



Neuromarketing and its Impact on Russian Business

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Bachelor's thesis

May 2022

School of business

International business

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Jyväskylä: JAMK University of Applied Sciences, May 2022, 40 pages.

School of business, International Business, bachelor's thesis

Permission for web publication: Yes

Language of publication: English

Abstract

In the early stages of the development of psychology, scientists put forward the hypothesis that thinking does not depend only on the rational but predominantly occurs unconsciously. Thus, it was confirmed that people of the 21st century have a very individual attitude toward what they see: content, advertising, goods and services. In addition, each potential customer has a unique impression of the product and the brand. This opinion can be managed by improving the quality of products and services, influencing both conscious and unconscious, which ultimately contributes to customer loyalty, mood and desire to buy goods more often.

There is neuromarketing, a science at the intersection of two teachings, neurophysiology and marketing.

With the help of neuromarketing research, businesses study a consumer's subconscious perception of a product and adjust it if necessary, thereby improving customer response and increase sales and loyalty levels. The author is interested in studying the device of neuromarketing methods, analyzing their examples, and predicting the adaptation of this innovative technology in the Russian Federation.

The author focused on literature sources and interviews and studied the device of neuromarketing research and the instruments used to conduct experiments.

The author also studied the resources required for adapting such technologies, touched upon the issue of labour and salaries, legal and ethical factors, the specifics of the Russian market of goods and services and the gradual adaptation of neuromarketing technologies by large Russian companies.

The result of the study indicates a favourable factor for the development of neuromarketing technologies in Russia, its successful adaptation and considerable influential potential.

Keywords/tags (subjects):

Marketing, Neuromarketing, Brand management, Innovative marketing methods, Consumer neuroscience, Brain-imaging, fMRI, EEG

Miscellaneous (Confidential information)

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1 Introduction

1.1 Background

Man has accomplished much during his development. Our primitive ancestors began by mastering agriculture and cattle breeding, the so-called people of the "ancient world" were already creating the first civilizations, the Middle Ages brought us the growth of agricultural production, and the new time brought industrialization, a powerful new tool of production - machines, and the latest time - the one in which we live - gave us a market economy, transforming our society from industrial to post-industrial. At this time, the civilized man in our time can no longer imagine himself without a roof over his head, the ability to read and write, the ability to earn money and to be a valuable part of society.

The increasing speed of scientific and technological progress has not left aside marketing. Improving in science, people enhanced in production. More and more new ways of getting a large volume of goods have emerged, with shorter production times and costs.

Nowadays, the entire production cycle depends on marketing. Through analysis and statistics, it is the science of marketing, which includes mathematics, economics, psychology, and sociology, that helps plan and market the goods or services that the customer will ultimately purchase. Everything from delivery cycles, product design, and product composition to price and delivery method is determined by marketing. The era of marketing has dramatically changed the direction of the marketplace and marked the shift from a seller's market to a buyer-focused market. Technology directly related to marketing is impacting our lives.

In October 2020, the world counted 4.14 billion social media users logging in every month. (Kemp, 2020)

It is essential to clarify that social media allows you to personalize your advertising message and only show it to users who are more likely to click and end up buying the product. Billboards, banners on websites, and TV and radio spots are pretty low compared to targeting ads on social networks - the number of PPC is lower, and the price is higher.

Why does it work this way? The reason lies in our subconscious. Man is a creature with a complex brain structure and a considerable measure of brain mass and capabilities (Bassett, Gazzaniga, 2011) In today's world, marketers, PR and advertising professionals are all united by the goal of effectively selling goods or services. What makes people choose one product or brand over another? It is one of the fundamental questions for any business. Even today, it can be answered by specialists who conduct neuroscientific research. "Neural activity begins in the limbic system of the brain, which means that any event is first reflected in emotions and only then in consciousness." (Nusenki, 2020, p.1)

McDonald's arches, Marlboro cowboys, gift wrap, IKEA store pencils and cafes, and many other findings that have now become classic fixtures of these companies have been discovered through neuromarketing research. (Ilchenko, 2021) (Picture 1)



Figure 1. The brain and stats. (Web, n.d.)

Neuromarketers use many neuroscience techniques to understand consumer behaviour and attitudes toward a brand. These technologies are divided into two groups: those aimed at studying directly brain reactions and those that analyze the subject's conduct of the experiment by measuring indirect signs. The most accurate is the first group, specific methods such as fMRI, EEG, eye-tracking, and others. (Research Methods, 2021)

The author has decided to study the effects of neuromarketing on practical marketing, to study the impact of this marketing segment on marketing in general and to explore the potential use of neuromarketing in Russia from 2022 to 2027 and the changes that the use of these technologies will bring to Russian business and how consumer perception will change.

1.2 Motivation and goals

The topic for this study was formed based on the author's interest in the latest progressive methods that take consumer behaviour analysis to a new level and provide a better product or service to the end consumer. The author has always had a personal interest in excellent service, its components, and psychological details that influence positive evaluation opinion of a business.

It is no secret that with the help of neuromarketing, marketers around the world make the most extensive advertising campaigns, allocating large budgets to research what exactly would appeal to the consumer, what will catch his attention, remains a phrase, a song, a banner in the subcortex of the brain, and that will lead the customer to the right product.

Also, despite the expense of severe and large neuromarketing projects, small and medium-sized businesses have already begun to implement neuromarketing practices in brand-matching, building a new progressive business that interacts with all five human senses. Thus, with quality analysis and building a competent business model that considers all the conscious and unconscious sides of the consumer, a business can interact with the customer on a new, emotional level, which is undoubtedly impressive. But this direction has pitfalls that have not yet been prevented or addressed, such as the ethical issue, which is a significant negative factor in building this kind of marketing.

The author is interested in looking into all of the factors involved in building a marketing campaign using neuromarketing, identifying the resources required to fully adapt and install neuromarketing technology and also identifying the impact of the introduction of neuromarketing in Russia as the author is an international student of International Business and Administration and his home country is Russia. The author also had the experience of working in Russia in a construction company as an assistant manager, so the study of the neuromarketing application in Russia will be used in an educational and professional capacity.

The study aims to examine neuromarketing and its impact on business in general, explore the resources required for adaptation and identify the findings of neuromarketing's impact on Russian business over the next five years.

1.3. Research questions

Technological marketing is used as a unique way to create an unforgettable experience for the consumer. Neuromarketing brings a vast number of exciting and progressive techniques for analyzing the human brain and its positive responses to external stimuli. It also makes it possible to “discover fresh viewpoints, uncover emotional and non-conscious responses, put measurements onto common scales.” (Bridger, 2015, p.2)

The most critical problem of neuromarketing research is the ethical problem of these studies and the dilemmas they cause to increase commercial activity. Theoretically, a marketing campaign cannot restrict human freedoms and rights, but the increasing influence and depth of research create the potential for future problems.

Such dilemmas include:

1. Lack of control by federal authorities
2. Lack of international standards and certifications
3. Hyperbolization of the advertising image in comparison with the natural type of product
4. Other illegal frauds with user data or participants of experiments

To prevent subsequent ethical disagreements and to consider the use of neuromarketing research in the territory of the Russian Federation, it is necessary to determine the range of possible actions for the development and unification of the general set of rules, the code of ethics and the improvement of methods of neurotechnologies in the field of marketing.

Based on the defined research problem and objectives, the author managed to determine three main research questions that he will give answers to by the end of the research process:

- How is neuromarketing being applied now, and what are the main benefits for the company?
- What methods are needed to adapt neuromarketing?
- What opportunities can neuromarketing provide in the Russian market within the next five years?

1.4 Structure of the thesis

This dissertation was created as a qualitative study with a review of the scientific literature, conducting interviews with a professional in the field, analyzing and reflecting on the findings, and anticipating their future applications.

The literature review includes such vital topics as innovative marketing technologies of the 21st century, methods for analyzing the unconscious reactions of the consumer, the influence on product choice, the formation of the mood and feeling of the consumer, ethical dilemmas, and analysis of the development of neuromarketing in Russia. The arguments derived from the literature review are also reflected in the Results section of the research work.

In the study's conclusion, the author offers his conclusion on the possible advantages and opportunities for the development of this technology within a particular state and marketing in general. The author also presents his view on the possibility of developing the established topic in a more realistic environment.

2. Literature review

2.1 Methods and sources of information

This section allows to analyze the available materials and form a new approach to the problem to build a theoretical framework, with the help of which the author then examines the collected empirical material.

The researcher used and analyzed such sources as:

- master's, candidate's, doctoral dissertations;
- scientific articles;
- publications in academic journals;
- academic, general education and scientific Internet sources.

2.2 Definition of neuromarketing

The problems of analyzing the impact on consumer attitudes toward a product, brand, or service remain relevant to the differentiated marketing industry and the overall economic direction of the 20th-21st century.

The definition of neuromarketing has hundreds of illustrations by various experts in marketing, neurophysiology, and cognitive psychology. To outline the main points, the author suggests looking at both parts of the word in more detail.

Neuromarketing has two parts: "neuro-" and "-marketing." Thus, the "marketing" part is familiar to many business-oriented specialists. Marketing implies, in the opinion of the expert in the field, The Hartford (2022), is a set of measures that are taken to ensure that there are as many buyers/communities interested in purchasing a product or service as possible, production costs become lower, and the number of investors increases. (p.1)

At the same time, the elementary particle of the word "neuro-" is something "relating to nerves or the nervous system". (Oxford Dictionary, 2012, p.46)

Marketers define neuromarketing as marketing research that uses empirical isolation through fMRI (functional magnetic resonance imaging), EEG (electroencephalography), eye tracking and other tools to determine the behaviour and response of the end consumer buyer or community of buyers. So, neuromarketing, according to Harrell, neuromarketing is a chain of sequential neurophysiological research aimed at identifying consumer preferences, reducing pricing and other marketing niches, and including preferences in taste, colour, and perception of information, measuring the activity of brain neurons. (2019)

If we look at neuromarketing from a neurobiological point of view, it is a section of cognitive neurobiology using experimental methods of cognitive psychology, functional neuroimaging and electrophysiology.

Both of these definitions can be considered trustworthy. Still, in this study, the author will stick to the report from the position of marketing, which uses the tools of neuroscience to obtain "subcortical," subconscious information of the subject to reflect their true desires, interests and qualitative perception of the presented product or service.

2.3 Neuromarketing types

To determine the types of the research object, the author refers both to the historical stages of neuromarketing development and the research methods. Thus, the author distinguishes fundamental and instrumental neuromarketing and types of neuroscientific research.

Rüschendorf (2020) defines the primary type as based on empirical research by scientists without the use of precise apparatuses from the mid to late 20th century, and the instrumental type, which began in the early 21st century and involved working with special instruments to record the neurophysiological reactions of the subject.

According to new research, the typology of neuromarketing in terms of research methods and divides them into three categories of techniques:

1. Techniques that register CNS activities (brain activities): fMRI, EEG, MEG, PET;
2. Processes that register PNS activities (non-brain activities): ECG, GSR, EMG, Eye-tracking and Facial coding;
3. Methods that report other activities (e.g. behaviour): IRT, InTrack, VideoCam, Indoor positioning. (*The 7 Most Common Neuromarketing Research Techniques and Tools*, 2019)

2.4 Methods and devices

The author describes the main methods used in modern marketing nowadays.

Farnsworth(2019) explains eye-tracking technology.

Eye-tracking (*pupil centre corneal reflection, PCCR*) or human gaze point tracking technology measures where a person looks over a predetermined period or in real-time using an eye tracker device. Infrared (near-infrared) light is directed at the eye of the market research participant and, reflecting off the pupil and cornea, creates a vector between the cornea and the pupil. These changes are measured with an infrared camera. (Picture 2)

First and foremost, human thoughts, feelings, and actions are merely the result of neural activity in the brain. Due to a study by LeDoux J. (2013) - the primary response originates in the neurons of the limbic system.

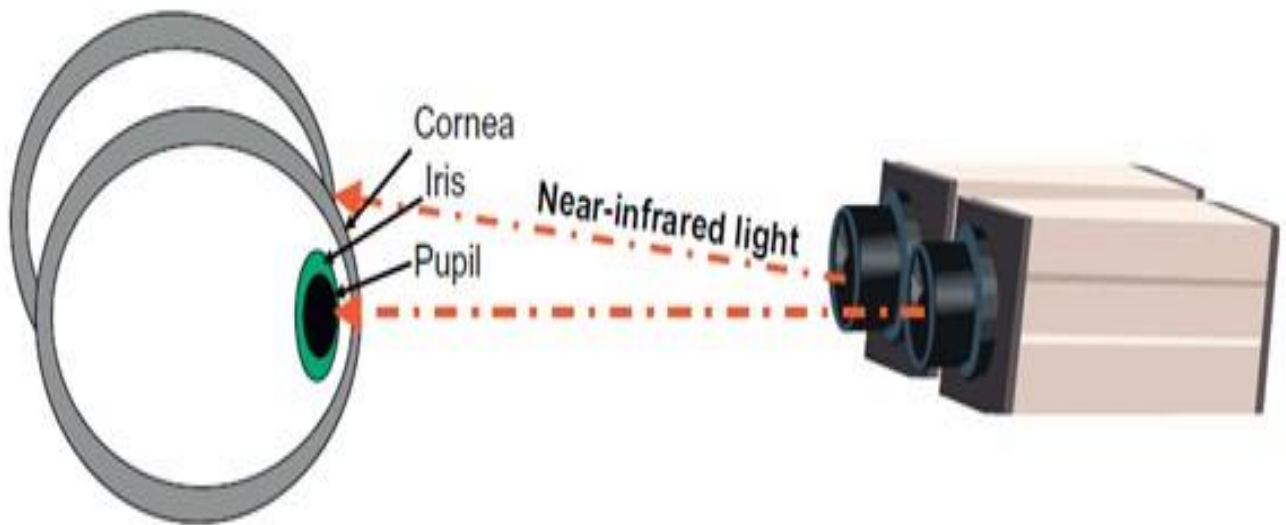


Figure 2. PCCR technology demonstration (Maher, 2018)

A light source that emits infrared light into the eye is significant because it allows you to see a more contrasting image and see the pupil and corneal reflection. In comparison, conventional cameras with light (visible spectrum, 400 to 700nm) do not qualify for such clarity and accuracy of measurement.

In neuromarketing, this method is used to obtain data such as:

1. Studying the areas of the screen that are most appealing to the user, the "attention-grabbing" areas. (Picture 3)
2. Processing (triangulation) of eye-tracking data, personal interview data and subject's behaviour (and other factors). (In modern psychology, triangulation is defined as the use of data collected from different sources by different methods researchers, and all triangulation techniques that have the necessary reliability (Biggerstaff, Deborah, p. 2, 2012).
3. Interest in reading instructions, documentation, labels, reference labels, etc.
4. Checking the workability of design projects, and advertisements, persuading interested parties.

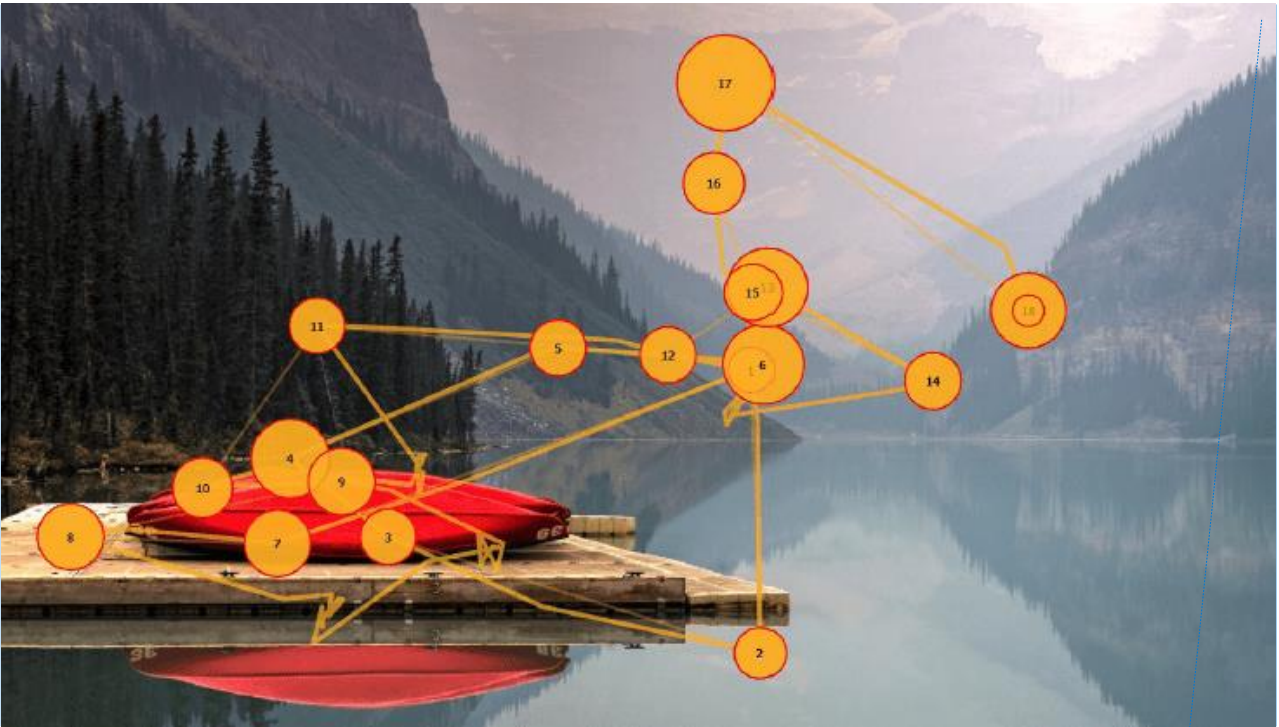


Figure 3. Using PCCR to collect main gaze points (DCG, n.d.)

Pupilometry. Pupil size also plays a significant role in modern eye-tracking. Thus, by the degree of pupil constriction, emotional arousal (the amount of emotional involvement of the subject) and the difficulty of perceiving the stimulus, in other words, cognitive load, can be ascertained.

(Picture 4)

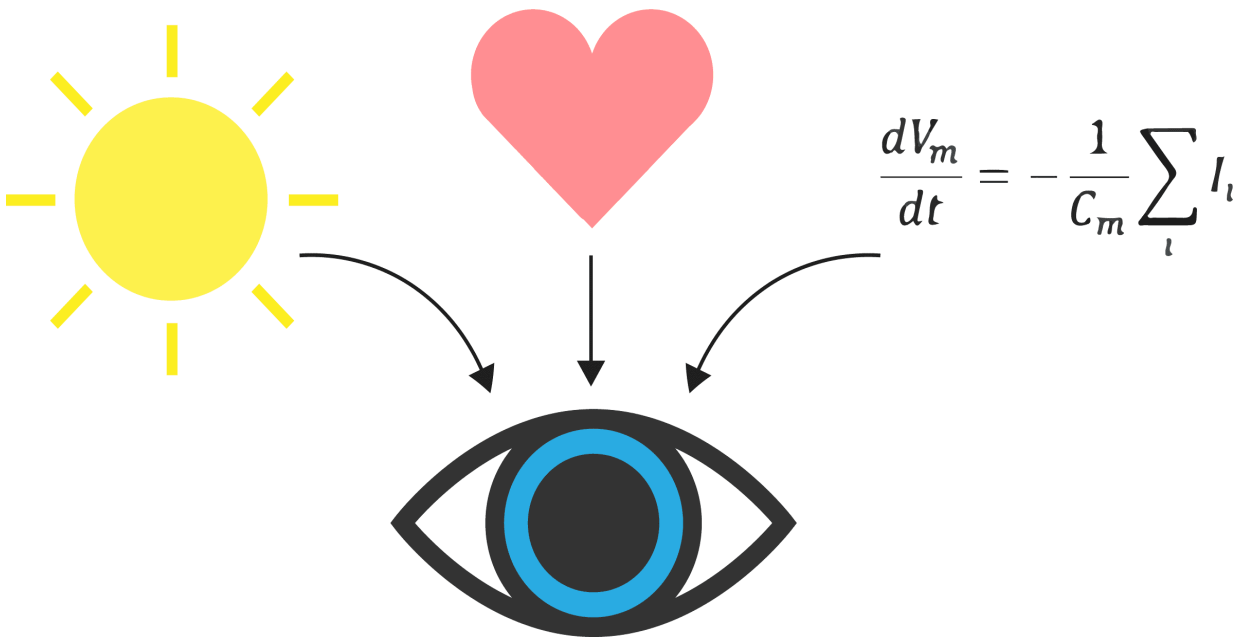


Figure 4. 3 stimuli that make the pupil react (Farnsworth, 2017)

Thanks to neuromarketing techniques, we can take it one step further. We can find out exactly what people are looking at, but we can also get clues about what they are thinking about. How? With devices that specialize in reading the electromagnetic activity of the brain, such as a functional MRI or electroencephalogram (EEG).

Functional neuromarketing techniques, which use devices that record the electromagnetic activity of the brain's neurons - fMRI and EEG - allow us to see people's thoughts.

In essence, the object of marketers' research is not much different from traditional marketing, but with the help of new research methods marketers get more accurate and scientifically verified information about what really attracts customers and what repels them, whether they like the brand style or not, and so on.



Figure 5. EEG method in process (NEUROLITE AG, n.d.)

The EEG method is sensitive and accurate, with no lengthy procedure required. It can be useful for a quick change of frames in a video. It allows you to find out more exactly what attracts clients, evokes emotion and activates neuronal activity. This method has one advantageous disadvantage compared to fMRI - with EEG, it is impossible to understand exactly which area of the brain is

involved. Hence it is more difficult to understand the original process of creating a feeling in the client.

Encelography in pre-testing of commercials gives an understanding of how the viewer reacts to this or that advertising to the objects in the commercial.

Three indicators are measured during the procedure: Physiological Arousal, Emotional Engagement, and Stress. If the advertisement is perfect in the first two parameters and has low-stress scores, the advertisement can be considered a success. (Neurobrand, 2015)



Figure 6. fMRI (Panigrahi, 2018)

Emotional responses, for example, are a stimulus of activity in the limbic system, and observation of changes in brain neural activity gives marketers and scientists insight into how external stimuli affect subjects' emotions. Since the invention of fMRI (Picture 6), neuroscientists have been able to identify and study the correlations between the involvement of specific parts of the brain and decision-making (Picture 7). With fMRI surveys, marketing responses can be more accurately assessed. Traditional marketing answers this question inaccurately, based only on interviewing

people, which is often completely wrong, as the fMRI method confirms. (*fMRI Neuromarketing Market Research, n.d*)

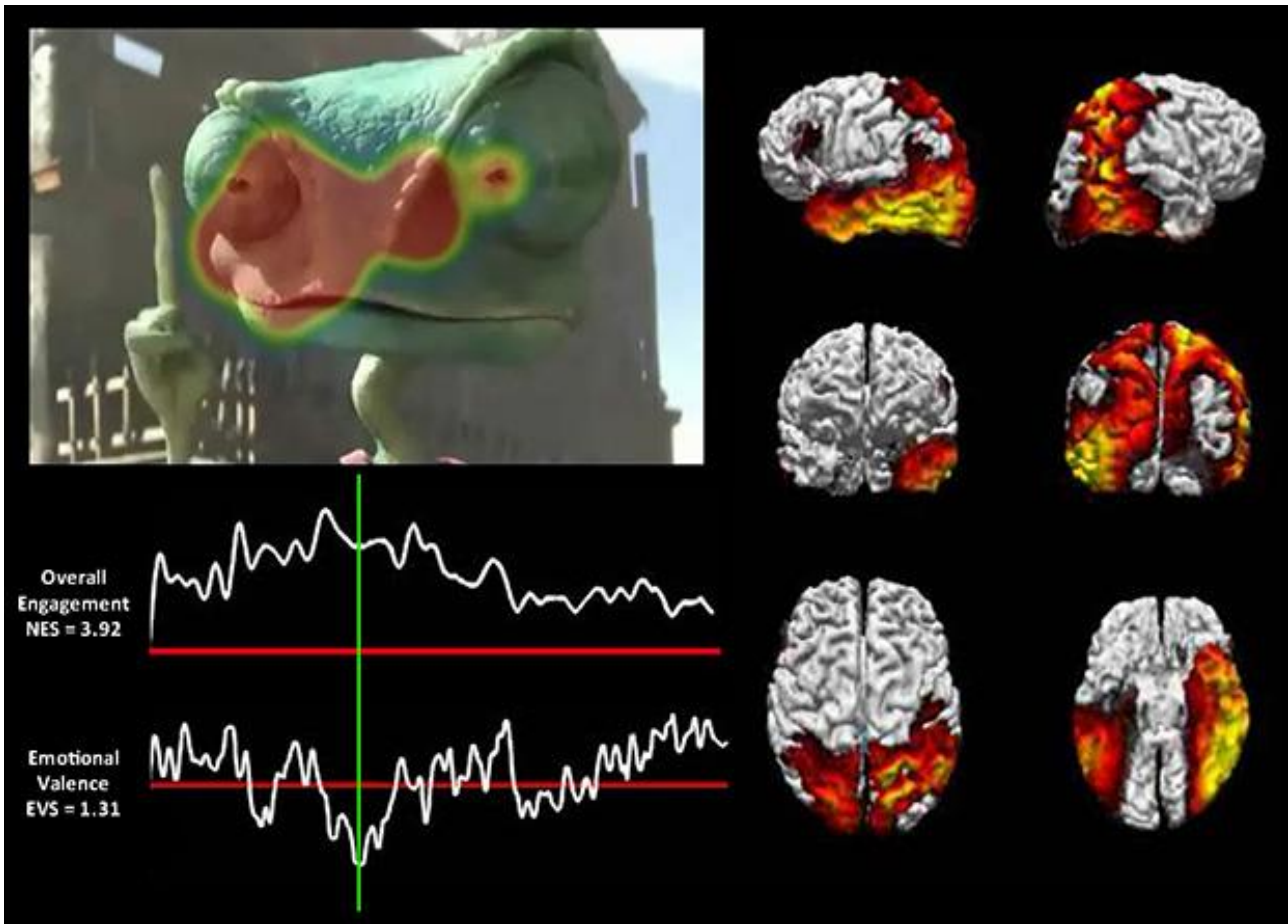


Figure 7. A brain scan image, illustrating neurons activity in different brain areas (Randall, 2011)

Sensory marketing, due to By, differs from traditional marketing in that it uses all five senses, whereas traditional marketing often uses nothing more than the visual and auditory senses of customers. (2022) (Picture 8)

Sensory marketing focuses on creating a positive impression of a brand or product, or service. This approach helps to gain the customer's trust and affection. This method involves finding the best set of factors to which the customer gives the best feedback.

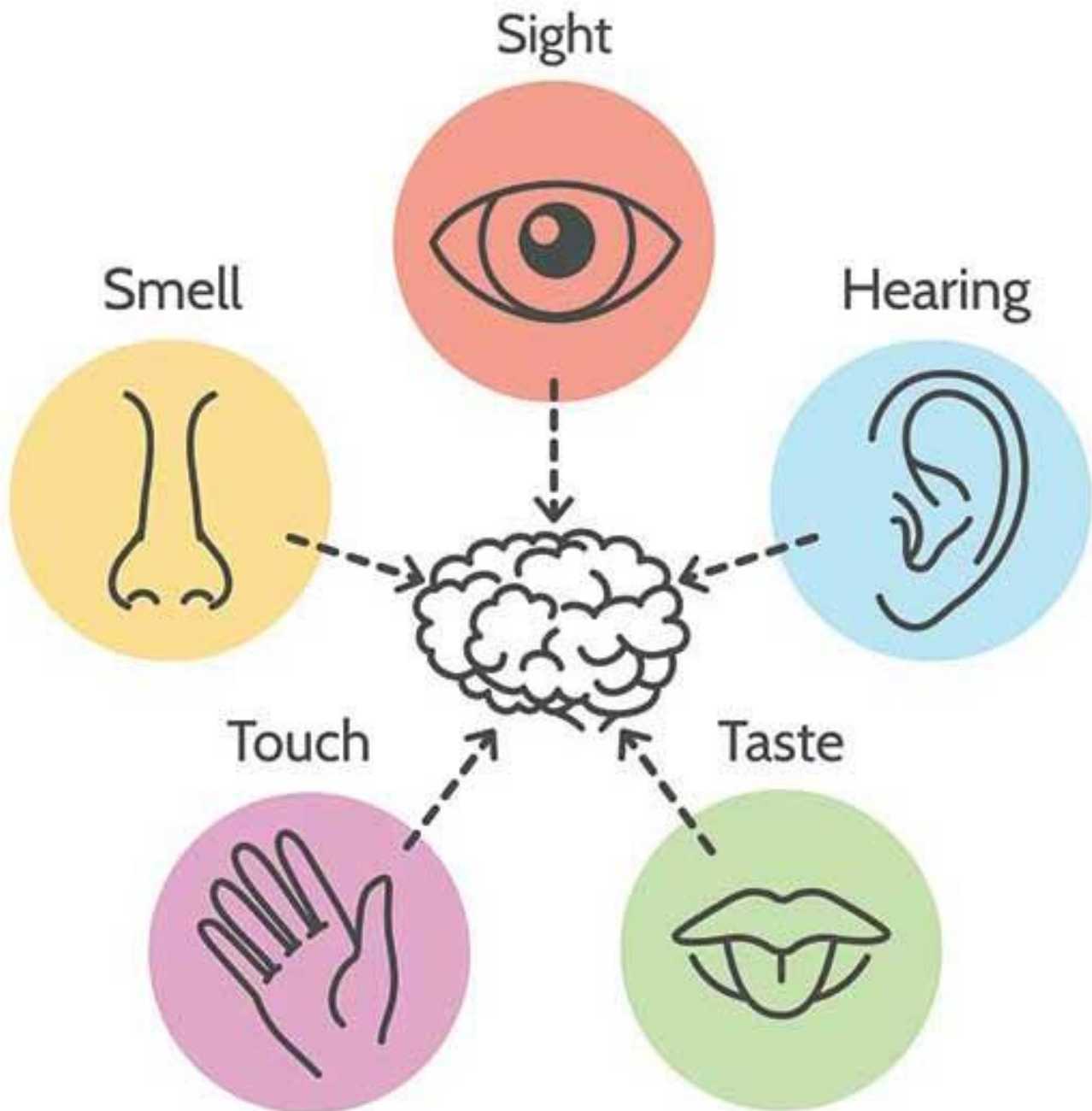


Figure 8. 5 senses (Rossi, 2021)

2.5 History of Neuromarketing

There are still many points of view about the true historical origin of neuromarketing.

A detailed historical perspective on how neuromarketing developed in its early years is provided by the article. According to the article, the beginning of neuromarketing is considered the end of the 20th century, 1940-1960. (Klicenkova, 2016)

In 1944, mathematician John von Neumann and economist Oskar Morgenstern proposed the axiomatics of expected utility theory in "Game Theory and Economic Behavior".

After that, in 1947, von Neumann and Morgenstern created the expected utility theory as a by-product of game theory. In the introductory chapter of the second edition of their book, they give a brief factual summary of the provisions of economic theory, with which they intended to provide a mathematical toolkit for the adequacy of choice. Then, exclusively in the second edition, they confirm the theses of their theory of expected utility and lead the entire economic industry to the conclusion that the notion of rational behaviour is not sufficiently quantified and cannot be considered exclusively accurate and true.

Based on the analysis and key results, the Allée paradox, named after the French economics laureate, the Frenchman M. Allée, was identified as relating to the theory of risk in decision-making and economics in general.

In the article it's explained the essence of the paradox - the paradox proves the impossibility of applying the theory of maximizing expected utility in real conditions of uncertainty and risk. (Evkova, 2016)

It was in this year that Professor Herbert Krugman first discovered the fact of changes in pupil diameter as an indicator of a customer's attitude to a particular product or advertisement. In 1970, Professor Herbert Krugman and Professor Fleming Hansen began to conduct in-depth scientific experiments to determine the reactions of the left and right hemispheres to certain stimuli and the direct interaction of these hemispheres with each other.

The results were a tremendous contribution to medicine and science but could not be applied by any marketer or scientist as a method for studying the emotions and feelings of consumers until 2002. Thus, according to Shishakova (2021), the first half of the 20th century - the period of the initial development of neuroscience, and the beginning of the 21st century - the development of devices and methods to visualize the response of neurons, which then formed the basis of neuromarketing.

But despite the similar conclusions of the two authors of scientific papers - Shishakova believes that neurophysiological methods to study the reactions of potential buyers began as early as 1990 - by Harvard professor Jerry Zaltman (2021). His development is called ZMET (Zaltman Metaphor Elicitation Method). Technical features of ZMET consist in the detection of activating neurons

while viewing specially selected pictures, causing a positive emotional response and activating hidden images metaphors, stimulating purchase.

Marketing was defined by professor Smits in 2002, and in 2004 was the first major scientific conference to formally document the word neuromarketing and its methodology. In 2004, in the scientific journal *Neuron*, Reed Montague, director of the department of human neuroimaging department at Baylor College of Medicine in Houston, one of the first weighty studies using precise neural activity recording machines, the Pepsi Paradox, was published in 2004.

During the first experiment (Lindstrom, Underhill, 2008), that was in 1970, participants were offered a choice of two cups of different brands (Coca-Cola and Pepsi), which did not differ from each other in appearance, and the respondent had to choose which drink he liked better and write down the answer.

Thus, based on the collected responses of the participants in the experiment, after the first survey, most of the subjects chose the Pepsi beverage cups. But when the drink's trademarks were revealed, the results were the exact opposite: seeing the familiar logo on the red can, people favoured Coca-Cola.

In 2004, scientists decided to conduct a similar experiment, but with the use of a CT scanner and an MRI machine. The results of the study surprised the scientists. So, in the absence of knowledge about the brand, the nominal indicators of the neural activity of the brain are quite similar among the participants of the experiment (the taste of Pepsi was preferred by the majority of the interviewees), but when introducing data about the brand and product preferences, the differential indicators influencing the choice changed in the direction of Coca-Cola. Researchers Kuhn and Galinam, 2013 attributed this to the fact that when subjects saw a branded package with a better reputation-brain, activity in the ventral striatum was higher. (Picture 9)

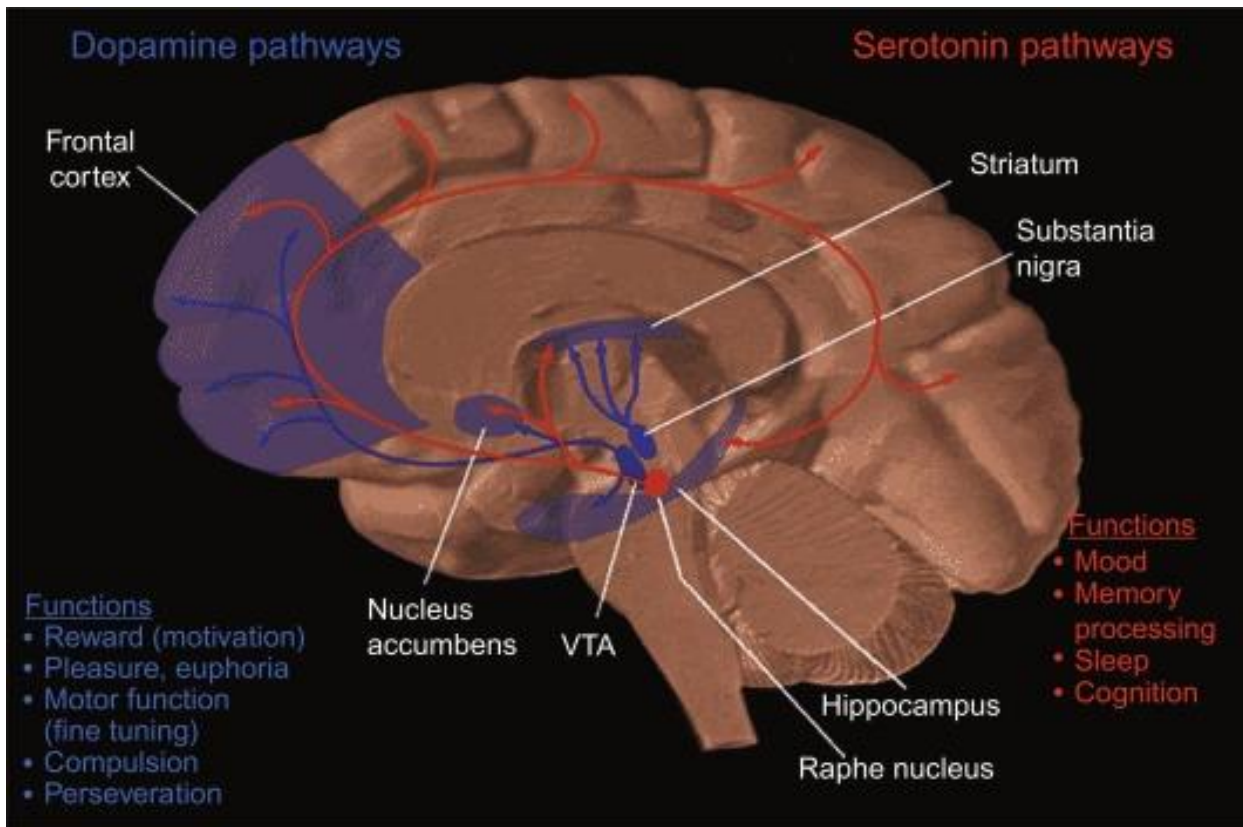


Figure 9. TRH projections in cerebral cortex (ScienceDirect, 2015)

The conclusion was given: “Coke causes more activity in the ventromedial prefrontal cortex than Pepsi does.” (McClure, Li, Tomlin, Cypert, Montague, L. M., & Montague, P. R., 2004)

On the other hand, from the position of Koenigs & Tranel (2008), the participants with prefrontal cortex damage were not susceptible to the Pepsi Paradox because their cortical decision-making center was not functioning correctly, as neural activity in the subcortical regions was distorted, different from usual, and could not function in a "rational" way. (Schallenberg, 2014)

“The most obvious explanation is the influence of the brand, but if you ask people if they choose the taste of cheerful Coca-Cola ads, almost no one will admit it. In the early noughties, however, new brain research technologies confirmed that the area of the brain adjacent to the orbitofrontal zone, the ventromedial prefrontal cortex, is a nest of vague but pleasant sensations, like the ones we experience when thinking about a familiar brand of a product.” (Mlodinov, p.12, 2012)

2.6 Implementation of neuromarketing in a modern market

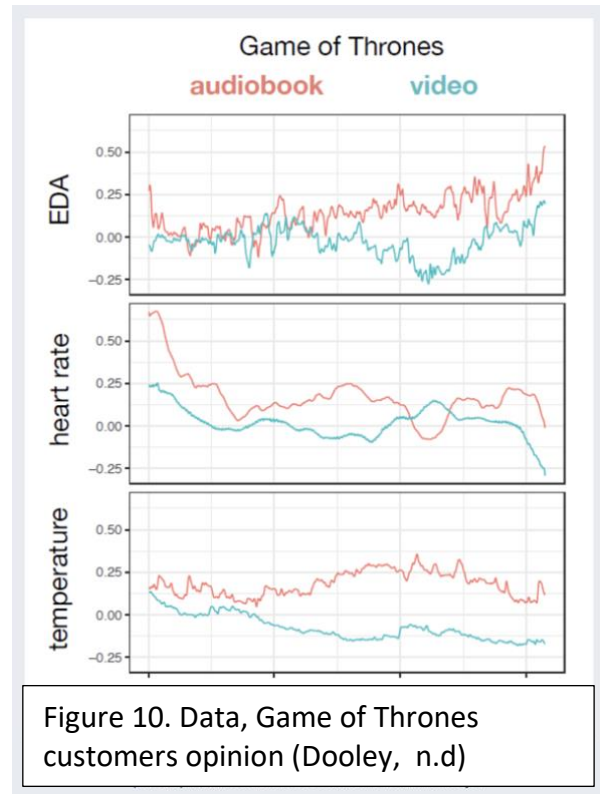
The author describes practical examples of successful neuromarketing implementation in modern brands' history.

1. In the first example, the author provides an example of evaluating customer confidence during the choice of payment methods. This study was of interest to all e-commerce brands. So, during the experiment, marketers decided to take a credit card and PayPal payment site. The experiment participants confirmed the hypothesis of the authors of the investigation that PayPal is perceived as a safer payment method and causes the customer more trust. And the method of payment by credit card was more pessimistic, activating the areas of the brain responsible for stress and distrust.
2. Gustav Bergman and Felix Lauren conducted a study that demonstrated the importance of first impressions on a customer's perception of a brand. Researchers created several pages on the Internet using different patterns of colours, stamps, fonts and contact information and showed them for no more than 7 seconds. Participants answered yes or no to the question: do you like this store? Thus, based on the data collected by EEG and eye-tracking machines, the marketers concluded that the main factor influencing trust was the design and elaboration of the website, thoughtfulness and usability. Also, an important finding was that there was no consistency in the time taken to think about the answer and the final result (yes/no).
3. University College London conducted a neuroscientific experience in which they compared the strength of the emotional impact of video and audio content, such as an audiobook and a movie. For the experiment, the most exciting parts of the works were taken, which were almost identical in terms of the strength of the emotional impact on the participants.

The video and audio tracks taken were movies such as: "Game of Thrones" and "Silence of the Lambs."

The survey showed that in most cases, participants in the experiment leaned toward the videos, claiming they were more interesting, but a scan of physical reactions proved otherwise. As participants listened to the audiobook, their heart rate increased and their body temperature rose. (Picture 10)

Also, neuromarketing techniques are used in television to elicit the highest levels of interest and attention in the early stages of developing a political or economic advertising campaign or broadcasting in general. (Crespo-Pereira, García-Soidán, & Martínez-Fernández, 2019).



To understand the impact of neuromarketing in this segment, the author provides several examples of successful neuromarketing campaigns:

1. Turner Broadcasting / Innerscope Research conducted a study revealing the level of viewer attention when viewing contextual advertising compared to traditional advertising. As a consequence of the experiment, they found a significant advantage of contextual, individualized advertising over conventional, polyverse advertising. (Tretler, Levine, Marci, 2010)
2. NCB International commissioned a neuroscientific study using biometric and eye-tracking methods from Innerscope Research that reveals the focus of attention when the end viewer rewinds an ad. When rewinding the commercial, it was found that the viewer's focal point was centred in the central part of the commercial. Consequently, advertisers (and ad creators) should emphasize large objects in the centre of the screen, catching the user's eye, as the end viewer will remember this area of the rewind. (Siefert et al., 2008)
3. Currys, PC World, BT Sport, and M&C Saatchi / Sensum have addressed the impact of 4k media on the final viewer's perception of sports content. The GSR method confirmed that

engagement and satisfaction when watching 4k content were higher than HD content.

Also, viewer retention and recall were consistently higher when the content was 4k.

Another finding of the study was that team performance plays an important role when watching HD content, while 4k content depends on it much less, due to Sensum research (2016).

Like any modern business, Starbucks tries to cut costs and increase profits while maintaining good brand status. It has turned to sensory marketing, intending to identify consumer satisfaction due to the pleasure of all five senses. Consistent testing of the effects of coffee odour on the consumer revealed a direct correlation between the intensity of coffee odour and the final customer reaction. Thus, the management of Starbucks took action to change the internal process of coffee processing. Bosses gave orders to grind coffee in the cafes themselves, despite the drop in productivity (brewing speed). In this case, the decrease in rate does not mean deterioration of perception and satisfaction from the product but only strengthens customer loyalty.

Thus, the author wants to summarise the above experiences with a quote from Cenizo (2022) in his report "*New Communication Phenomena and New Product Creators*": "Subconsciously, a person picks up even the slightest change in the shape and weight of a product." (pp.72)

To be seen and heard by their target audience and to stand out from the competition, companies have to use a variety of marketing techniques. The practical and powerful impact of advertising is based on emotional contact. By evoking some experience, one can influence one's conscious and unconscious decisions. (Dooley, 2015)

2.7 Pricing

There are many neuromarketing research service providers around the world. The most significant number are in the U.S., the U.K., and China. Businesses can count on three options for solving the neuroscientific problem posed:

1. Conduct the research through highly qualified scientific companies that exclusively provide this service (InnerScope Research, MindLab, Synetic, Neurofocus, etc.). (Owler, 2022)
2. Conduct the research yourself by hiring outside experts.
3. Buy back existing results from companies with such data. (Facebook, Nestle, IBM, etc.)

The most effective method for large companies is to order the service from a company/research centre. According to Professor Devlin, the average cost of neuroscientific research for a small company with a small budget would be £500-700 per hour. For large companies with the need to process large amounts of data and many factors - the amount could end up in the 6-digit numbers and, at the same time, take at least six months.

Devlin also highlights a cheaper way - EEG. So, it follows from the source that the average price tag for a similar experience will cost only 10-20 thousand pounds. (Pike, 2016)

Opinion of the author Harrell. E., 2019 agrees with the above position: "fMRI machines are many times more expensive than EEG equipment, typically costing about \$5 million with high overhead, versus about \$20,000."

Thus, the average price of a neuromarketing study would be £15,000 for an EEG study and about £5.5 million for a complete MRI examination. For comparison, in Russia, the average cost of a comprehensive study is from 300 to 700 thousand rubles. (Kozyrevskaya, 2016)

2.8 Resources

In this section, the author describes the resources required to implement marketing research. Based on the methodology for conducting neuromarketing research, the author will discuss the resources necessary for achieving methods using fMRI, EEG and eye-tracking systems.

To create a practical laboratory, it is necessary to work out the key factors such as:

1. Focus: either for commercial marketing research or for research purposes
2. The focus of the research (this determines how much equipment and workforce is required)
3. Potential number of locations for respondents (number of measurements)

The author considers the total costs without which such business is not possible. Other fees may vary from state to state, from country to country.

Thus, the costs of composition, team, and equipment can vary significantly from company to company.

The author gives an example in which he describes buying equipment, average market value equipment, hiring employees with average profit margins, renting space, etc.

1. **fMRI.**

Based on Gay, the average cost of an MRI machine is about - \$1.5 million. It also requires equipment to prevent a solid electromagnetic field leakage and requires a minimum of \$0.5 - \$1 million. (2017)

The MRI machine requires a three-phase UPS of 10 to 60 kVA. A room adapted to work with high electricity consumption, equipped for safety and high conductivity, will cost a company more money. Thus, according to ENERGYBOT, an MRI machine requires an average of 60kW of power per session - equal to \$6.25 in the U.S., or \$18.33 in Hawaii. (Mail Answers, 2017)

So, electricity costs for an approximate 100 tests per month would come out to a minimum of \$625, and in Hawaii, as much as \$1,833 per month. (EnergyBot, 2020)

A professional centre should work with professionals. Otherwise, the results may be incorrectly interpreted, and the company researcher will suffer reputational and economic losses. For the basis of calculations, the author takes the average salary of a neurophysiology specialist, taking the minimum number of specialists as 3.

According to the PayScale, the average salary for a neuro specialist is about (\$72500/12months) - \$6000 per month. Thus, \$18,000 would be needed for the wages of the co-workers.

Recording and maintaining the confidentiality of the subjects' data requires the development of a secure server database, the cost of which is estimated by Servermania to average between \$5,000 and \$1,000,000. The salary paid to a system administrator in the United States is \$63,603 per year, which is precisely \$5,300 per month.

Tax and law enforcement contributions depend on the state (U.S.)/country where the science and economics business is running. (2021)

1. **EEG.**

Creating a centre focused on implementing requests that do not require the detection of activity of individual areas, using the EEG machine is much cheaper and requires much less expense.

Thus, according to Farnsworth (2019), the average EEG machine is between \$15,000 and \$30,000, much less than the average cost of an MRI machine.

Like the last case study, these studies also require a stable, secure database server component, but the costs for specialists are very different. For example, the average salary of a neurologist (a specialist who operates an EEG machine) is \$260,000, which equals \$2,700 per month. The author considers a similar number of specialists per research method, taking the nominal number of specialists as 3. Thus, the cost of the entire staff will cost more than for MRI scans, but the total price of the equipment is lower.

1. Eye-tracking.

Many factors affect the final price of an eye-tracker. The average cost for an accurate eye-tracker to track movement and response to stimuli is, on average, \$17,500. (Farnsworth, 2019)

An eye-tracking specialist studying the attention and psycholinguistics of the experience earner averages \$10,000 according to PayScale (DePietro, 2019)

It takes two specialists to conduct the experience.

2.9 The main features of consumer behaviour around neuromarketing methods

The topic of neuromarketing ethics in Russia and around the world requires attention.

Neuromarketing often targets unconscious processes, which causes several ethical problems. For example (Belascu, 2020)

- Is neuromarketing a manipulation?
- Who will control this research?
- Whose responsibility is it for the leakage of focus group information that occurs?
- How do we define the boundaries of research subjects?

These questions worry the public and law enforcement alike, as the masses are aware of cases of anti-ethical/harmful effects on both research participants and end-users.

Authors cite an example of an unethical marketing campaign by manufacturers of sweet soda water to sell narrow, elongated bottles at higher prices to people with higher body mass indexes (Odekerken, 2020).

A study commissioned by the manufacturers confirmed the impact of bottle proportion on sales to people with unhealthy abnormalities, which questions the ethics of such a marketing strategy. In this way, companies influence such people in an unhealthy direction and on their wallets.

Another example of unethical research in violation of human rights and freedoms occurred in 2012. In the experiment, Facebook changed the structure of its news feed without users' knowledge to control users' emotional expressions. The research was conducted in partnership with universities in the United States and revealed the relationship between users' emotions and the content they post. Amount of people – 689003. (Meyer, 2014)

"Let's call the Facebook experiment: a symptom of a much wider failure to think about ethics, power, and consent on platforms," (Crawford, 2013, p.1).

The ethical issue of neuromarketing was raised back in articles in 1984, at the dawn of neuroscience and its use in marketing. The ethics of subliminal communication, by Gratz (1984), suggests a disagreement between the potential of neuromarketing research and the attitude of the masses toward it. The author emphasizes that as knowledge about neuromarketing penetrates the groups - the effect of methodologies will decline, but this will only happen if consumers learn all the features of neuromarketing. According to the article's author, this will not happen soon, so the ethical risks and contradictions are meaningless.

"This is the critical issue of the ultimate invasion of a person's man's private life - his mind." (Gratz, 1984, p.184)

"Ethical dilemmas arise when a situation involves a deontologically moral action that produces negative consequences, or when a teleologically correct action involves an immoral action to produce positive consequences." (Flores, Baruca, & Saldivar, 2014 p.146)

According to the authors, as of 2014, neuromarketing can lead to ethical controversy because this technique influences human decision-making as an end consumer and the production of specific unconscious reactions to a product or service.

Thus, comparing the two positions of different authors, it was concluded that both in 1984 and 2014, the ethical issue of neuromarketing remained as relevant as it is now. Based on this data, the author concludes that neuromarketing requires the setting of moral rules regarding neuromarketing research and refers to the article by Murphy, Illes & Reiner (2008).

The authors of the article make recommendations for moral boundaries concerning consumer research. Thus, according to the authors, timely development of guidelines in the professional community of scientists and marketers will help establish trust more than the principles established due to unfavorable research outcomes and settlement by law enforcement order. The author raises current ethical questions and provides answers with advice from research authors.

The author of the article prepared a presumptive guideline plan:

First, research subjects need to know and understand all the risks of methods, confidentiality, and possible gambling incentives (e.g., monetary rewards). They must be informed of their full right to refuse to conduct or continue the experiment for any reason, even if it is mild discomfort.

Subjects must be protected and undergo a complete information procedure.

The authors suggest introducing a rule to protect vulnerable target populations from marketing exploitation as a second point. The protection should include an additional ethical review of research.

Researching to launch advertising campaigns should be aimed at beneficiary satisfaction of consumers' needs without causing harm, psychosocial or financial.

In the third item in the rulebook, the authors point out full transparency of the research companies' goals, possible risks, and benefits. This initiative aims to protect the privacy and autonomy of both subjects and end-users. The publication of ethical principles should address all aspects of the research process and the campaign.

Equally important, the authors note the close cooperation with independent journalists, the media revealing scientific methods and measures of credibility. The absolute observance of this rule and the communication of information to the public will help maintain a high level of awareness in society, which will have a positive and trusting effect on the end consumer and contribute to the development of innovative technologies.

In their study, the authors refined the recommendations of Eaton and Illes (2007) and put forward the verdict that studies should be validity checked, emphasizing validity issues. The authors emphasize the importance of the FDA (in the U.S.) because without its influence, the truth of these data is almost impossible to track and verify. (Murphy, Illes, Reiner, 2008)

The Institute of Neuromarketing in the Republic of Croatia, engaged in scientific and consumer research, has provided its list of ethical rules. The fundamental ethical principles can be divided into three main groups, including several sub-paragraphs.

The author quotes the essential points of this code of ethics.

1. Neuromarketing researchers must adhere to the highest standards of research accepted in their countries and use generally accepted scientific principles.

2. Neuromarketing researchers should not act in ways that may adversely affect the reputation and integrity of the neuromarketing research profession.
3. The results of neuromarketing research should be provided to clients without exaggerating or distorting the results of neuromarketing research beyond what is accepted by science. (Martina, 2019, p.1)

2.10 Peculiarities of the Russian advertising market

Advertising exists to induce customers to a specific action - the purchase of goods or services, acting as a powerful beneficial tool for organizing distribution in economic reproduction, increasing the rate of sales, and stimulating production. Even a higher quality product against competitors needs to advertise because the buyer first acquires something "close." (Maslova, 2018)

Mostly, people are annoyed by advertising because it interrupts television shows and exciting programs. Still, it is quite successful because it causes confidence in the brand, remains in memory and provokes the purchase.

Russian advertising is characterized by frequent mentality references and discussion of social problems and often interacts with the viewer's emotions.

An exceptional feature of the advertising business is a "closed" market for new advertisers and a high "pass-through" advertising budget. On average, the number of "fundamental" television advertisers does not exceed 30. Thus, over the past three years, owners of media carriers raised prices for services aimed at integrated advertising campaigns.

The high level of pass-through budget is due to the lobbying of paid tenders by the Russian Association of Advertising Agencies. The cost of the tender increases, and non-big clients themselves fall away. (Kurkov, 2015)

Internet advertising has become the most developing segment of Russia's advertising business over the past ten years. Video advertising on the Internet is developing fastest, while radio and television advertising shows a negative trend.

Outdoor advertising is steadily maintaining its position thanks to Internet sales. The most widespread advertising objects in Russia are motor transport, outdoor ads often feature food or retail products, and T.V. ads for dietary supplements and pharmaceuticals are in the lead.

The share of Influencers (opinion leaders) has recently increased, and the demand for advertising services mediated by Influencers has also increased. There is an increasing spread of advertising through TikTok, Ambassador, and Influencers, which contributes to the development of the advertising market and resembles the Western market trends. (Ananyeva, 2020)

An updated forecast from GroupM indicates an increase in the overall capitalization of advertising budgets in the media segment. This growth of indicators means the rapid development of the advertising market in Russia, provoking the change in sales and expansion of the Russian market of goods and services, better recognition and distribution of brands, contributing to an increase in advertising volumes and the cost of own advertising space. (Picture 11)

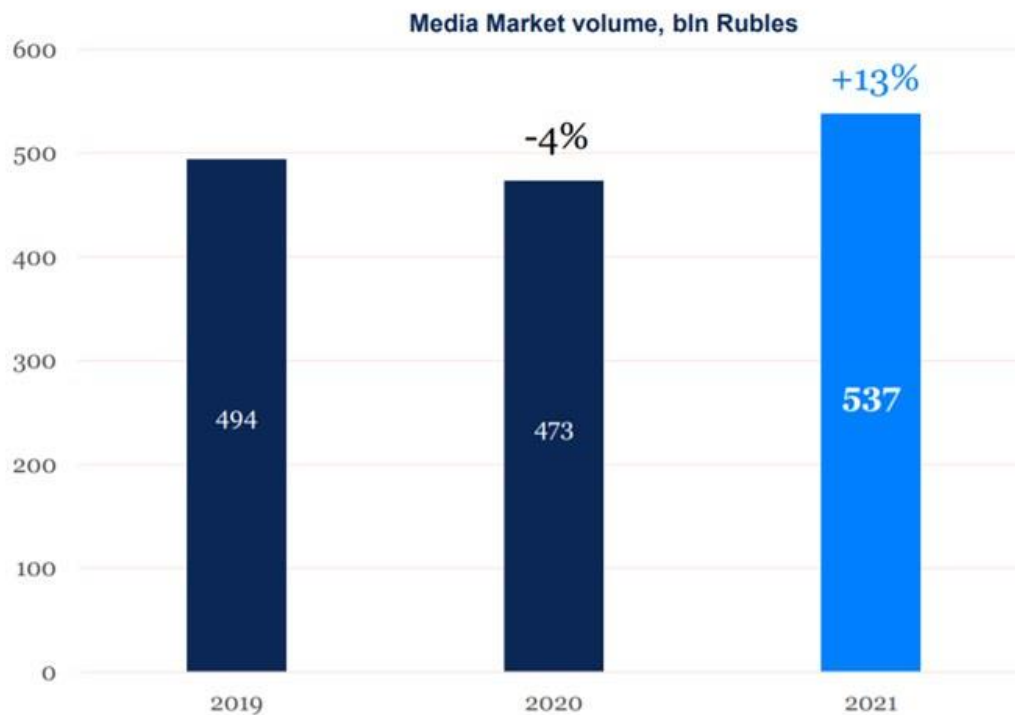


Figure 11. Media Market volume in billions of rubles (AdIndex, 2021)

According to Bulycheva (2008), Russian advertising aims to describe the product and subconsciously recreate the advertising image and adapt it to the realities of the buyer's life. In support of this, Bulycheva cites Drew: "Advertising has become part of the country's collective unconscious."

A clear example of the unconscious advertising influence in Russia is the advertising of alcoholic drinks, which shows the weight of the person drinking the beverage and mentally combines one of the national holidays and a lazy, neglected lifestyle in a video.

Leading companies in the advertising services market in Russia's top agencies ranking for 2022

(All Advertisement, n.d.):

1. Gazprom-Media
2. Ingate
3. iConText

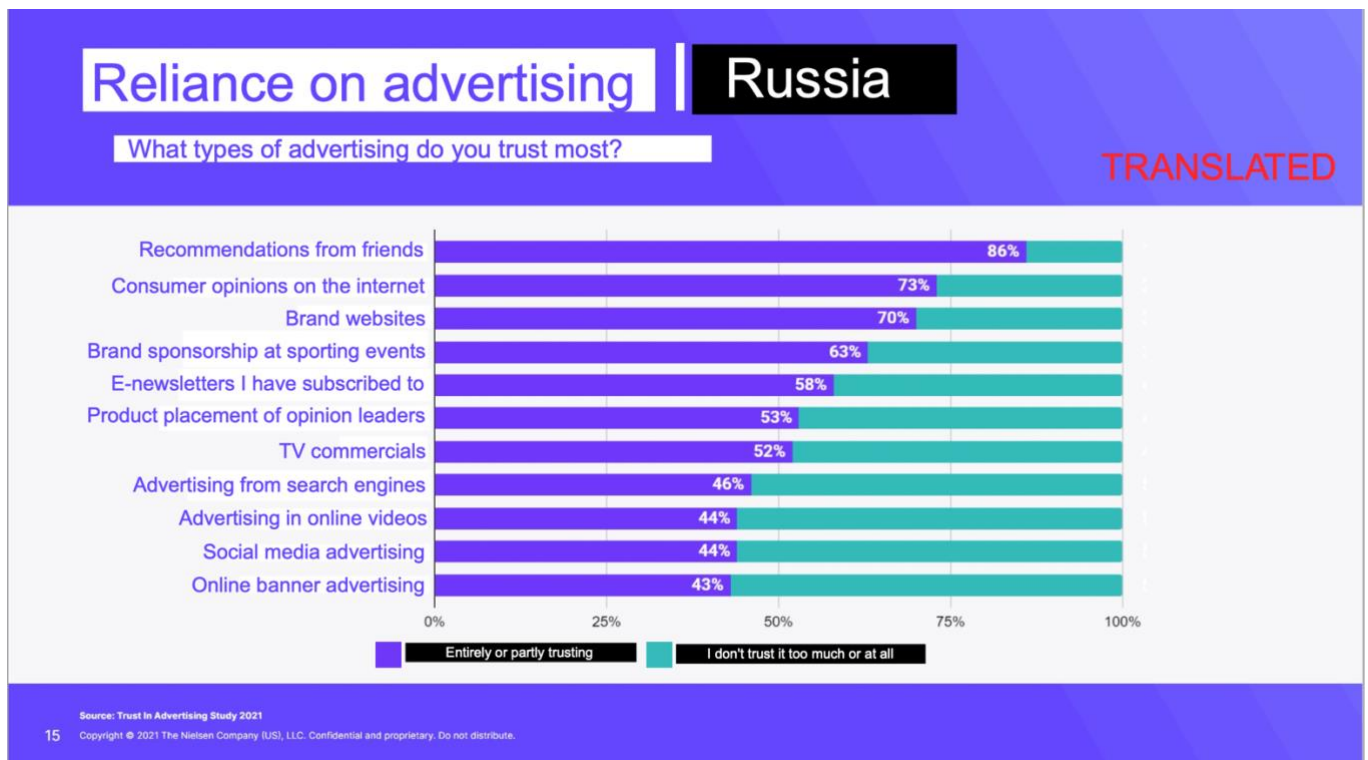


Figure 12. A translated version of Russian reliance on advertising by Nielsen LLC (Nielsen, 2021)

From Picture 12, the author, based on statistical data, points out that trust rates in advertising depend on the age of consumers. Thus, advertising on social networks has a more significant influence on Millennial and Zoomer generation buyers, while Generation X and Boomers prefer TV ads and electronic mailings. The older 65+ generation trusts mostly search ads.

An essential factor in building trust among the Russian consumer is tracking users on the Internet, 15 percent more than in Europe. The author focuses on content marketing advertising due to the increased prevalence of this advertising campaign. In terms of effectiveness, content marketing is

on a par with social media promotion (51%) and second only to contextual advertising (69%). (MyForce, 2022) (Picture 13)

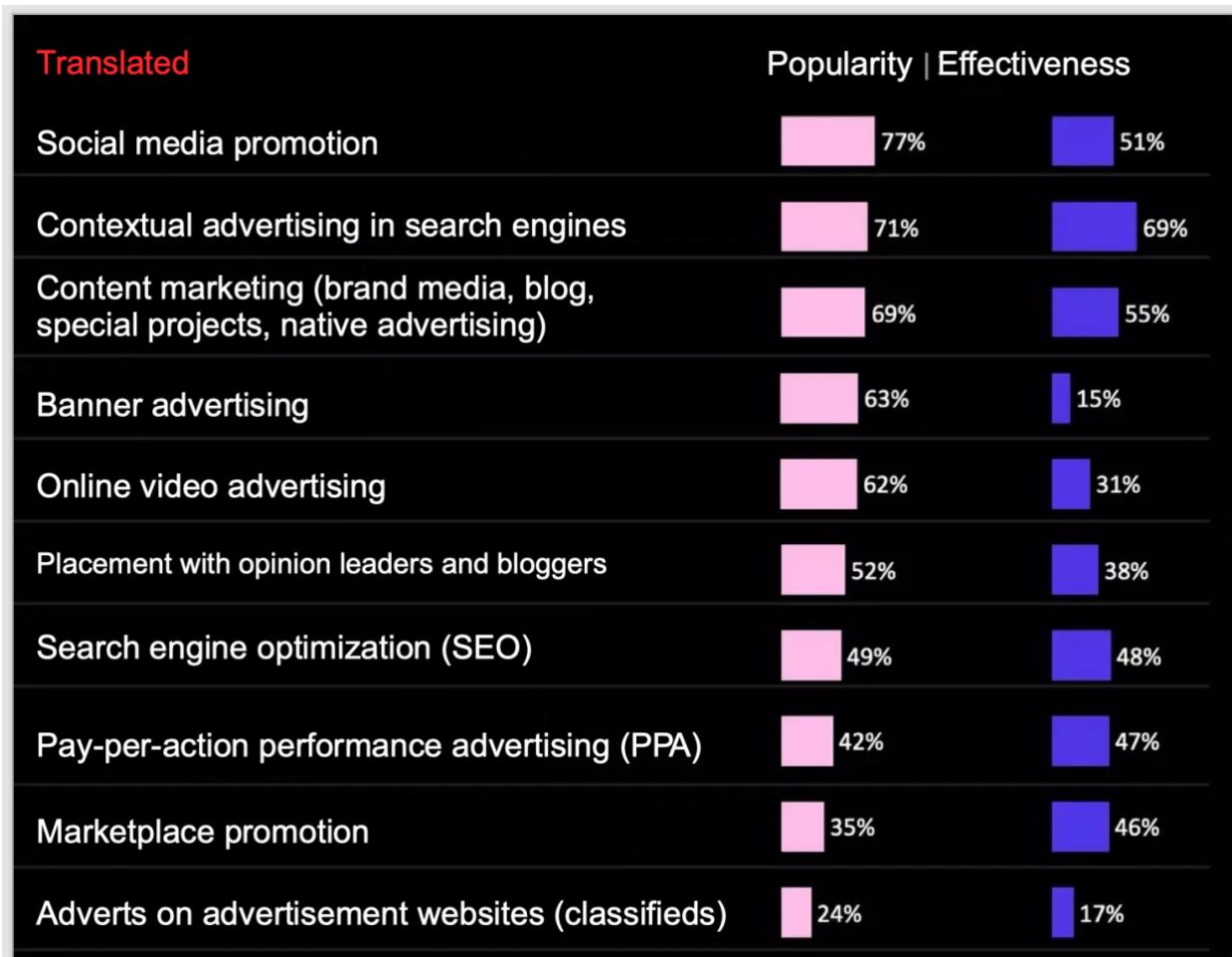


Figure 13. Key findings of a study on recent content marketing trends in the Russian Federation (translated) (VC.RU, 2022)

2.11 Summary of literature review

In this chapter, the author provides an overview of the literature sources required to answer the main research questions used in the data collection process.

Modern marketing today is used for very different purposes than a couple of decades ago. If before, the main task of marketers was to sell as many products as possible to the consumer, regardless of whether they needed the product or not.

Modern marketing in the 21st century is focused on the consumer - it evaluates the needs and desires of customers, offering the most demanded and satisfying products or services.

Neuromarketing is a relatively new area of marketing that originated in the 20th century but found its application in marketing only by the beginning of the 21st century. It is different from traditional marketing in that it does not require the collection and analysis of data on the subjective preferences of the buyer. Neuromarketing is an industry at the intersection of neurobiology, predictive psychology and marketing, focused on collecting, studying and processing unconscious customer reactions to build the most attractive branding system and provide the most demanded consumer products and services to maintain customer loyalty and attract new potential customers.

There are many data collection and analysis technologies, technical devices, and specialists working with these devices. Marketers work directly with neurophysiologists. Without these experts, the use of neuromarketing techniques is not yet feasible.

There are two main subgroups of studies:

- using fMRI, EEG, eye-tracking

- sensory neuromarketing

The first section reveals changes in physiological perception, reactions to stimuli, and respondents' emotional responses, which helps estimate the concentration of people's attention on pre-prepared objects. Technology using an fMRI device gives the most accurate results, analyzing precisely the areas and amount of brain activity.

Such studies help businesses in product and service design, pricing, branding, and increasing and retaining a high level of mood and loyalty. The most expensive type of research is the fMRI apparatus, as the price and resources required to maintain the machine are much higher than those of competitors. This price comes from the high amount of energy consumed, the novelty and high cost of the technology, and the complexity of the technology and its maintenance.

Sensory (sensory) marketing is often used in retail services; it is responsible for the promotion of goods and services using all the senses of the consumer to develop a quality marketing strategy for the company's products and repeated, repetitive purchase of the product by the customer.

Accordingly, each method targets the senses: visual, audiovisual, tactile, aroma, flavour, and taste. The price of such studies varies considerably but is often less than fMRI experiments.

Also, the author, after analyzing the data, concluded the extent to which the Russian market has adapted to the introduction of neuromarketing science and what are the positive consequences behind it.

Sources show that large and medium-sized businesses already use neuromarketing to develop advertising campaigns, improve service quality and strengthen their market position; they have adapted to market conditions and cultural code. Russian citizens are statistically positive about conducting, processing and using neuromarketing research from an ethical standpoint, but it is crucial to consider some cultural differences.

The data shows that neuromarketing is just emerging in Russia. It is already in use and will only be used more and more accurately on television, digital platforms, in the service and affect marketing in general, improving it and progressing.

3. Methodology and implementation

This part of the thesis focuses on determining the right research approach for the study and specifying the methods for collecting and processing the information required for the study.

3.1 Research approach

This part of the thesis focuses on determining the right research approach for the study and specifying the methods for collecting and processing the information required for the study.

This research points to the development of neuroscience, explore practical answers to the questions posed and explore possible ways of implementing and using neuromarketing in the economic environment of the Russian Federation.

Scientific work predicts the development of neuromarketing in new marketing based on the influence on the unconscious of human brain activity, examines the characteristics of the implementation and adaptation of new technologies and opens new horizons for small and medium-sized businesses in the Russian Federation. The primary research method analyzed the literature, scientific sources and opinions, and the psychological verbal and communicative

approach, which consists of a structured conversation-interview between the author and the subject on a pre-designed plan (list of questions) with sound recording and subsequent audio description. (Bouchrika,, 2021)

There are two different types of methods that can be applied in research. Research: qualitative and quantitative. Inherent characteristics of the quantitative approach are fragmentation, systematicity, objectivity, and a focus on numbers and statistics.



Figure 13, 14. Qualitative and quantitative methods (Stats, n.d.)

In other words, the quantitative research method is based on numbers, figures, and tables. It counts estimates, opinions, and other variables to prove or disprove hypotheses about a given phenomenon.

The quantitative method of information gathering implies the establishment of a quantitative ratio of the components of a given action, the result of which is a deductive inference, "the logical form of which guarantees the obtaining of a true conclusion, provided that the premises are true at the same time." (Markin, 2018, "Deductive Inference," p.1)

Quantitative research is more structured than qualitative research because it provides more opportunities to identify patterns in what is measured and how it is measured. It helps identify human and end-user behaviour, motivation, and emotion patterns. (Surbhi, 2018) While counting the number of actions that occurred over a particular period and in a specific place helps gather data for statistical analysis, this method answers the question "How many?" but not the question "Why?".

Qualitative research aims to study subjective images of a person, his social life, formation, existence and interaction in the environment of mental images (order of metaphors, meanings, cultural ideas, etc.), description of the studied phenomena, and processing of the obtained information. When using the qualitative method of collecting data, problems are examined in detail, and the result of the researcher's work is inductive inference, the importance of which lies in the fact that "from several premises, a general rule is derived, a movement from the particular to the general occurs, knowledge is expanded, and conclusions are probabilistic." (Jadro, 2019)

When comparing the two methods of information collection, the author concluded that it is the qualitative analysis that is appropriate for the study, as qualitative research makes extensive use of projective and stimulus techniques - ways of asking questions that help the author to uncover motives, beliefs, preferences, cultural values, satisfaction or dissatisfaction, etc. Such techniques help to reveal latent motives, uncertainties, and unconscious actions.

It is important to note that the research objectives require identifying the overall picture of the phenomenon and predicting motives for behaviour based on the data collected and expert opinion. In this study, the author uses the in-depth interview method to obtain an expert opinion, which confirms the appropriateness of the author's choice of a qualitative approach.

3.2 Data collection

In this section, the author describes the difference between the types of information obtained, specifies what type of information is used and identifies the features of the chosen information collection method.

There are two types of information: primary and secondary. Primary data - data obtained only by the researcher due to efforts and experiences without intermediaries. Primary data collection is expensive because it requires investment and human resources and is conducted through surveys, physical testing, questionnaires, face-to-face and telephone interviews, etc.

The term primary describes the essence of data explicitly obtained for the first time by the researcher. Primary data is received in raw form, while secondary information is obtained when statistical processing techniques are applied to primary data. (UMAS Boston, 2020)

At the same time, secondary data is secondhand information collected or obtained by anyone other than the researcher herself for a purpose that is only indirectly related to the purpose of the study.

The author looks for such information in journals, books, scholarly articles, Web portals, and instructional videos. Such data is easier to collect and less costly to the author. (Dudovskiy, 2016)

The author in his dissertation uses and works with two types of information; as the author uses in his study chose such methods of collecting data as a review of scientific and educational literature, scientific articles (secondary option) and a personal interview with a professional (primary option).

It is not unimportant to consider the types of interviews. The main types of interviews are structured, semi-structured, and unstructured interviews.

During a structured (standardized) interview, the researcher is assured that respondents' answers can be gathered, specified, and analyzed. This can only be achieved if the purpose and essence of the question are communicated to the respondent in a competent, accurate, and consistent manner. (Bryman, 2004) In such interviews, the interviewer asks planned and created questions in advance. The interviewer must prepare the questions in advance, develop a scale for evaluating responses, and record all replies as they come in. This is a quantitative research method (Alsaawi, 2014).

Unstructured interviews are an accessible format in which the order, characterization, and phrasing of questions change from interview to interview. In such interviews, the interviewer asks questions as they arise spontaneously in the dialogue. This is a qualitative research method in which questions are created during the interview. Often the interview is unplanned, so it is informal. (Segal, Coolidge, O'Riley, & Heinz, 2006)

Semi-structured interviews are interviews in which the research author asks basic, thematically pre-prepared questions and, depending on the respondent's responses, may supplement the interview with new, spontaneous questions. In this way, the interviewer has a specific space to ask the questions that have arisen in response to riveting, necessary for solving the research questions. The author uses a semi-structured method of interviewing in the study.

The advantages of the interview are the following: the process of interaction allows to check the correctness of understanding of all questions by the respondent, the interview allows to look at reality through the eyes and head of a particular person (professional), and the discussion will enable you to get more profound and more valuable information, increasing the level of seriousness of the respondent to the survey. (Więcek-Janka, n.d.)

3.3 Data analysis

As mentioned earlier, the author chose a qualitative research method. Qualitative analysis of information (statistics and opinions) is divided into five main ways: Content analysis, Narrative analysis, Discourse analysis, Framework analysis, and Grounded theory.

Based on the opinion of data, 2018, these five methods are:

1. Content analysis.

In this analysis, the study's author categorizes, typifies and tabulates the data to classify behaviour and verbal data.

2. Narrative analysis.

Narrative analysis is a form of qualitative research in which researchers record their conclusions based on the information received, scrutinize it, and then conduct an analysis.

The author uses this method because he considers it suitable for qualitative analysis of primary and secondary data. In this analysis, the researcher is initially focused on the topic of the study, considering the data collected through surveys, interviews, visual observations, etc. To conduct narrative analysis, the researcher must be deeply familiar with the research topic, understand the cultural and social contexts of the research subjects, and understand how the issues work. Solid knowledge of all parts of the research topic gives the researcher a clearer understanding of the respondents' narrative. This is especially useful in context-oriented research, as it helps to understand the answers to the research questions precisely.

Before the study begins, the author analyses a list of literature, from which they prepare questions and asks them of a marketing professional. From these information databases collected through interviews, the author selects several discourse topics helpful in answering the research questions and analyses them in detail.

Discourse analysis uses analytical methods of processing and systematizing various kinds of texts or opinions resulting from information exchange between two or more people, carried out in specific socio-political circumstances and cultural and historical conditions. The very notion of discourse is "a coherent text in conjunction with various life, socio-cultural, psychological, etc. factors."(Brown, 2020, p.121.)

3. Framework analysis. "This is a more advanced method that consists of several steps, such as familiarisation, determination of thematic structure, coding, graphing, mapping, and interpretation." (Hacket, Alison & Strickland, Karen, 2018)

In other words, a method of analyzing conversation and all types of written signs.

These methods are used for state-social type research to provide quality standards in qualitative reckoning. Most used in political and health studies.

3.4 Plan for research quality and ethics

Key features of the research quality plan were:

- Complete confidentiality of the respondent's information, except for his or her occupation and professional experience
- The interview participant was informed that an audio recording device was being recorded and a written audio transcript was being maintained
- The respondent was informed that any information pertaining to the respondent's case studies is not saved or published, and all written references will be removed after a detailed analysis
- Respondent was selected in advance by mutual permission and desire of both parties. The respondent was chosen for completeness of experience, professionalism, current position, and attitude toward the research topic. This was required for completeness and clarity of the answer, its credibility, and practicality
- The respondent was primarily introduced to the overall topic of the research paper
- Questions about nationality, religion, or political beliefs were not asked during the interview process

Interview questions were developed in advance, were neutral, and did not require personal answers. During the interview, the author asked general questions and then asked additional questions based on the respondent's responses.

The author predominantly conveyed the leadership of the respondent's conversation in order to elicit the most extended, rich, and accurate responses possible.

Secondary data was also used from a review of scholarly literature. The data were checked for accuracy, objectivity, and relevance relative to the end date of the study. Sources from researchers of different nationalities were used for greater validity, due to the influence of the main object of study to a particular foreign market and the inability to find more relevant and up-to-date articles on international platforms.

All resources, including illustrations, tables, articles, etc. were reflected in the References section.

4. Results

4.1 Process

In this chapter, the author outlines the findings, which are the direct product of a personal interview with an expert in the field of the research question under study, and reviews the secondary data obtained at the beginning of the study.

During the research process, the author followed a predetermined and established structure consisting of three critical parts of the interview.

The first part focused on preparing the respondent for the topic under discussion and introducing them to the case, explaining the aims of the research and the possible outcomes of the study. The author also raised the topic's relevance in our time to get the respondent's opinions, learn their fundamental position and lead to the key issues.

The second part discussed the scenarios of adapting the research method to modern business, the resources required and the relationship between the cost of the equipment necessary for adaptation and the quality of the final results. The second part of the interview also contained a discussion of already existing examples of implementation of the investigated technology and illustrative pros and cons factors.

The last part contained questions related to the business area and how the integration of the technology affects the performance of advertising campaigns in the jurisdiction of a particular market field (country).

The author has validated and outlined the critical interview questions in the appendix of this study and chose a semi-structured interview as the research method of information collection and analysis; the author collected and researched all possible information about the interview topic and the interviewee, studied the terminology, and prepared additional questions. The author worked through the language and studied the respondent's characteristics and field of work, experience, psychological attributes, expected structure of the answers, introduction, list of questions, and difficulty in understanding the respondents' questions. The author worked through the general themes of each conversation topic.

The author conducted the interviews to understand the key features: the method should be brief and illustrated with examples. The list should include the main interview questions, the criteria for selecting interviewees, the transcription of the data obtained when it was decided to stop collecting data, the analysis of this data, and the primary method used to analyze and form the results and subsequent conclusions based on the data obtained.

An ex Head of digital media and marketing manager in Yandex, and a leading specialist in neuroscience at NeuroTrend, was selected and asked with great respect for the respondent's position. The researcher found the respondent's expertise and theoretical knowledge as relevant and vital as possible to the research questions.

To consistently process the information received, the author highlighted the main and statistically most discussed points of the conversation, key quotes, and directions of the conversation. For better understanding and within the laws of the methodological process, the author recorded reflected as textual information, coded, grouped, and organized the key topics raised during the interview in the form of entering specific words/phrases in a particular context into a table. The author uses the method of **narrative** data analysis.

<i>Keyword</i>	<i>Context</i>	<i>Code</i>
----------------	----------------	-------------

Data	Big Data	D.1
Data	Data privacy, storage and regulatory laws of the Russian Federation	D.2
Data	Purchase and sale of data by research companies	D.3
Data	Ethical procedures for conducting research	D.4
Resources	Infrastructure	R.1
Resources	Technology platform	R.2
Resources	Intangible assets	R.3
Resources	Marketing investments	R.4
Technology	Accuracy of the methodology	T.1
Technology	Variability of technical devices	T.2
Technology	Medical, objective approach	T.3
Technology	Potential for subjectivity of the results	T.4
Technology	Dependence of emotion and neural activity on the final action	T.5
Innovative marketing	Neuromarketing as a new rational marketing direction	I.1
Innovative marketing	Emotion reading technology	I.2
Innovative marketing	Modern advertising should be meaningful	I.3
Innovative marketing	Potential research to export data from russia abroad	I.4
Innovative marketing	Adaptation of neuromarketing in the unique cultural code and advertising market in Russian Federation	I.5

Table 1. Collected data

To answer the questions, the author works with the data, analyzing it, distributing it according to the leading positions, keywords, indirect and direct data, decoding it and conducting the final coding, getting the answer to the research questions.

During the interview, the respondent demonstrated and communicated his point of view on how neuromarketing works and how it affects the marketplace. This chapter is an excerpt from the author's work, which he has distributed, structured, and reflected on.

4.2 Technology

Nowadays, consumer culture is the basis of the modern economic system in which sellers of goods and services must consider many factors, the most important of which is to make consumers want to buy.

It is well-known that marketers use different tricks and techniques to draw consumers' attention to a particular product. This is influenced by the path from beginning to end in the store, the arrangement of products on the shelves, the music playing, etc. Having accumulated sufficient scientific and technical information and acquired experience, I formed a separate discipline that combines the best neurobiology and marketing techniques. "Neuromarketing, first and foremost, is a separate industry of advertising and marketing in general, empirically studying how people respond to various kinds of advertising with the technical power and labour of neurophysiologists with marketers."

There are various neuromarketing tools based on the segmentation of respondents according to specific criteria. The devices are often divided into two types: technical and psychological.

Specialized tools: brain scans of the subject using fMRI, EEG, and eye-tracking are fundamental.

Psychological: segmentation, behavioural psychology, behavioural traits. Respondent confirmed the validity of the literature regarding descriptions of neural signal processing devices and techniques.

Using fMRI is the most accurate type of study because the brain's underlying structure is examined, and it is possible to discern activity in different parts of the brain. Then there is the EEG, which displays only activity without details about the location of the signal, and eye-tracking, which allows you to observe the subject's eye movements.

The respondent pointed out the importance of understanding the limitations of neuromarketing, highlighting the lack of a standardized research system, the small number of respondents in focus groups, and the fact that brain scans are conducted in a generated environment, which "is not human behaviour in the real world."

4.3 Innovative marketing

From the respondent's experience, neuromarketing already plays a significant role in the business environment. It has a positive impact on business and the advertising business due to the innovation and effectiveness of the methods. "Neuromarketing research is not only interesting but also long-term utilitarian." (Personal communication, March 25, 2022)

Businesses use and adapt neuromarketing techniques to:

- testing various types of communications,
- collecting information about the behaviour of focus groups under various factors and recoding that information to sell later or share information.
- study consumer reactions to external stimuli used in branding and audio marketing, aroma marketing and digital product visualization (e.g., restaurants, banking, etc.).

The respondent provided practical examples from his professional experience of how neuromarketing helps businesses develop more marketable products, design detailed action sheets and prerequisites for consumer choice, and increase response to advertising campaigns and marketing strategies. "The businessman started the business to have a high income" (personal communication, March 25, 2022). The respondent emphasized the advantageous feature of using neuroscience in business to increase conversions in the sales funnel at each stage chosen by the company.

4.4 Neuromarketing in the Russian market

As the first respondent begins to articulate his response to this topic, the respondent particularly emphasizes the utility of technology, citing examples from other areas of life: the military, politics, and even religion. By comparing the progress of neuromarketing in those areas of city life with the

methods currently being developed in marketing - the author concludes that neuro-technology has long been active in some Russian social institutions. Still, it is a new relative to developments in other areas of marketing. This is due to ethical factors, soft power principles and the state's right to secrecy.

The interviewee gave examples of neuromarketing techniques in different business spheres: an advertising campaign for a well-known Russian bank and a large importing company of clothes-care chemicals in 2016. In the examples illustrated by the expert, the interviewee pointed out the unreadiness of the Russian business sector to instantly adapt neuromarketing due to the backwardness of the server, technology and resource allocation departments of the business in the recent past.

During the talk, the author brought up the topic of the current adaptation of neuromarketing technology in the Russian Federation and the potential positive outcomes of using the technology. The respondent proved by way of experienced examples that Russian neuromarketing, despite its scarcity five years ago, nowadays has a large user base, extensive citizen databases, carries out continuous research for large Russian companies and develops its innovative approaches based on cultural code, neuroscience experience in other governmental and industrial sectors, the experience of Western colleagues and a set of utilized rules.

According to the respondent, neuromarketing in Russia has a place, is successfully developing, and will continue to do so in the next decade. The skills and experience of Russian neuroscientists and marketers make it possible to successfully collect and analyze data, derive new, unique laws of science, positively influence sales growth and brand awareness, increase customer loyalty and attract new clients. "I don't see any problems that could harm the development of neuromarketing in Russia; on the contrary, I believe that neuromarketing in Russia is just emerging, putting its fast-growing roots into all areas of human life. This science has a vast future, especially for business in Russia". (Personal communication, March 25, 2022)

4.5 The limiting and ethical aspects

The author would like to mention in a separate topic the ethical issue of neuromarketing discussed with the respondent during the interview,

The interviewee placed particular emphasis on the data of the research participants, the ethics of the research conducted, and compliance with all aspects of the code of ethics. The respondent gave the example of selling user data, citing Sony, which "sells its consoles almost at a loss to itself. Sony gets a huge amount of user data, making most of the revenue from selling user data to client companies, advertising agencies, research groups, etc." The respondent also questioned the ethics of legal processes, "especially those conducted in Russia", bringing up the topic of collecting information about people without warning them or not following the conditions and procedures of the experiment. At the same time, emphasizing the paramount self-interest of business goals, the respondent argues for the continued use of neuromarketing techniques both in Russia and globally. (Personal communication, March 25, 2022)

5. Discussion and conclusion

In this chapter, the author indicates the final results of the research questions, discusses them, and summarizes the results. Also, this chapter indicates the implementation, evaluation of the quality of the results, and the value of the study in the scientific field.

5.1 Answers to the research questions

The author conducted the research, the primary purpose of which was to "anticipate," forecasting the development of neuromarketing technologies in the marketing industry in the Russian market in the next five years. The researcher developed three research questions to understand these technologies, predict their future, and consider their potential in this area.

The first research question is: *How is neuromarketing being applied now, and what are the main benefits for the company?*

Because of the data analysis, it is fair to say that neuromarketing is a separate science, a marketing industry for attracting customers, analyzing their behaviour and shaping their views with technical and scientific advances. If we consider the concept of neuromarketing research - it is a study that captures and analyses the active responses of the human brain to incoming stimuli. From a

marketing perspective, it is an ongoing "experiment" to identify behavioural traits in humans as buyers.

The most crucial advantage of neuromarketing is the ability to accurately identify the actual preferences of the consumer, which of the advertised products people like, and which influences the decision to buy soon. With the help of neuromarketing, businesses improve the methods and approaches of companies in providing and promoting their services, creating advanced and exciting, and most importantly, working advertising campaigns and influencing the purchasing behaviour of their customers.

The limitations of neuromarketing for business are the uncertainty of consumer reactions, the ethical dilemma provoked by the purposes and conditions of experiments, data leaks, and the opacity of data transfer between different research institutions. The author adds to the limitations the subjectivity of some studies, the lack of virtualization of the experimental environment due to limited virtualization capabilities, and the cost of the experiment.

The second research question is: *What methods are needed to adapt neuromarketing?*

Having analyzed the data obtained through collecting information from the scientific literature and interviews, the author came to an objective answer to the question posed.

There are many resources required to develop and adapt neuromarketing technologies from scratch. It is essential to consider such factors as high costs "per product," very high prices for equipment, direct labour and general production costs (electricity, water, repair services, etc.) The author draws attention to the legal side of the issue, which requires businesses to own a lot of legal permits and certificates for ownership of such technologies, their use for research processes, collection and analysis of data from respondents of such research, transparency and public accessibility of the study.

To clarify the average price of adapting neuromarketing technology, the author analyzed the average price of renting a research facility, hiring and maintaining employee salaries, purchasing and setting up equipment, keeping the machine running at the proper level, and paying for utilities so on. During the analysis, the author concluded that in the Russian Federation, the cost of adopting such technology would cost about 400 million rubles, which characterizes such business as high-cost, but in the future, has a good indicator of payback due to the innovation of technology, low competition in the market and "usefulness," the demand for the business.

The third research question is: *What opportunities can neuromarketing provide in the Russian market within five years?*

Based on the research, the author has identified key features of neuromarketing research development by companies operating in the Russian Federation over the next five years. The writer has identified the complexity of the advertising market, high dependence on the cultural code, the main neuromarketing methods used in the Russian private, public and state sectors, and the ethical side of consumer perception. The author underlines the importance of the moral side, as neuromarketing research is still not very transparent, and not all laboratories comply with the recommended research guidelines. A common phenomenon is the leakage of private information of human respondents; their medical and personal data may be compromised and sold to third parties. We can conclude from the study that Russian citizens are statistically positive about introducing innovative marketing technologies, and marketers and businesses quickly adapt to new trends and create even better products/services.

The potential for neuromarketing development in Russia in the next five years lies in the increasing culture of neuromarketing, the rapid growth of research, laboratories providing research services, and performing analysis independently with different research objectives and focus groups for subsequent sale of data to interested parties.

5.2 Practical implementation

This technology has a great impact on marketing and the perception of marketing products in general, improving the experience of interaction between the party providing the goods or services and the party consuming them. Neuromarketing tools increase customer loyalty by making consumer predictions and facilitating repeat purchases by the customer.

By deftly manipulating the sensory and subconscious departments of consumer psychology, this technology is a powerful and evolutionary tool in marketing to increase sales, which is beneficial for any business.

Such technologies also help test all types of communication, from advertising clips to packaging, to accurately segment audiences and targeting in greater detail.

The complexity and ambiguity of the technology lies in these factors:

1. The high cost of resources for analysis
2. Subjectivity and ambiguity of interpreting results of analysis by specialists and business
3. Lack of specially trained specialists
4. Limited amount of information that can be obtained from research that has already been done

Lack of centralized ethical and legal code, dissemination and transparency of results

Neuromarketing can be competently adapted in any country, taking into account the amount of financial investment, the availability of qualified professionals and the legal regulations of the local legislation. It is important to take into account the cultural code, consumer responsibility for collecting and sharing personal information, the peculiarities of consumer behavior in a particular area of business.

5.3 Assessment of research process & results quality

The dissertation was carried out using reliable scientific sources, taking into account cultural differences and the different markets of the countries. The work was carried out in a consistent manner, with all the steps of a carefully thought out, prepared research plan in advance, respecting all ethical norms and the privacy of the respondent and his or her information. These factors were observed in order to achieve high accuracy and informative content in the scientific work, the comfort of the respondent and the interviewer in order to obtain the maximum useful information and mutual interest in the conversation.

The information obtained in the course of the interview reflected the overall situation regarding the prevalence of neuromarketing technologies in Russia, the cost of adaptation, the difference between the adaptation of these technologies in the leading countries of the world and the ethical aspect of the issue.

Such information helped to confirm the hypothesis and make more accurate conclusions on key questions and predict the results.

The main difficulty was to gather information on these technologies due to the public non-publicity of these technologies, the cost of using these technologies, the lack of trained specialists

in the field and the possibility of subjectivity of the results, as well as possible ethical dilemmas and the impossibility of conducting potentially useful research.

The article could be improved by interviewing several focus groups, using anonymous questionnaires, and a deeper analysis of the literature on the existing realities of country markets. The application and consideration of the technology in the practical field can provide relatively large and detailed data. Also, a comparison of focus groups, knowingly different in terms of familiarity with the research (or interviews with extreme categories of consumers) can be of great value.

The potential usefulness of situation design methods in which respondents would give a more complete answer, including subjective and objective, is also worth noting, which would be useful to compare and analyze.

The interviews in this study can be supplemented by

5.4 Limitations of the research

This study was drawn up and thought through in a time without war, some time before the war, so the results of the study may be loosely applicable to market realities, and market indicators and conditions may be very different from pre-war indicators.

Despite careful attention to the reliability of sources and their relevance, the author's predictions may be inaccurate, due to the difficulty in finding the required information from open sources, the inability to predict market trends due to the many changes in market realities, and the inability to test the technology. It is also important to note the author's lack of competence in such sciences as neurophysiology and psychology.

5.5 Recommendations for future research

Modern marketing focuses on the consumer, their needs and wants. This study examines the possible future potential for neuromarketing research in the Russian business sector. The study has confirmed the use of these technologies in many countries around the world, in different areas of life, and the potential for use everywhere in the future, as it is a fairly accurate option for measuring the unconscious intentions and desires of the consumer. This study focused on the marketing part of the subject matter, but beyond that, it is important to note that neuromarketing

has long been used in areas that are not accessible to people who do not have special access to such information. This technology has great scope for study, is only in its infancy in the Russian business segment, but it has already had significant and practical results, is used by large companies and intends to continue to evolve. Future research could focus on improving and reducing the cost of research, identifying options for increasing objectivity in relation to research results, developing a unified classification and capturing results.

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Appendices

- **Appendix 1. Interview questions**

- What do you think about neuromarketing in general? Please, describe.
- What neuromarketing techniques do you know and use in practice?
- What are some examples of leading companies using neuromarketing?
- What are the pricing rates of neuromarketing research? Which ones are the most costly, which ones are more often used in terms of value for money?
- What resources are required to launch a neuromarketing research company? (average equivalent)
- Do you think there will be ethical constraints leading to the suspension or complete winding down of the field?
- Do such technologies exist on the Russian market?
- Which Russian market companies have already adapted this technology?
- In your opinion, will the data of Russian users be sold to black markets?
- What are the potential options for the development of neuromarketing technologies in the Russian Federation, including ethical restrictions and an ambiguous cultural code?