specific advertising effectiveness.

<table>
<thead>
<tr>
<th></th>
<th>Very low</th>
<th>Low</th>
<th>Moderate</th>
<th>High</th>
<th>Very High</th>
<th>Total</th>
<th>Average Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rolex</td>
<td>6.00%</td>
<td>14.00%</td>
<td>20.00%</td>
<td>44.00%</td>
<td>10.00%</td>
<td>50</td>
<td>3.50</td>
</tr>
<tr>
<td>Omega</td>
<td>6.00%</td>
<td>24.00%</td>
<td>20.00%</td>
<td>30.00%</td>
<td>3.00%</td>
<td>50</td>
<td>3.04</td>
</tr>
<tr>
<td>TAG Heuer</td>
<td>24.00%</td>
<td>20.00%</td>
<td>34.00%</td>
<td>20.00%</td>
<td>10.00%</td>
<td>50</td>
<td>2.56</td>
</tr>
</tbody>
</table>

Rolex achieved the highest average rating (3.50) which implies that the brand’s advertisements are considered as most effective among the three brand alternatives. Rolex is closely followed by Omega with an advertisement effectiveness rating of 3.04. Luxury watch consumers perceived the advertising effectiveness of TAG Heuer as lowest symbolising a rating of 2.56.
Chapter 5: Conclusions and recommendations

5.0 Introduction
The limitations in the existing literature concerned with both neuromarketing and advertising effectiveness as well as consumer’s perceived efficacy of contemporary luxury watch advertisements have ultimately proved to be a strength in constructing this dissertation. The lack of conclusive knowledge surrounding the potential of neuromarketing techniques to improve certain stages of advertising effectiveness meant that exploratory qualitative methods would build a deeper understanding of the phenomenon in question and therefore almost certainly yield unprecedented conclusions. This was indeed the case. In this two-phase mixed methods design, descriptive quantitative methods provided measurable data and therefore evidence of luxury watch consumer’s perceived advertising effectiveness. Merging the concurrent two types of data lead to constructive results that symbolise a foundation for further research.

5.1 Applicability of neuromarketing techniques in the luxury watch industry
It is the conclusion of the researcher that neuromarketing techniques have the potential to complement traditional qualitative market research in the luxury watch industry by revealing additional variance which consumers cannot express explicitly and therefore cannot be obtained through traditional interviewing techniques. In this regard, a multimodal approach (triangulation) increases the certainty to trace a reaction back to a certain stimulus and accommodates disadvantages and advantages that individual methods incorporate. The higher cost to conduct neuromarketing research compared to traditional market research is evident which is also reflected in the imperative necessity to cooperate with an expert who can employ the techniques meaningfully and interpret generated data reasonably.

Depending on the exact questioning, it is more or less reasonable to employ neuromarketing techniques in the luxury watch industry. The results of the dissertation help to identify central improvement potentials for luxury watch advertising which can be realised by applying specific neuromarketing techniques. However, since only 30% of human brain processes are investigated on a simple level at the current point in time, it is important to highlight that neuromarketing techniques cannot serve as a universal solution to all types of questioning which implies a restricted employability at certain stages. Due to the complexity of the subject area, a simplified overview table was created which concisely demonstrates opportunities and capacities of neuromarketing techniques to informing exposure stages of luxury watch advertisements based on consumers’ perceived effectiveness (Appendix 3: Scope of neuromarketing techniques to inform luxury watch advertising effectiveness). There are main indications which are addressed as follows:

5.1.1 Framing perception of luxury watch advertisements
Luxury watch consumers perceive the ability of luxury watch advertisements to create an expectation for a brand as moderate by tendency which indicates improvement potentials. However, utilising

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4 Statistical results of the quantitative datasets were transformed and placed in a qualitative context in order to allow a comparability with the qualitative dataset.
neuromarketing techniques to create a perceptual prompt that brings a luxury watch into a particular frame of reference is not possible at the current point in time. The methods and different test designs are restricted to indicating if something is perceived by measuring a subject’s physiological reactions. In theory, neuroimaging techniques such as fMRI could depict the inverse, a mismatch or conflict perception, by contrasting a desired and evoked reference point (framing) with the actual experience of the luxury watch consumer. Certain conflict areas in the brain state information on the fit and could be used as a reference point. The researcher concludes that neuromarketing techniques comprise high potentials on this subject for the luxury watch industry but studies that scientifically validate findings are currently non-existent.

The research findings extrapolate that the minimal success of luxury watch advertisements to create customer anticipations can be improved by employing neuromarketing techniques and generating data which provides additional insights to the questioning. Since anticipation signals play a significant role in neuroscientific research it is well-known that specific anticipations are associated with certain brain activity patterns. These patterns can be used as further marker in addition to explicit questioning. In conclusion, fMRI and eye-tracking as supplementary method can deliver insights that help to maximise practitioners’ success in creating a sense of anticipation of a certain luxury watch experience.

Luxury watch consumers perceive a rationale for the anticipation which a luxury watch advertisement aims to deliver only to a limited extent. Thus, neuromarketing techniques can be employed advantageously to identify processes behind the effect (behind the behaviour). The researcher concludes that a neuroscientific approach, and particularly fMRI, are beneficial to the luxury watch industry in order to generate deeper insights on ‘why’ and ‘how’ questions. Investigating which anticipations or reactions a luxury watch advertisement (signal in the brain) triggers can help to more precisely understand the background mechanisms. It is difficult to get this understanding with other behavioural analyses.

The overall use of neuromarketing techniques in framing consumer perceptions of luxury watch advertisements implies an added value for practitioners in the luxury watch industry. Particularly, fMRI offers good markers for elementary cognitive states, which can be used to capture attention processes and to see if subjects have higher or lower levels of attention while confronted with a luxury watch advertisement. Additionally, other methods such as eye-tracking, can be employed in combination to detect on which part of the advertisement the attention of the consumer is focussed.

5.1.2 Enhancing the luxury watch advertisement experience

It is unquestionable that advertising always effects at least one of a human’s five senses. In a luxury watch context, visual advertisements are most likely to provide customers with an enhanced sensory experience. Neuromarketing techniques can be employed to design such visual advertisements or the frame in a way that it most effectively influences luxury watch consumers’ experiences. Thus, the knowledge gained through studies in neurosciences or psychology about processes in the brain can be used to improve anticipations, or evoke targeted anticipations which in turn can increase the effectiveness of a luxury watch brand’s communication.
Luxury watch consumers are affected by the advertisement element social experience to a great extent which extrapolates the success of luxury watch brands to establish a relationship with its customers based on factors such as trust. Even though the knowledge in the social neurosciences is particularly high regarding social interactions which give measures for trust, this knowledge has not been applied in a marketing/brand context. Furthermore, a measurement based on hormones such as oxytocin in the blood or the brain is not a meaningful measure to capture trust in a stimulus since external oxytocin administration does not generally reinforce social bonds or trust but only within the own reference group which implies in-group and out-group effects. Thus, it is the conclusion of the researcher that utilising neuromarketing techniques in regard to social enhancement does not benefit practitioners in the luxury watch industry at the current point in time and symbolises further room for scientific investigation.

As it was the case with framing perceptions of luxury watch advertisements, fMRI is the method of choice to test if a luxury watch advertisement delivers both enhanced sensory and social experience. Even though the complex issue social experience has been investigated to an insufficient extent, it is conclusive that fMRI is likely to deliver data on this subject in the course of scientific progress.

5.1.3 Luxury watch advertisements to organise memory
A luxury watch consumer's advertising/brand recall is mainly enabled by visual cues. Building on this, neuromarketing techniques can identify brain areas that play an important role for specific memory processes and also for the recall of memory associations. The field of memory research is one of the most advanced and most frequently investigated ones within neurosciences and particularly fMRI is well suited for the detection of impacts on memory. Based on activation patterns of, among others, the hippocampus, fMRI allows to ascertain if a specific luxury watch advertisement causes a stronger recall in comparison to another one. Furthermore, the method delivers insights on attention processes which can be used to design the luxury watch advertisement. It is the conclusion of this piece of research that particularly fMRI as neuromarketing technique can be employed to design a luxury watch advertisement better or differently whereby a differentiation between a general advertising recall and a brand related recall is redundant. However, neuromarketing does not reveal practitioners how a deficient or insufficient recall can be improved. Neuromarketing techniques can only ascertain that subjects truly cannot remember certain things and do not just claim it.

Consumers are influenced by sensory or social experience of a luxury watch advertisement but advertising barely provides a rationale and emotional attachment to believe the advertising message. Although neuromarketing techniques can readout basal processes such positive or negative arousal based on brain activity patterns, it is currently not possible to measure which emotions a consumer is experiencing while being confronted with a luxury watch advertisement. Scientific studies on facial expressions analysis as different approach also demonstrate that the correlation between what can be expressed by emotions and what can be indicated with analysis methods is currently insufficient. Furthermore, these studies often diverge from what companies offering neuromarketing services commend. It is the conclusion of the researcher that facial expression analysis could serve
practitioners in the luxury watch industry as a method which can provide rough reference points but does not allow to draw meaningful conclusions on which emotional impact a luxury watch advertisement has on a consumer.

Even though neuromarketing techniques cannot reliably identify emotions based on brain activity patterns, the techniques can be employed to generate data beneficial to create advertisement related brand equity. Magnetic resonance imaging can be applied suitably regarding memory associations and to receive insights on how evaluation processes e.g. for the product luxury watch take place. It is scientifically proven that brands can be loaded up with associations through advertisements. This gives practitioners in the luxury watch industry an uncontroversial measure to ascertain if the brand changed the evaluation processes by inducing a re-evaluation/higher valuation of the product through the previously shown advertisement.
5.2 Recommendations for further research

Although this research has improved our understanding of neuromarketing methods and their applicability to inform luxury watch advertising effectiveness, there are many areas left unexplored. In order to encourage continued growth, further research should explore areas that remain outside the actual academic scope of investigation. As a springboard, further research should explore the limits of the present findings. In contemplation of these limitations, the following section focusses on recommendations for academic research, neuromarketing businesses and luxury watch industry practitioners. The recommendations are derived from the research findings and complemented by insights gained from the literature review.

5.2.1 Academic research

Previous neuroscience research has not addressed certain advertising effectiveness aspects which needs to be changed in order to both enhance the scope of marketing research and improve the quality of results which paves the way for the creation of more effective advertising and communication.

Further and more in-depth research on conflict areas and signals in the human brain should be carried out to be able to contrast a desired advertisement framing with actual consumer experiences which allows to interpret neuroscientifically generated data in a way that it provides meaningful information on customer expectations towards a brand.

Even though advertising has been shown experimentally to enhance sensory experience, neuroscience has not scientifically proved this yet. Since studies on actual human interactions exist, which give measures for trust, neuromarketing research should focus on these studies in a marketing and brand context in order to gain valuable insights on how advertisements can provide customers with an enhanced social experience.

Furthermore, the necessity exists to build upon knowledge on reading out processes such as positive or negative arousal from brain data in order to identify more complex emotions such as disgust, fear, or other negative emotions that a subject might experience while confronted with an advertisement. Increased neuroscientific research on brain activity patterns can therefore provide advertisers with insights to create advertising messages that truly deliver.

Overall, the luxury watch industry offers great potential for neuromarketing research which should not be ignored and sets a research agenda for further investigation. Studies exploring questionings based on luxury watch advertisements will help educating industry practitioners by providing them with an increased understanding of neuromarketing which in turn is likely to serve as an encouragement to apply the methods for industry-specific research purposes.

5.2.2 Neuromarketing businesses

Current limitations in neuroscience should serve as a basis for neuromarketing companies and their employed academicians to work closely together with academic neuroscience research institutions in order to encourage research and further development of neuromarketing as a discipline. Practitioners selling neuromarketing services should communicate these limitations to their customers to a greater
extent in order to increase transparency and encourage ethical behaviour. Factual assertions which are based on scientific findings can help improving the public view of neuroscience moving away from ‘finding a buy button’ in the brain but promoting the applicability of neuromarketing techniques as beneficial supplementary research activity instead.

5.2.3 Practitioners in the luxury watch industry
Practitioners in the luxury watch industry should avail the opportunities that neuromarketing techniques offer in order to create more effective and target-group specific advertisements that deliver. There is a need to publish potential findings in furtherance of the advancement of neuromarketing as discipline as well as to increase transparency, concomitant with counteracting misinterpretation and public scepticism.

Finally
We have seen that informing advertising effectiveness by employing neuromarketing techniques is both viable and beneficial for the luxury watch industry but limitations are present at the current point in time. This research has raised questions of academic thought of which many have been answered through purposive research and an interpretive analysis. Nonetheless, several topical matters are beyond the scope of the present study and deserve acknowledgement and further exploration by neuroscientists. The establishment of academic-industrial partnerships is beneficial to further investigate these topical issues and marketing-relevant aspects of human behaviour in general. The author sincerely hopes that this dissertation accentuated many of these matters and provided a guiding principle for future efforts.
Bibliography


Appendices

Appendix 1: Questionnaire and interviews qualitative primary research

a) Interviews qualitative primary research (English)-

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<th>Objective 1:</th>
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Q 1.1: Which are the potential added values of neuromarketing techniques in comparison to traditional market research tools?

*Dr. Thomas Trautmann (SalesBrain)*

There are many. The first and the most important one is that neuromarketing tries get what people “really” think. With traditional market research techniques, interviewing techniques, you are always driving somehow the answer so that your questions may point towards an answer you want. Neuromarketing tries to get out of the subconscious of the people and tries to find out what their real “PAIN” is.

*Prof. Dr. Bernd Weber (Life&Brain)*

The underlying idea of neuroscientific methods is that to generate additional marker for human behaviour. This means having access to consumers’ reactions which cannot be achieved by explicit questioning. For instance, that we can ascertain reactions which consumers cannot express explicitly with the help of physiological methods such as magnetic resonance imaging or optical motion measurement. This is the greatest advantage that neuromarketing techniques incorporate.

*Dr. Christian Holst (Siegfried Vögele Institut)*

The topic which I would like to touch upon first is the definition of the term neuromarketing. Neuromarketing is marketing in the sense of advertising which aims at unconscious processes. Thus, I consider the term neuromarketing to a certain extent as a wrong choice. Eventually, the core of your question is which market research methods that are applied in the area of neuromarketing do allow an access. These are primarily physiological measurement methods from the neuromarketing family which can include fMRT measurement, EEG measurement, eye-tracking and electronic monitoring of skin resistance measurement as well as the measurement of heart-rate, and respiratory changes. This is what is mainly done when talking about measurement in a neuromarketing context. Compared to classical methods such as questioning and observation techniques all these methods have in common that they measure physiological reactions which the respondent can usually only control to a low extent or not at all. The idea behind it is that the results and the data collected in this way allow a more direct and unfiltered access to reactions/processing stages which are triggered by a certain stimulus. It is always possible to measure something with these diverse neuromarketing measurement methods, no question.

However, the difficulty is to determine what a certain stimulus triggers and what a normal change is, e.g. a change in the heart-rate, which can be triggered by the laboratory situation or lying in a fMRI scanner. This is one point, the question concerning the obtained measured value.
The second and ensuing issue is if the stimulus is strong enough to evoke something which is measurable. Are the stimuli, if they are sufficiently strong, comparable to the stimuli which I have in a normal advertising situation/in a normal advertising environment? This problem arising in relation to measuring is actually a substantive issue: Can a measured change clearly trace back to a stimulus if I observe a reaction or a causality between e.g. heartbeat and stimulus. What does this mean? The difficulty regarding the measurement methods is that certain activations in the brain are often ambiguous since they perform different functions. For instance, an increased activity of the amygdala can be triggered by fear behaviour or there is simply an increased activation readiness. Therefore, the results usually have to be evaluated as a complex system of various brain regions. These regions have a high probability to induce e.g. fear or reward behaviour but it does not have to be like this. The explanation which I draw from the data has to be interpreted with reservations. An example: We see the following reaction which occurs frequently in (analogical conclusion)…the amygdala is activated in situations with increased stress. Due to the activation of the amygdala we conclude that the advertisement possibly induces stress. This is an analogical conclusion but ultimately not a causality. It is hoped to be able to create or detect these causalities with neuromarketing. However, academic research which is currently rather on the basis of correlation has not yet reached the point to do this unequivocally. These are to some extent the disadvantages regarding neuromarketing methods.

The advantages of neuromarketing methods lie in being able to tease out reactions without the filter of a conscious response. There are no have effects of social desirability in classical survey research. I am not sitting opposed to an interviewer that might encourage private or intimate conversations while I am watching a certain advertisement. In a social situation like this I think twice if want to answer the way I should or it is expected of me. In this case it happens on a conscious level. However, it frequently works on a subconscious level e.g. first associations with a certain message or representativity topics. This is about how our normal thinking can be misled without being aware of it. These are filter mechanisms that proceed unconsciously. It is hoped that these filter processes can be prevented with neurophysiological methods. Academic research will continue to learn regarding this and brain processes in general of which only 30% are investigated on a simple level. Furthermore, there are no single areas in the brain which have a particular function but networks. The complexity is further increased when it comes to investigating how networks interact together concerning a simple decision.

**Q 1.2:** What are the shortcomings that neuromarketing techniques incorporate in comparison to traditional market research tools?

*Dr. Thomas Trautmann (SalesBrain)*

I do not see any; I am selling neuromarketing. What is really interesting about neuromarketing is that you put the human being in the centre of the problematic compared to marketing which acts towards a position. The company will do the marketing as central to the brand. Traditional marketing techniques are good for rational things but we are not rational people. Neuromarketing directs to the subconscious part of the brain which is not rational but which is the part making the decision.
Prof. Dr. Bernd Weber (Life&Brain)
From my point of view there are two main points which are relevant here. The first one is of course the high cost. More equipment is needed which I do not need for traditional market research. The costs vary depending on the technique employed: EEG caps, MRI scanners, or eye movement cameras, etc.
The second and even more relevant point is about to be well versed in the methods. A lot of time and energy has to be invested in the methods in order to be able to employ them meaningfully. It is not about pressing a button to generate data but to employ the methods in a way that they help you. I think this point is even more relevant than the cost.

Dr. Christian Holst (Siegfried Vögele Institut)
The significance of neuromarketing results clarified to an extent which allows to draw causal conclusions from A to B. The other deficit is that one method is probably not enough and that you need several methods. Using several methods is advisable to be sure that a reaction can be traced back to a certain stimulus. The procedure to detect this is call triangulation. It means to measure on and the same event from multiple perspectives.
Large techniques such as fMRI are very expensive and entail both advantages and disadvantages. FMRT can look deeply into the brain but can only poorly illustrate processes. EEG measurement is very quick but can only measure information through tension differentials on the scalp surface. Thus, it cannot distinctly localise deeper brain regions. There is a dispute between EEG and fMRI researchers. EEG researchers refer to empirical values in order to interpret the curves accordingly. Other researchers, e.g. in fMRI doubt this. This symbolises a dispute over methods or faculties and people have to decide for themselves who to believe.

Q 1.3: Do you consider neuromarketing techniques as substitute or beneficial supplement to traditional market research tools such as surveys and focus groups? Why?

Dr. Thomas Trautmann (SalesBrain)
It is both. It is a substitute because compared to traditional focus groups…let me give you an example: You are producing pencils and I want to bring your pencils on the market. What I would ask in my focus groups is do you prefer a “red pencil” or “blue pencil”. That is traditional marketing so of course the people will answer, let us say 70% tell me that they prefer blue. What I would do is produce many blue pencils, put them on the shelf and expect them to sell (which may not happen). If I had used neuromarketing techniques I would have discovered that people do not want to use pencils. Maybe because of the frustration of a stressful and complex life they want to be creative and unfortunately they need a paint brush. That is the main difference, you do not drive the answer and let the answer come to you.

Prof. Dr. Bernd Weber (Life&Brain)
Definitely a supplement. All research studies conducted so far demonstrate that neuromarketing techniques have a supplementary predictive power for behaviour. This means that neuromarketing techniques do not give the same results but give different ones. Depending on the questioning it is
more or less reasonable to employ neuromarketing techniques. This point should be more considered and investigated. But it is obvious that neuromarketing techniques should complement and not replace traditional market research.

Dr. Christian Holst (Siegfried Vögele Institut)
Neuromarketing tools can always only be a supplement that reveal additional variance. A paper written by Michael Schießl which was published last year demonstrates that implicit methods can symbolise an added value for topics such as advertising effectiveness research by clarifying additional variance. This benefit could not be obtained through traditional interviewing techniques. However, it is not possible to work with neuromarketing techniques exclusively since the techniques are comparably pedestrian.

Q 1.4: Do you classify market research conducted by neuromarketing techniques as closer to a quantitative approach, or to a qualitative one? Why?

Dr. Thomas Trautmann (SalesBrain)
It is qualitative. You will need some quantity to make a result. Positive that it is a qualititative thing.

Prof. Dr. Bernd Weber (Life&Brain)
What I would like to have is that it is a quantitative approach. However, I think that neuromarketing techniques are currently rather used as qualitative approach which is also connected with the fact that many people do not know how to meaningfully employ the methods. In particular this means that there is a lot of room for interpretation through the methods and the results that these methods deliver. The results then induce qualitative evidence whereas quantitative data is desired due to the scientific background and neuromarketing techniques also allow this. I think that neuromarketing techniques are mainly used qualitatively but could and should be used more quantitatively.

Dr. Christian Holst (Siegfried Vögele Institut)
The question here is what a qualitative approach means. If we consider restricted and small samples until 30 (n=30) then neuromarketing techniques are rather qualitative methods.
**Objective 2:** To investigate the potential added value of neuromarketing techniques in framing consumer perceptions of advertisements. (pre-experience exposure)

**Q 2.1:** How can neuromarketing techniques ascertain if the advertisement of a new product is put into a certain frame of reference that evokes a meaningful perception for the consumer?

Dr. Thomas Trautmann (SalesBrain)
Are we talking about visual or audio advertisings? Neuromarketing teaches one thing which is that the part of the brain which makes a decision is a visual. Regarding visual media you can definitely analyse that with what we call visual impact maps. It is a sort of eye-tracking solution which analyses what happens in the very first seconds (max 5 first seconds). This is the time when you subconsciously watch the picture, webpage or advertisement. It will really watch what is happening in your brain at that stage because that is unconscious, you are moving your eyes in an unconscious way.
This can be complemented with EEG signals and then we watch what the volumes of the signal and the variation is. If the signal distracts then you do not get anything out of the brain. You want it to either be down or up. So we can definitely use neuromarketing to analyse and we do this a lot to analyse advertising.

Prof. Dr. Bernd Weber (Life&Brain)
It is possible to depict rather the inverse very well with neuroscientific methods which is the mismatch or the conflict perception. More precisely, if you want to evoke a certain reference point/a certain framing and contrast it with the actual experience of the consumer/the perceiver. There are certain conflict areas, conflict signals in the brain which state something about this fit. This measure could be used as something like a certain reference point. However, I do not know any study that has investigated this yet.

Dr. Christian Holst (Siegfried Vögele Institut)
Neuromarketing techniques can measure whether something is perceived. This can be done through different test designs. It is well known that attention and consciousness can diverge there are meanwhile diverse test designs which can determine these different effects. The crux regarding this question is what meaningful means. I do not know any method that equals a physiological reaction with meaningful. I can measure certain reactions. For instance the registration of errors in which levels of attention are established if things are not as anticipated. Thus, I assume that there is an error, in other words something unexpected. There are areas in the brain of which it is known that they are relevant for the registration of errors. If I show subjects an advertisement and see that these areas are activated then I can draw the conclusion that the people do not like the advertisement or that something is not understood. However, it is not possible to identify if the advertisement did not appeal to people or if something was not understood or wrong since the anticipation with which people approached the advertising medium is unknown.

**Q 2.2:** Can the anticipation that is connected with a certain experience (e.g. food advertisement is designed to make you hungry) be improved by the use of neuromarketing tools? How?
Dr. Thomas Trautmann (SalesBrain)
Sure. That is where it gets complex. You need to understand the PAIN of your customers to make a good advertisement. For that you need to do research, solutions, your scientific research solutions. There are many: voice analysis, facial analysis, eye-tracking, visual impact maps, EEG, fMRI and biometrics. Once you have identified the PAINS then you have to communicate using the major stimuli that activate the decision part of the brain which is called the reptilian brain. If you do that well then you have a very effective advertising because then you really talk to the reptilian brain of your customer and that is exactly what you should do.

Prof. Dr. Bernd Weber (Life&Brain)
The anticipation can definitely be improved. Especially such anticipation signals play a significant role in neuroscientific research. It is well-known that specific anticipations are associated with certain brain activity patterns. These patterns can be used as further marker in addition to explicit questioning. The important question regarding all this is if the neuroscientific method/the data can provide additional insights to the questioning. I think this is heavily dependent on the individual case. Basically, neuroscientific methods can be very well used for it.

Dr. Christian Holst (Siegfried Vögele Institut)
No, neuromarketing techniques cannot do this. What the techniques can determine is whether certain areas in the brain are active or not. For instance, if I show the subject food, or confront the subject with a scent or a certain haptic then the techniques can ascertain whether areas responsible for the regulation of the hunger feeling are active or not. Again, we are back to the definition of the term neuromarketing. It can mean to produce neuromarketing technical advertising or to show people e.g. an advertising of a crispy roasted chicken in order to see if their mouth is watering. I can certainly measure the latter.

Q 2.3: Can neuromarketing techniques identify a potential explanation why certain advertisement anticipations are generated? How?

Dr. Thomas Trautmann (SalesBrain)
If we use neuromarketing research then we can see what is happening in the brain and therefore explain why the result of one advertisement is better than the other one.

Prof. Dr. Bernd Weber (Life&Brain)
The advantage of the methods and particularly magnetic resonance imaging is that we can identify processes behind the effect which means behind the behaviour. We can see which anticipations or reactions an advertisement, or more generally speaking a signal in the brain triggers. This serves to more precisely understand the mechanisms behind it and to better understand the “how” and “why”. It is difficult to get this understanding with other behavioural analyses. This is why this neuroscientific approach is particularly useful for “why” and “how” questions.

Dr. Christian Holst (Siegfried Vögele Institut)
What neuromarketing techniques can do is show is displaying what is happening the heads of people. A classic example is the McClure study on Coca-Cola and Pepsi. The study demonstrates that the
difference is not due to the taste since a blind tasting does not make any difference. The difference lies in the fact that certain brain areas responsible for the formation of memory (esp. the hippocampus) become active when the brand Coca-Cola is revealed. Data measurement showed that an activation of these areas is not the case when it comes to Pepsi. McClure interpreted that Coca-Cola succeeded in establishing an image over decades which was continuously linked to associations and memories. This image becomes active when showing the logo or brand Coca-Cola which in turn has an influence on how the Coca-Cola taste is perceived. The taste of Coca-Cola compared to Pepsi is perceived as more positive if I am aware of the fact that I am drinking Coca-Cola.

**Q 2.4:** Which neuromarketing techniques can be used to test if a meaningfully framed perception of an advertisement (e.g. the customer is not 'fooled' into inattention) took place?

*Dr. Thomas Trautmann (SalesBrain)*

It depends on what you want to analyse in the advertisement, what type of advertisement, how much budget you have that all the techniques can be used. Now of course you will not use voice analysis. It is a visual advertisement. You can only use voice analysis if you ask people questions on what they think about the advertisement. EEG and facial analysis are very good, they are not intrusive so to say, not too expensive and can be used easily on anyone to see how people react. Because as you may know we cannot control the micro expressions of our face. If something is happening on the face, let us say the 7 to 8 major core reactions/feelings then you can analyse that.

*Prof. Dr. Bernd Weber (Life&Brain)*

There are relatively good marker for such elementary cognitive states, particularly in magnetic resonance imaging. We use these in research studies to capture attention processes and to see if subjects have higher or lower levels of attention. Depending on how the research study to investigate attention processes is created or designed it is possible to say a lot about the attention state of the subject due to these activation patterns. Additionally, other methods such as eye-tracking, which can be employed in combination, are useful to see on what the attention of the subject is focussed.

*Dr. Christian Holst (Siegfried Vögele Institut)*

Eye-tracking is certainly an important element. It symbolises inattention if the glance should wander beyond of the presented stimulus. This applies to e.g. an advertising spot. Should the glance wander to the wall and the subjects claimed to follow the spot then I can verify with eye-tracking that this was not the case.
**Objective 3:** To ascertain if neuroscientifically tested advertisements can enhance sensory and social experience. (enhancing experience)

**Q 3.1:** Can neuromarketing techniques help to improve the sensory experience which an advertisement aims to deliver when exposed to the consumer before the experience? How?

*Dr. Thomas Trautmann (SalesBrain)*

Yes, definitely because as you know where to read brain you can do whatever you want with it. It has a large storage because it can assimilate itself to that story and it tries to remember past experiences. Rewards mainly for that because we restore information, we make decisions based on a reward process. If you can get the advertisement to activate parts of the brain that were happy with the past experience, that is related to the experience that you want to provide, then you will be very successful.

*Prof. Dr. Bernd Weber (Life&Brain)*

The techniques themselves do not influence the consumer. We are dealing with passive measurements and not active manipulation. What can be used to improve these anticipations, or evoke targeted anticipations, is the knowledge gained through studies in neurosciences or psychology. It is an important distinction that neuromarketing is not an active manipulation by neuroscientific methods. Neuromarketing techniques help to understand processes in the brain or regarding perception in order to improve communication. Neuromarketing techniques are tools to make design or advertising more effective in order to increase the effectiveness of communication. Neuromarketing techniques can definitely help concerning this matter.

*Dr. Christian Holst (Siegfried Vögele Institut)*

Again, term neuromarketing has to be clearly defined regarding this question. In real terms it is done. For instance, I am visiting a market and the person working on a market stall praises how sweet, delicious and crunchy e.g. the apples are even before I have the chance to bite into the fruit. I can imagine this before my inner eye which is called imagering. It is known that similar brain areas are activated to a similar extent through imagering or imagery than through an actual sensory experience. Humans are very good in imagining such things. If an advertisement succeeds in evoking associations through e.g. an intelligent language, nicely selected images, a certain haptic or odours then these associations are established in peoples’ heads before the product is even tested. This works very well for food products but becomes more difficult concerning abstract terms. For instance, multi-sensory optimised advertising is limited regarding the service facility of a copier which makes it crucial to cooperate with an intelligent and creative agency. Altogether, this is not a neuromarketing topic but a topic is and was present on every market worldwide.

*Can these associations be measured?*

If you encourage a person to imagine a soft, juicy and sweet (the same as in the previous example roast chicken) then a resulting salivation and the activation of certain brain areas associated with the sensation of hunger can be measured. It is possible to measure it but the technique for it is old.
Q.3.2 Can neuromarketing techniques help to improve the sensory experience which an advertisement aims to deliver in retrospect, when exposed afterward? How?

Dr. Thomas Trautmann (SalesBrain)
It is the same answer as to the previous question since it has to do with emotion. You have to relate to something and then you can use anchors.

Prof. Dr. Bernd Weber (Life&Brain)
The answer is the same. You do not apply a method to change the perception of a consumer through some rays. It is about using neuromarketing techniques to design the frame or the advertisement in a way that it most effectively influences experiences. Neuromarketing techniques can definitely do this. However, not through an active manipulation of the consumer but through a better understanding of the effect of the advertisement or the product.

Dr. Christian Holst (Siegfried Vögele Institut)
Every time I live a certain experience it is stored in the brain. If an advertisement builds on this or succeeds in recalling the experience then this experience becomes repeatedly channelled. This leads to an increasingly easy recall of the experience (classical learning behaviour). We know that learning functions through neural facilitation/ paired pulse facilitation (PPF). The more these neural facilitations are activated the easier and faster they can be aroused. This symbolises the neurochemical foundation for learning. If I succeed in repeatedly addressing these neural facilitations in a new way through a stimulus (advertisement) then the result can be improved or reactivated in retrospect.

Q 3.3: Can neuromarketing techniques identify social experience in connection with an advertisement (e.g. a sense of trust that a service provider already created in the mind of the consumer)? How?

Dr. Thomas Trautmann (SalesBrain)
Of course it can. It is back to using all the neuroscientific tools that we use that you have to of course design the experience, the experience the right way.
A good example is Coca Cola. When you want to drink a soda and you do not know what brand you want, if you are not a Pepsi or Cola addict, if you stand in front of a shelf with many brands, there is a 90% chance that you pick up Coca Cola. Because Coca Cola is basing the brand on the emotional part of your brain whereas Pepsi Cola is more on the rational side, taste, freshness.

Prof. Dr. Bernd Weber (Life&Brain)
I can well imagine that neuromarketing techniques can do this. However, I do not know if a study has already been conducted which demonstrates it. The knowledge in the social neurosciences is particularly high regarding social interactions. We know which brain regions play an important role regarding that. There are good studies on actual human interactions which give measures for trust. What I can well imagine is to apply this in a marketing/brand context. I do not know any study that did it but I can well imagine that it would work if it was investigated.

Can trust be identified through neurotransmitters such das oxytocin in the blood of subjects?
There is a relatively big literature regarding hormones such as oxytocin. It is shown on both animal
and humans that it plays a role regarding social bonds. However, it does not generally reinforce social bonds or trust but only within the own reference group. Therefore, there are in-group and out-group effects. Oxytocin can increase aggression towards out-group members but can strengthen bonds within the group. The topic is not completely trivial but it is not the fact that I can measure oxytocin in the blood in order to measure a trust-reaction. It is clearly shown that external oxytocin administration can improve trust within the own reference group. The measurement of oxytocin is extremely difficult and probably not a meaningful measure to capture trust in a stimulus. The generation of oxytocin in the brain would probably be not strong enough to even measure reactions.

Dr. Christian Holst (Siegfried Vögele Institut)
There are techniques which aim at supporting trust. A classic example is oxytocin. Oxytocin is a hormone that is, among others, released during pregnancy and symbolises and neurochemical foundation for basic trust. I can use oxytocin in advertising but I need relatively high dosages in order to have an effect. There are hormones with which I can trigger certain reaction but it is questionable whether this should be called neuromarketing or not. It is possible to measure trust since it is known which brain areas are addressed in connection with building trust. Thus, I can measure as how trustworthy a brand appears.

Q 3.4: Which neuromarketing techniques can be used to test if advertisements provide both sensory and social experience?

Dr. Thomas Trautmann (SalesBrain)
The best one would be fMRI because it shows precisely which part of the brain is active.

Prof. Dr. Bernd Weber (Life&Brain)
I think that functional magnetic resonance imaging is the method of choice for such complex issues where it is of importance to be able to assign which reactions take place where in the brain. I do not know how to do this meaningfully with EEG since certain structures of the brain cannot be captured by EEG. This is due to the anatomic structure of the brain. If it was really possible to do it then magnetic resonance imaging.

Dr. Christian Holst (Siegfried Vögele Institut)
You should ask the question the other way round: Is there and advertisement that does not provide sensory or social experiences? Sensory means that I perceive something through one of my five senses. If I do not perceive something through one of these five channel then I do not experience advertising either. Thus, advertising addresses at least one of the five senses. Therefore, there is no need to pose this question.
**Objective 4:** To examine the role of neuromarketing techniques in creating advertisement related brand equity. (post-experience exposure)

**Q 4.1:** Can neuromarketing techniques track an advertisement, the brand and the product recall if the exposed subject is confronted with oral, visual and aural cues that enable the recall? How?

Dr. Thomas Trautmann (SalesBrain)
Yes, you can use all of the neuromarketing techniques. For example if you talk to somebody about a product/ a brand and the person says that he/she is very happy about it but has a very aggressive face, micro-expression I mean. You can also analyse a subject’s voice, there may be trends in the voice that show what people are really thinking. If I am telling you in a sad voice that I am happy to be on the phone with you (of course I do it on purpose) this can also be analysed. Trends in the voice is something which everyone does unconsciously. Then of course you can also go back to fMRI which is very expensive though.

Prof. Dr. Bernd Weber (Life&Brain)
Yes, definitely. The field of memory research is certainly one of the most advanced ones within neurosciences. It is well known which brain areas play an important role for specific memory processes and also for the recall of memory associations. Magnetic resonance imaging is particularly well suited for the detection of impacts on memory.

Dr. Christian Holst (Siegfried Vögele Institut)
Yes, sure. The recall or the recall performance is one of the most frequently investigated elements. It is possible to measure this relatively well through the activation of the hippocampus. However, neuromarketing is not able to tell how a deficient or insufficient recall can be improved. Neuromarketing techniques can only ascertain that subjects truly cannot remember certain things and do not just claim it.

**Q 4.2:** Can neuromarketing techniques improve the strength of a separate brand-related recall (branding)? How?

Dr. Thomas Trautmann (SalesBrain)
Again that is back to the brain demonstrating/showing that the brand understands the PAIN of the people. It relates to one of the most important feelings which is the egocentrism of the reptilian brain. The reptilian brain loves that you talk about it, it is only interested about itself. One of the stimuli that is the most important one, egocentrism, divides so to say the reptilian brain. It is called like that because reptiles have exactly the same, the dinosaurs had the same, and it helps us to survive. We know without any doubt that this is the part that makes a decision and all your decisions come from that part. It is a dinosaur that decides for us, which was quite a shock 15 years ago. If you understand the PAIN of the people, back to our attention that people need to be creative to be out of the stress of the world that they are living in. And if you show that you will be that one that will help them to be creative then you strengthen your position in the mind of the people. This allows you to create trust, creating trust is being something that people already know, that you emend something...
that people already know. But be careful not to be too well known because people also want new things. The brain likes to relate to existing things. It does not want to much deeply existence and needs new things but is scared of new things.

It has to be on the edge which is very complex. But if you show that your brand is the one answering those PAINS then you will be the centre of what people think about.

_Prof. Dr. Bernd Weber (Life&Brain)_

Yes, through knowing how this recall can be improved. Not the method itself can improve the recall but the knowledge on how these memory processes function. I can create an advertisement more effectively if I know how attention processes function in order to improve the recall. The methods themselves do not bring any improvement but deliver insights if a specific advertisement causes a stronger recall in comparison to another one. Furthermore, the methods deliver insights on attention processes which I can use to design the advertisement. The methods themselves do not serve to improve the memory but I can use them do design an advertisement better or differently.

_Dr. Christian Holst (Siegfried Vögele Institut)_

The same applies here as to the previous question. A general advertising recall or a brand related recall is the same.

**Q 4.3:** Can neuromarketing techniques ascertain which positive emotions/feelings towards an advertisement were aroused through sensory or social experience?

_Dr. Thomas Trautmann (SalesBrain)_

Yes, as I said you can measure emotions of the people with all the techniques that we have. Voice analysis, facial analysis, EEG, fMRI they all allow to get the emotions out of the people.

It is possible to exactly determine which emotion for example with micro expression. Professor Ekman worked on micro expression since the 1970s. He demonstrated around 1000s of expressions that there are 7 or 8 most important ones that every human being on earth has independently of culture, religion or education. Humans have exactly the same micro-expression for anger, for happiness, for sadness for content. You can identify these, and yes we can with a software, you know exactly what the person is feeling.

The TV series “lie to me” is based on professor Ekman’s work. He worked as a consultant for that show and you can see how people play with micro-expressions.

_Prof. Dr. Bernd Weber (Life&Brain)_

No, not at the current point in time. It is not possible to tell which emotions somebody experiences based on brain activity patterns. This is not possible. A scientific study which was released in Stanford two months ago tries to readout at least basal processes such positive or negative arousal from brain data. This seems to succeed but it is not possible to readout from brain data if a subject is experiencing disgust, fear, or other negative emotions with a reasonable reliability.

**What about facial expressions analyses?**

Facial expression analysis is a very interesting method. However, all scientific studies that I have seen so far diverge from what companies offering neuromarketing services say.
It does not work as well in a scientifically controlled setting as people claim it does. The correlation between what can be expressed by emotions and what can be indicated with analysis methods is not very good. Nevertheless, I can imagine facial expression analysis is a very exciting method which can also be further improved. However, at the current point in time it is necessary to be careful with the interpretation since it does not function as good as people claim it does.

Dr. Christian Holst (Siegfried Vögele Institut)
No, I do not know any neuromarketing technique acknowledged within the scientific community that can unambiguously identify certain emotions (positive and negative). You will certainly find publications that claim to have measured e.g. fear or trust. It is relatively unambiguously agreed upon trust and reward but there are relatively few studies regarding more complex emotions such as love, affection or hate. It is sure how a basal emotion such as fear functions and how it can be measured (activation of the amygdala). However, I would be careful with everything that goes beyond that.

Q 4.4: Which neuromarketing techniques can be used to test if an advertising successfully created an emotional connection with a brand?

Dr. Thomas Trautmann (SalesBrain)
EEG, eye tracking, facial expressions and fMRI are the most important neuromarketing tools. We do not use that many more of neuroscientific tools. You can use some like septic ones but they are all back to the same thing. Because the one mostly as the decision part of our reptilian brain and one of the stimuli is visual. The eye is the only organ that is directly connected to the reptilian brain. For the simple reason that to be alive speed is more important than intelligence. Everything is visual, we work on the reptilian brain, if it is worth that. If you want to analyse what is happening in an advertisement, they are mainly visual now. Even on TV if there is some voice or whatever it is easier to have a pretty powerful image to show. And for that you can very quickly read what is happening on the face, what is going on through EEG. If you want to go deeper you may talk with people and use voice analysis. Facial analysis as well as eye-tracking combined together are very powerful. Biometrics including skin conductivity (lie detector), then you measure the micro sweat drops on the skin. If you experience an emotion then you unconsciously produce sweat drops on your fingertips. So that combined with heart rate, breathing rate etc. allows to analyse these things. If you want to analyse trust then you have to analyse neurotransmitters like oxytocin in the blood.

Prof. Dr. Bernd Weber (Life&Brain)
Due to the fact that you cannot really capture the emotional state of a subject, you cannot really capture this either. What I can see is if the brand, without an advertisement that I generated to it, evokes certain associations/brain reactions. This means if the brand itself evokes certain associations/brain reactions which it maybe did not do before, without the advertisement (before the advertisement was seen).

However, with neuroscientific tools you cannot translate this back to specific emotions.

Then there is the question if emotion is an important measure. It is spoken a lot about emotions and that everything has to be emotionalised. I am not sure if this is meaningful though. In other words, if
the pure emotionalisation is important to yield a purchasing stimulus. This is very much depending on the brand or product. Eventually, I do not want a consumer to find a brand funny or nice but that the consumer has a motivation to buy the product. Thereto the product has to fit the needs of consumers. I have to evoke such associations that fit the needs of customers and not necessarily arouse emotions. It is not the aim to emotionalise a brand but to connect the brand with associations which improve the customer’s motivation to buy the product. This does not necessarily have to be the same. Therefore, I find the current focus on emotion, which can also lead in a wrong direction, a bit exaggerated.

Magnetic resonance imaging can be applied suitably regarding these associations. I think it is important to have a look at how specific evaluation processes in the brain take place, e.g. for products. Scientific consumer research is already about to standardise these processes using neuroscientific methods. Studies concerning the evaluation processes in the brain demonstrate that brands can be “loaded up” with associations through advertisements in order to be able to ascertain if the brand changed the evaluation processes. In that case I have a good and uncontroversial measure which avoids much room for interpretation. The measure shows if the brand can induce a re-evaluation/higher valuation of the product through the previously shown advertisement. It is possible to measure this very well whereas everything else is rather a qualitative interpretation of brain activity patterns which bring along a high degree of freedom for interpretation.

I consider being able to raise this on a more quantitative level as important. For instance, to identify specific areas in the brain that I want to use in order to have a measure showing that people regard the product/the brand as better. A lot of knowledge exists around this topic and it is possible to clearly define these areas. After that I can examine if the advertisement which I initiated or the design of the product influence the evaluation process. This gives me a relatively clear evidence.

*Dr. Christian Holst (Siegfried Vögele Institut)*

It is possible to go on an unconscious level via implicit attitude tests (IAT). The test was developed by Dr. Anthony Greenwald in the late 80s. In many areas this test became established as a method to derive availability through the speed with which a term is allocated to a certain image that symbolises an emotion. In other words, it can be derived how close the term is to a certain emotion. IAT as such functions very well in the area of prejudice research for which is was also originally developed. It was also about developing a test procedure which circumvents a conscious shear and that finds a measure, via the speed of the allocation/rejection, on how high the correlation between a term and an emotion is.

This can also be done regarding brands. It is possible to allocate this test, which is a reaction and speed test, to the neuromarketing techniques. However, the test is not a measurement procedure which measures physical responses since it proved information on the speed of an answer. It is possible to see on master illustration how strongly e.g. a certain brand and a measurable emotion correlate by applying such a test. In important role regarding this plays how well the master illustration is validated and how variable the measures with which I work are.
**b) Interviews qualitative primary research (German)**

**Objective 1:** To investigate neuromarketing techniques as an alternative research method tool.

**Q 1.1: Was sind die Vorteile von Neuromarketing-Techniken im Vergleich zu traditionellen Marktforschungsmethoden?**

*Prof. Dr. Bernd Weber (Life&Brain)*


*Dr. Christian Holst (Siegfried Vögele Institut)*


Der Kern Ihrer Frage ist ja letztlich welche Marktforschungsmethoden einen Zugriff erlauben die im Bereich des Neuromarketings angewandt werden. Das sind in erster Linie physiologische Messmethoden aus der Neuromarketing Familie. Dies kann umfassen: fMRT-Messung, EEG-Messung, es kann Eye-tracking und Hautwiderstandsmessung umfassen und auch Puls-, Lungen-, oder Atemveränderungen. Dies ist was häufig gemeint ist, wenn man vom Thema Messen und Neuromarketing spricht. Was all diese Methoden gemeinsam haben gegenüber klassischen Methoden (Befragungs- oder Beobachtungsmethoden) ist, dass sie physiologische Reaktionen messen, die in der Regel nur wenig oder gar nicht durch den Befragten kontrolliert werden können.


Die Schwierigkeit ist das herauszufinden, was durch einen bestimmten Stimulus ausgelöst wird und was normale Veränderungen zum Beispiel im Herzschlag sind, die durch die Laborsituation oder das Liegen in einer engen MRT Röhre ausgelöst werden. Dies ist der eine Punkt, die Frage nach dem Messwert, den ich erhalte.

Die zweite Frage die sich daran anschließt ist die Frage nach der Stärke der Stimuli, damit etwas Messbares hervorgerufen werden kann. Sind die Stimuli, wenn sie hinreichend stark sind, auch vergleichbar mit den Stimuli die ich zum Beispiel in einer normalen Werbesituation/in einem normalen Werbeumfeld habe. Dies ist die Frage der Messproblematik, die ich dabei habe was eigentlich ein inhaltliches Problem ist: Kann eine gemessene Veränderung auch wirklich eindeutig auf einen


Q 1.2: Was sind die Defizite die Neuromarketing-Techniken im Vergleich zu traditionellen Marktforschungsmethoden beinhalten?

Prof. Dr. Bernd Weber (Life&Brain)

oder was auch immer ich einsetze.
Der zweite und eigentlich relevantere Punkt ist, dass man sich mit den Methoden auskennen muss. Man muss eine Menge Zeit und Energie darein investieren um die Methoden auch sinnvoll einsetzen zu können. Es geht nicht darum einen Knopf zu drücken und Daten zu generieren sondern darum die Geräte auch sinnvoll einsetzen zu können, damit sie einem auch helfen. Das ist denke ich noch der relevantere Punkt als die Kosten.

*Dr. Christian Holst (Siegfried Vögele Institut)*


**Q 1.3:** Betrachten Sie Neuromarketing-Techniken als Ersatz oder vorteilhafte Ergänzung zu traditionellen Marktforschungsmethoden wie Umfrage oder Fokusgruppe? Warum?

*Prof. Dr. Bernd Weber (Life&Brain)*


*Dr. Christian Holst (Siegfried Vögele Institut)*

Q 1.4: Do you classify market research conducted by neuromarketing techniques as closer to a quantitative approach, or to a qualitative one? Why?

Prof. Dr. Bernd Weber (Life&Brain)
Was ich gerne hätte ist, dass es ein quantitiver Ansatz ist. Ich denke, dass es im Moment von vielen, was auch damit zusammen hängt, dass viele die Methoden nicht sinnvoll einsetzen, eher qualitativ verwandt wird. Also das viel Interpretationsspielraum durch diese Methoden gegeben wird und durch die Ergebnisse die diese Methoden liefern. Die Ergebnisse rufen dann qualitative Aussagen hervor wobei man eigentlich, das kommt mehr vom naturwissenschaftlichen Hintergrund, gerne quantitative Daten hätte was diese Methoden auch ermöglichen. Ich denke, dass Neuromarken-Techniken zum größten Teil qualitativ eingesetzt werden, es aber quantitiver sein könnte und auch werden sollte.

Dr. Christian Holst (Siegfried Vögele Institut)
Die Frage ist hier, was mit einem qualitativen Ansatz gemeint ist. Betrachtet man begrenzte Fallzahlen bis ungefähr 30 (n=30), dann sind es eher qualitative Verfahren.
**Objective 2:** To investigate the potential added value of neuromarketing techniques in framing consumer perceptions of advertisements. (*pre-experience exposure*)

**Q 2.1:** Wie können Neuromarketing-Techniken feststellen, ob die Werbung für ein neues Produkt in einen bestimmten Referenzrahmen gesetzt ist, welcher eine aussagekräftige Wahrnehmung beim Konsumenten hervorruft?

*Prof. Dr. Bernd Weber (Life&Brain)*

Ich denke, dass man eher das umgekehrte mit neurowissenschaftlichen Methoden relativ gut darstellen kann, nämlich die Nichtpassung oder die Konfliktwahrnehmung. Also wenn man einen bestimmten Referenzpunkt/ein bestimmtes Framing hervorrufen will und das kontrastiert mit den tatsächlichen Erfahrungen die der Konsument/der Wahrnehmer hat. Es gibt bestimmte Konfliktareale, Konfliktsignale im Gehirn die etwas über diese Passung aussagen. Diese kann man als Maß für so etwas wie eine bestimmte Referenzpunkt herziehen könnte. Ich muss sagen ich wüsste keine Studien die so etwas bis jetzt untersucht haben.

*Dr. Christian Holst (Siegfried Vögele Institut)*


**Q 2.2:** Kann die Erwartung, welche mit einem bestimmten Erlebnis verbunden ist (z.B. Essenswerbung die designt ist um Sie hungrig zu machen), durch den Gebrauch von Neuromarketing-Techniken verbessert werden? Wie?

*Prof. Dr. Bernd Weber (Life&Brain)*

Dr. Christian Holst (Siegfried Vögele Institut)

Q 2.3: Können Neuromarketing-Techniken eine potenzielle Erklärung liefern, warum Erwartungen gegenüber einer bestimmten Werbung generiert werden? Warum?

Prof. Dr. Bernd Weber (Life&Brain)
Der Vorteil von den Methoden und vor allem von der Kernspintomographie ist ja das wir gerade die Prozesse hinter der Wirkung, also hinter dem Verhalten identifizieren können. Wir können sehen was für Erwartungen oder Reaktionen eine Werbung oder allgemeiner gesprochen ein Signal im Gehirn auslöst. Das dient gerade dazu die Mechanismen dahinter genauer zu verstehen, und das wie und warum besser zu verstehen, was man durch andere Verhaltensanalysen schwer machen kann. Deswegen ist gerade für warum oder wie Fragen diese neurowissenschaftliche Herangehensweise extreme sinnvoll.

Dr. Christian Holst (Siegfried Vögele Institut)

Q 2.4: Welche Neuromarketing-Techniken können angewandt werden um zu testen, ob eine Werbung ein aussagekräftiges 'framing' hervorruft? (z.B. der Konsument wird nicht in Unaufmerksamkeit geleitet)?

Prof. Dr. Bernd Weber (Life&Brain)
Für solche grundsätzlichen kognitiven Zustände gibt es inzwischen relative gute Marker, vor allem in der Kernspintomographie. Diese setzen wir auch in Studien ein um Aufmerksamkeitsprozesse zu
erfassen und um zu sehen ob Probanden, höhere oder niedrigere Level für Aufmerksamkeit haben. Je nachdem wie man die Studie um dies zu untersuchen kreiert oder design kann man anhand dieser Aktivierungsmuster sehr gut etwas über den Aufmerksamkeitszustand des Probanden oder des Konsumenten sagen. Zusätzlich sind hier natürlich auch andere Methoden wie Blickbewegungsmessungen sinnvoll, die in Kombination eingesetzt werden können, um zu sehen worauf die Aufmerksamkeit des Probanden fokussiert ist.

Dr. Christian Holst (Siegfried Vögele Institut)

Eye-tracking ist sicherlich ein wichtiges Element. Sollte der Blick sich außerhalb des gezeigten Stimulus bewegen, bedeutet dies Unaufmerksamkeit. Dies gilt z.B. für das Zeigen eines Werbespots. Schweift der Blick an die Wand ab und der Proband behauptet den Spot verfolgt zu haben, kann ich über Eye-tracking nachweisen, dass dies nicht der Fall war.
Objective 3: To ascertain if neuroscientifically tested advertisements can enhance sensory and social experience. (enhancing experience)

Q 3.1: Können Neuromarketing-Techniken dazu beitragen dem Konsumenten ein verbessertes sensorisches Erlebnis einer Werbung zu übermitteln (wenn dem Konsumenten vor dem eigentlichen Erlebnis ausgesetzt)? Wie?

Prof. Dr. Bernd Weber (Life&Brain)
Die Techniken an sich beeinflussen den Konsumenten ja nicht. Es handelt sich immer um passive Messungen und nicht um aktive Manipulation. Was man nutzen kann um diese Erwartungen zu verbessern, oder gezielte Erwartungen hervorzurufen, ist das Wissen welches man aus der Neurowissenschaft, der Psychologie oder Studien gewonnen hat. Es ist eine wichtige Unterscheidung, dass Neuromarketing nicht eine aktive Manipulation durch neurowissenschaftliche Methoden ist. Neuromarketing-Techniken helfen die Prozesse im Gehirn oder bei der Wahrnehmung zu verstehen um die Ansprache verbessern zu können. Es sind tools um Design oder Werbung effektiver zu machen, also um eine Ansprache effektiver zu machen. Diesbezüglich können Neuromarketing Techniken definitiv helfen.

Dr. Christian Holst (Siegfried Vögele Institut)

Können diese Assoziationen gemessen werden?
Regt man Menschen an sich eine weiche, saftig und süße Frucht vorzustellen (wie beim vorherigen Beispiel Hähnchen), kann man messen, dass der Speichelfluss einsetzt und das bestimmte Areale, die mit der Regulierung von Hungergefühl assoziiert sind aktiviert werden. Messen kann ich dies schon, die Technik dazu ist alt.

Q.3.2: Können Neuromarketing-Techniken dazu beitragen das sensorische Erlebnis einer Werbung in Retrospektive (nach dem eigentlichen Erlebnis) zu verbessern?
Die Antwort ist die gleiche. Man setzt ja nicht eine Methode ein um die Wahrnehmung des Konsumenten durch irgendwelche Strahlung zu verändern. Es geht darum Neuromarketing-Techniken zu nutzen um den Rahmen oder die Werbung so zu gestalten, dass sie möglichst effektiv die Erfahrung beeinflusst. Das können Neuromarketing-Techniken definitiv tun, aber nicht durch eine aktive Manipulation des Konsumenten sondern durch ein besseres Verständnis der Wirkung der Werbung oder des Produktes.

Dr. Christian Holst (Siegfried Vögele Institut)

Q 3.3: Können Neuromarketing-Techniken ein soziales Erlebnis in Zusammenhang mit einer Werbung identifizieren (z.B. ein Gefühl von Vertrauen, dass ein Dienstleister schon in den Köpfen der Menschen erschaffen hat)? Wie?

Prof. Dr. Bernd Weber (Life&Brain)

Can trust be identified through hormones such das oxytocin in the blood of subjects?
Es gibt eine relative große Literatur zu bestimmten Hormonen, Oxytocin zum Beispiel. Sowohl am Tier als auch am Menschen ist gezeigt, dass dies bei sozialen Bindungen eine Rolle spielt. Es verstärkt jedoch nicht per se soziale Bindungen oder Vertrauen, sondern nur innerhalb der eigenen Referenzgruppe. Es gibt daher in-group und out-group Effekte. Das Oxytocin kann auch aggressiver ggü. out-group memebern Machen aber verstärkt die Bindung innerhalb der Gruppe. Das Thema ist nicht ganz trivial aber es nicht so, dass ich Oxytocin im Blut messen kann um eine Vertrauensreaktion zu messen. Das ist auch bei sozialen Interaktionen nicht gezeigt. Externe Oxytocin-Gabe kann Vertrauen in der eigenen Referenzgruppe verbessern, das ist klar gezeigt. Die Messung von Oxytocin ist extrem schwierig und es wäre wahrscheinlich auch kein sinnvolles Maß um sowas wie Vertrauen
in einem Stimulus zu erfassen. Die Generierung von Oxytocin im Gehirn wäre wahrscheinlich nicht stark genug um Reaktionen überhaupt vermessen zu können.

**Dr. Christian Holst (Siegfried Vögele Institut)**


**Q 3.4: Welche Neuromarketing-Techniken können genutzt werden um zu testen, ob eine Werbung sowohl sensorische als auch soziale Erlebnisse übermittelt?**

**Prof. Dr. Bernd Weber (Life&Brain)**


**Dr. Christian Holst (Siegfried Vögele Institut)**

Objective 4: To examine the role of neuromarketing techniques in creating advertisement related brand equity. (post-experience exposure)

Q 4.1: Können Neuromarketing-Techniken nachverfolgen, ob eine Werbung, die Marke, oder das Produkt einen Widerruf hervorrufen, wenn der Proband mit visuellen, verbalen oder auralen Stichwörtern konfrontiert wird? Wie?

Prof. Dr. Bernd Weber (Life&Brain)

Dr. Christian Holst (Siegfried Vögele Institut)
Ja, klar. Der Recall beziehungsweise die Erinnerungsleistung ist eines der am häufigsten Untersuchten Elemente. Man kann dies relativ gut über eine Aktivierung des Hippocampus messen. Neuromarketing wird aber nicht sagen können, wie ein mangelhafter oder ungenügender Recall-Wert verbessert werden kann. Es kann nur feststellen, dass Probanden sich tatsächlich nicht erinnern können und dies nicht nur behaupten.

Q 4.2: Können Neuromarketing-Techniken die Stärke eines separaten markenbezogenen Widerrufs (branding) verbessern? Wie?

Prof. Dr. Bernd Weber (Life&Brain)
Ja, darüber das man weiß, wie dieser Recall verbessert werden kann. Nicht durch die Methode per se kann der Recall verbessert werden, sondern dadurch, dass ich weiß wie diese Gedächtnisprozesse funktionieren. Wenn ich weiß, wie Aufmerksamkeitsinteresse funktionierte kann ich das Advertisement effektiver gestalten um den Recall zu verbessern. Die Methoden an sich bringen keine Verbesserung, aber liefern Erkenntnisse darüber ob ein bestimmtes Advertisement im Vergleich zu einem anderen zu einem stärkeren Recall führt. Auch bringen die Methoden Erkenntnisse über Aufmerksamkeitsprozesse, was dies besonders stark anzieht, sodass ich dies nutzen um das Advertisement zu gestalten. Die Methoden an sich dienen nicht dazu das Gedächtnis zu verbessern, sondern ich kann sie nutzen um ein Advertisement besser oder anders zu gestalten.

Dr. Christian Holst (Siegfried Vögele Institut)
Hier gilt genau das gleiche wie bei der vorherigen Frage. Ein genereller Werbe-Recall oder Marken-Recall ist das Gleiche.

Q 4.3: Können Neuromarketing-Techniken feststellen, welche positiven Emotionen/Gefühle gegenüber einer Werbung durch sensorische und soziale Erlebnisse hervorgerufen werden?

Prof. Dr. Bernd Weber (Life&Brain)

Wie sieht es in diesem Zusammenhang mit Facial-Expression-Analyse aus?
Facial-Expression-Analyse ist eine ganz interessante Methode. Die wissenschaftlichen Studien die ich bis jetzt gesehen habe divergieren jedoch von dem was Firmen, die dies anbieten, sagen. In einem wissenschaftlich kontrollierten Setting funktioniert dies nicht so gut wie behauptet wird. Die Korrelation zwischen dem was man durch Emotionen äußert und was durch Analysemethoden angezeigt wird ist nicht sonderlich gut. Ich kann mir vorstellen, dass dies eine spannende Methode ist, welche auch noch verbessert werden kann. Zum jetzigen Zeitpunkt ist es jedoch so, dass man mit der Interpretation vorsichtig sein muss, da es nicht so gut funktioniert wie geredet wird.

Dr. Christian Holst (Siegfried Vögele Institut)

Q 4.4: Welche Neuromarketing-Techniken können angewandt werden um festzustellen, ob eine Werbung erfolgreich eine emotionale Bindung mit einer Marke hergestellt hat?

Prof. Dr. Bernd Weber (Life&Brain)
hervorrufen die zu den Bedürfnissen des Kunden passen und nicht unbedingt Emotionen hervorrufen. Per se ist es nicht das Ziel eine Marke zu emotionalisieren, sondern sie mit Assoziationen zu verbinden, die die Motivation des Kunden das Produkt zu kaufen verbessern. Das muss nicht unbedingt das gleiche sein. Daher finde ich die Fokussierung im Moment auf Emotionalisierung ein bisschen übertrieben und kann auch in falsche Richtungen laufen.


**Dr. Christian Holst (Siegfried Vögele Institut)**

Appendix 2: Questionnaire quantitative primary research

a) Questionnaire quantitative primary research (English)

### Luxury watches and advertising effectiveness

1. What is your gender?
   - Female
   - Male

2. The advertisement of a new luxury watch model clearly depicts the attributes of this particular watch and its availability for purchase.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither Disagree Nor Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
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</table>

3. The advertisement of a luxury watch creates a sense of anticipation of a certain experience which I connect with the product.

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<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither Disagree Nor Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>

4. Product specifications or features of a luxury watch (benefit of the product) which are described in an advertisement encourage me to buy the product.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither Disagree Nor Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
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</tbody>
</table>

5. Which of your five senses do luxury watch advertisements affect most? (several answers possible)
   - Sight
   - Smell
   - Sound
   - Taste
   - Touch

6. Luxury watch brands succeed in creating a relationship (e.g. a basis of trust) with its customers through advertisements.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither Disagree Nor Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
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</tbody>
</table>

7. Which cues mainly enable the recall of a luxury watch advertisement and the brand in your case? (several answers possible)

<table>
<thead>
<tr>
<th>Advertisement Cues</th>
<th>Visual Cues</th>
<th>Aura Cues</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</table>

8. I usually believe the message that luxury watch advertisements try to deliver.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither Disagree Nor Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
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<td></td>
</tr>
</tbody>
</table>

9. Please evaluate your perceived advertising effectiveness of the following luxury watch brands.

<table>
<thead>
<tr>
<th>Rolex</th>
<th>Omega</th>
<th>TAG Heuer</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
b) Fragebogen quantitative primäre Forschung (Deutsch)

<table>
<thead>
<tr>
<th>Luxusuhren und Werbeeffektivität</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Was ist Ihr Geschlecht?</strong></td>
</tr>
<tr>
<td>Männlich</td>
</tr>
<tr>
<td>Weiblich</td>
</tr>
<tr>
<td><strong>2. Die Werbung für ein neues Luxusuhrenmodell weist eindeutig auf die Eigenschaften dieser Uhr hin und vermittelt, dass das Produkt zum Kauf verfügbar ist.</strong></td>
</tr>
<tr>
<td>Trifft nicht zu</td>
</tr>
<tr>
<td>Trifft eher nicht zu</td>
</tr>
<tr>
<td>Teils ja</td>
</tr>
<tr>
<td>Trifft eher zu</td>
</tr>
<tr>
<td>Trifft zu</td>
</tr>
<tr>
<td><strong>3. Die Werbung einer Luxusuhre weckt in mir die Erwartung an ein bestimmtes Erlebnis, welches ich mit dem Produkt verbinde.</strong></td>
</tr>
<tr>
<td>Trifft nicht zu</td>
</tr>
<tr>
<td>Trifft eher nicht zu</td>
</tr>
<tr>
<td>Teils ja</td>
</tr>
<tr>
<td>Trifft eher zu</td>
</tr>
<tr>
<td>Trifft zu</td>
</tr>
<tr>
<td><strong>4. Produktspezifikationen oder Eigenschaften einer Luxusuhre (der Nutzen), welche in einer Werbung beschrieben werden, regen mich zum Kauf des Produktes an.</strong></td>
</tr>
<tr>
<td>Trifft nicht zu</td>
</tr>
<tr>
<td>Trifft eher nicht zu</td>
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<tr>
<td>Teils ja</td>
</tr>
<tr>
<td>Trifft eher zu</td>
</tr>
<tr>
<td>Trifft zu</td>
</tr>
<tr>
<td><strong>5. Welche Ihrer fünf Sinnen werden durch Werbung für Luxusuhren am meisten berührt? (mehrere Antworten möglich)</strong></td>
</tr>
<tr>
<td>sehen</td>
</tr>
<tr>
<td>hören</td>
</tr>
<tr>
<td>riechen</td>
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<tr>
<td>schmecken</td>
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<td>tasten</td>
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<td>Trifft nicht zu</td>
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<td>Teils ja</td>
</tr>
<tr>
<td>Trifft eher zu</td>
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<tr>
<td>Trifft zu</td>
</tr>
<tr>
<td><strong>7. Durch die Konfrontation mit welchen Reizen wird bei Ihnen der Widerstand einer Luxusuhren-Werbung der Marke hervorgerufen? (mehrere Antworten möglich)</strong></td>
</tr>
<tr>
<td>visuelle Reize</td>
</tr>
<tr>
<td>vertale Reze</td>
</tr>
<tr>
<td>akustische Reze</td>
</tr>
<tr>
<td><strong>8. In der Regel glaube ich der Botschaft, welche eine Luxusuhren-Werbung zu übermitteln versucht.</strong></td>
</tr>
<tr>
<td>Trifft nicht zu</td>
</tr>
<tr>
<td>Trifft eher nicht zu</td>
</tr>
<tr>
<td>Teils ja</td>
</tr>
<tr>
<td>Trifft eher zu</td>
</tr>
<tr>
<td>Trifft zu</td>
</tr>
<tr>
<td><strong>9. Bitte bewerten Sie die von Ihnen persönlich wahrgenommene Werbeeffektivität bezüglich der folgenden Hersteller.</strong></td>
</tr>
<tr>
<td>Rolex</td>
</tr>
<tr>
<td>Omega</td>
</tr>
<tr>
<td>TAC Herder</td>
</tr>
</tbody>
</table>
Appendix 3: Scope of neuromarketing techniques to inform luxury watch advertising effectiveness

<table>
<thead>
<tr>
<th>Exposure phase</th>
<th>Function</th>
<th>Effect</th>
<th>Perceived effectiveness</th>
<th>Neuromarketing application field</th>
<th>Technique</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-experience</td>
<td>Framing perception</td>
<td>1) Expectation</td>
<td>Moderate by tendency</td>
<td>A desired framing reference point's certain framing could be contrasted with the actual experience of the consumer. Certain conflict signals in the brain state information about the fit (not investigated)</td>
<td>fMRI, eye-tracking as supplementary method</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) Anticipation</td>
<td>Low by tendency</td>
<td>Specific anticipations are associated with certain brain activity patterns. These patterns can be used as further marker in addition to explicit questioning</td>
<td>fMRI, eye-tracking as supplementary method</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3) Interpretation</td>
<td>Low by tendency</td>
<td>Possibility to see which anticipations or reactions an advertisement (signal in the brain) triggers in order to understand the background mechanisms</td>
<td>fMRI, eye-tracking as supplementary method</td>
</tr>
<tr>
<td>Pre-/post-experience</td>
<td>Enhancing experience</td>
<td>1) Sensory Enhancement</td>
<td>Senses sight and touch most effected</td>
<td>Design the frame the advertisement in a way that it most effectively influences experiences</td>
<td>fMRI</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) Social Enhancement</td>
<td>High by tendency</td>
<td>Studies on actual human interactions which give measures for trust could be applied in a marketing/brand context (not investigated)</td>
<td>fMRI</td>
</tr>
<tr>
<td>Post-experience</td>
<td>Organising memory</td>
<td>1) Cuing</td>
<td>Recall mainly enabled by visual and verbal cues</td>
<td>Identification of brain areas relevant to specific memory processes and also for the recall of memory associations</td>
<td>fMRI</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2) Branding</td>
<td>Recall mainly enabled by visual and verbal cues</td>
<td>Identification of brain areas relevant to specific memory processes and also for the recall of memory associations</td>
<td>fMRI</td>
</tr>
<tr>
<td></td>
<td></td>
<td>3) Interpretation</td>
<td>Low by tendency</td>
<td>Neuromarketing techniques cannot identify emotions based on brain activity patterns at the current point in time (not investigated)</td>
<td>fMRI</td>
</tr>
</tbody>
</table>
Appendix 4: Self-Reflective Approach to Learning

4.1 Introduction

This section is devoted to the analytical self-reflection of the researcher on individual learning and research experience during the process of writing this dissertation. An outline review of the vast literature of learning styles is presented, commencing with an investigation into what learning comprises. Theory, tools and frameworks form the basis for a critical evaluations of practice which in turn encourages and shapes the formation of new practice. Learning styles are characteristic cognitive, and psychological behaviours indicating how the person who is learning perceives, interacts with, and responds to the learning environment (NASSP, 1979, cited in Fatt and Joo, 2001, p. 24). Moreover, learning styles can be delineated as following a particular strategy in learning. Hereof, most students have a preferred learning style but some may adapt it task-specific to which is referred to as “versatile” learning style (Pask et al. 1977, cited in Sternberg and Zhang, 2011, p. 78).

4.2 Learning style theories

Element of learning styles that appeared in research literature date as far back as 1892 whereby the term ‘learning style’ was purportedly first used by Thelen (1954, cited in Hogg and Tindale, 2001, p. 536) in discovering the dynamics of groups at work. The concept of learning styles that disseminated widely in managerial circles was based on the theories of David Kolb (1974) who regarded learning as a circular process consisting of a series of experiences with cognitive additions. The cycle entails four phases which include having a concrete experience, followed by observation and reflection on that experience which leads to the formation of abstract concepts and generalisations which are then used to test hypotheses in future situations, resulting in new experiences (Copley, 2011, pp. 84-85).

![Figure 10: A simplified version of Kolb's experimental learning cycle (Moon, 1999, p. 25)](image)

Later work by Honey and Mumford (1986) developed a psychological framework of individual learning styles that paralleled the four stages identified by Kolb: activist, reflector, pragmatist and theorist. An activist is considered as a dynamic learner; a reflector, an imaginative learner; a pragmatist, a common-sense learner whereas a theorist symbolises an analytical learner (Fatt and Joo, 2001, p. 25). The concept of learning styles preferences is based on the recognition that some individuals prefer learning in one way as compared with another. Moreover, the model proposes that individuals’ reactions to the same learning experience are strongly associated with the four stages of the learning
cycle (Beard and Wilson, 2006, p. 34). Figure 11 illustrates the association between the learning style cycle and learning styles preferences.

![Learning Style Cycle](image)

**Figure 11:** Honey and Mumford’s learning styles (Beard and Wilson, 2006, p. 34)

In accordance to the above mentioned theory, observed personal study patterns and the results of a Learning Styles Questionnaire (LSQ), the researcher has the strongest tendency to the learning styles reflector and theorist.

Particularly in the primary data collection and analysing part of this dissertation, the investigator always considered diverse possible angles and implications of certain situations to get a wider picture and more in depth knowledge. This cautious pondering of experiences and the great obtained in-depth knowledge on diverse neuromarketing topics lead to well though-through conclusions but more time was needed than initially anticipated until these own points were stated.

The theorist learning style also fit the researcher since problems faced in the dissertation, such as the difficulty of tying together qualitative and quantitative research results in a meaningful way, were always approached in a vertical, step-by-step logical way. The complexity of the dissertation topic encouraged the researcher to question and probe ideas until a rationale scheme was established.

Even though two learning styles dominated in the course of this dissertation, the researcher tried to acquire the ability to learn in all four styles in order to benefit from the skills and qualities that each individual one offers.

### 4.3 Skills developed and self-reflection while conducting research

The learning experience derived from undertaking a postgraduate MSc Marketing programme at DBS and particularly writing this dissertation enabled the researcher to acquire and develop numerous skills which can be applied advantageously to achieve both personal and professional goals. In this regard, three specific areas which are of highest significance and importance to the researcher are expounded as follows.

#### 4.3.1 Interpersonal skills

The dynamic and interactive format of the MSc Marketing programme, accompanied by the substantial number of immanent group projects and presentations completed greatly benefitted the
development of the researcher’s interpersonal skills. Both verbal and non-verbal communications, stress-management, listening and negotiation are all skill areas that were abundantly put to the test and further developed in the process of the course. This acquired strong interpersonal skill set will help the researcher to create more satisfying interactions in all environments and therefore significantly impact future success of both professional and personal life.

4.3.2 Language skills
The course of studies completed allowed the researcher, who is a non-native speaker of English, to significantly improve the knowledge of English. Many oral presentations, assignments completed during the course and an international environment, due to contact with students of different nationalities, helped to further develop written and oral competences. Particularly, this dissertation as final assignment and the scientific literature reviewed in this context sharpened the investigator’s academic language skills and lay the foundation for lifelong, autonomous language learning.

4.3.3 Research skills
Conducting research with the purpose to create this dissertation was one of the most challenging but equally most effective opportunities for skill development during the entire MSc Marketing programme symbolising an incomparable learning experience. First of all, meaningful time management and the use of organisational skills lay the foundation to write the dissertation in a structured way which maximised results and learning outcomes. Particularly, the researcher’s tendency to prefer a reflective learning style made it necessary to adhere to strict self-imposed deadlines in order to reach decisions and progress with the overall work on the dissertation.

A solid understanding of neuromarketing as research activity and individual measurement methods implied knowledge on the function of human brain structures which symbolised a completely new and unknown research area to the investigator. The effort put in reviewing secondary research served as a basis to create a meaningful questionnaire for qualitative research purposes. This questionnaire and the completion of in-depth interviews generated both new and highly relevant insights on neuromarketing and advertising effectiveness and constituted an extraordinary learning experience, providing great personal rewards. Decision-making was a skill tested to a great extent at all different stages of the dissertation work including without limitation the definition of research objectives as an underlying framework, the selection of knowledgeable interviewees, but also critically scrutinising own performance and deciding to continuously revise individual paragraphs which did not meet the researcher’s expectations. Furthermore, understanding, processing and extracting value from generated quantitative data promoted the further development of the researcher’s numeracy and quantitative skills, resulting into great knowledge acquisition.

Conclusively, the dissertation assignment was the most difficult task in the MSc Marketing programme which equally represented the single most important source of knowledge acquisition and skills development of the entire course. Thus, the outcome generated in the dissertation is expected to serve as an additional benefit that is likely to help fostering the researcher’s professional career.
4.4 Future utility of Learning

During the period of working on the dissertation, the researcher has been lucky enough to begin a position as a Mobile Campaign Manager for a start-up company in Dublin. This achievement confirmed the investigator's personal development through the MSc Marketing programme at Dublin Business School and many of the previously outlined skills will be of great benefit to this new role. The researcher is aware of the fact that a learning process is lifelong and considers the completion of both course of studies and dissertation as a great and valuable foundation on which has to be built upon in the future. The investigator will certainly continue reading academic articles and resources on marketing relevant topics and stay updated on the latest advances and developments in neuroscience since this area might offer a career opportunity one day.

Conclusively, continuous critical self-reflection, scrutinising own performances as well as striving for perfection, while both completing the course and writing this dissertation, encouraged the investigator to trust and believe in own skill sets and employ these abilities meaningfully to achieve the best results possible. The progress and success of the one year MSc Marketing programme lead the way for a fruitful and promising future marketing career.