

# THE MODERN FORMS OF MARKETING RESEARCH IN SELECTED AGRI-FOOD BUSINESSES

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## ABSTRACT

The paper explores the place and position of neuromarketing in marketing management while it points out its role in understanding consumer behavior. At first, we summarize the main findings of the use of neuroscience in marketing over the past two decades and provide several definitions of neuromarketing from various authors dealing with this issue. We clarify the main difficulties and obstacles of full use of neuroscience in marketing, mainly in form of possible ethical dilemmas, by comparing the traditional and modern approach to consumer persuasion models both with and without using neuromarketing methods. Finally, the paper offers discussion about the future application of neuroscience in marketing theory and practice when planning, organizing and implementing business strategies. The outcomes can be used to design optimal POP materials, to plan the layout of products on the shelves or with communication tools used to sell products.

**KEY WORDS:** Brain activity, Neuroscience, Neuromarketing, Wireless EEG device, Mobile eyetracking,

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## INTRODUCTION

Contemporary form of economy is influenced by globalization, deregulation, privatization and new technologies. Markets on those companies operate are constantly changing. This is the main reason why the marketers are still compelled to find new tactics and techniques how to influence the behaviour of their customers and also how to stimulate the demand for their products. In process of creating and finding of new techniques of marketing research, the questions of creativity and innovation connected with all new trends in marketing are becoming more and more important. The next important step is the evaluation of their effectiveness and economic efficiency.

**Kretter, A.** (2010) says that one of the main aims of contemporary marketing is to understand and influence the process of evaluation, and choice of products that are made by customers. As we mentioned above, the marketers are still trying to find new tactics and techniques how to direct and influence the decisions of their customers unless they will be able to realize this influence. For example product placement in PC-games, films and in TV programmes, or the newest possibility of aimed information spreading by word-of-mouth communication or guerilla marketing. It is a well-known fact, that there are a lot of possibilities how to influence the decisions and behaviour of customers unless they could be able to realize it and with next improvement of science, the number of these possibilities will increase.

The first idea of using the measuring of brain activity was emerged in studying of the impact of advertising on consumer behaviour. Despite significant limitations in interpreting of the data obtained from electroencephalograms, neuroscience and cognitive psychology made huge shift in exploring of process of acquiring, storing, processing and use of information by the human brain. Today, there are many specific neuroscience methods, and non-invasive neuroimaging technologies, that are common practice in studying of consumer behaviour according to **Lee, N.** (2007)

An important attribute of investigation in neuromarketing in connection with neuroscience is

that 68% of unplanned purchases are influenced by nerve impulses that arise during the time, when the consumer is in purchase-sale units.

## **MATERIAL AND METHODS**

The main aim of this paper is to highlight the importance of neuro-marketing research results in business management. The next aim of this paper is to evaluate the different methods used in neuromarketing and their subsequent application in planning, organizing and implementing business strategies. During the process of writing we used:

- all available written documents such as books, professional literary works of domestic and foreign authors and printed documents (magazines), etc.
- information from websites,
- articles available on the internet
- publications available in libraries

For better understanding of the issue connected with using the results of neuromarketing, in business strategies development, in business management, and attempting to detect the first consumer preferences, we decided to use wireless EEG device with software solution designed specifically for this device.

## **RESULTS AND DISCUSSION**

### **1. Neuroscience, neuromarketing and the decision making process during purchases**

Neuromarketing is a new field of marketing that seeks to examine the impact of marketing stimuli for the reactions of customers and consumers at the same time. There are suggestions like cognitive, affective, and sensorimotor stimuli. Neuromarketing deals with studying and examination of brain functions in process of decision making connected with purchase of goods. It also tries to figure out how human brain responds to specific marketing stimuli invoked by companies and advertising agencies. It is a tool by which scientists try to identify the real and true preferences, i.e. to find "trigger" of purchase. From this point of view, effecting of consumer is subliminal.

The human brain is fascinating. It is formed from 1.300 - 1.400 g of substance which mainly consists of fat and water. The main part that makes the human brain different from other brains of all living creatures on The Earth is the forehead flap. A forehead flap is the gooleand also the conductor of the brain at the same time. This part of brain makes civilised people from us. It allows us to cope with all sorts of situations (emotional, rational routine, innovative). This part of brain also permits the survival of human beings as species.

The human brain is also fascinating by the fact, that it contains more than 100 billion neurons that are able to make connections and via these connections the brain can encode everything we know and what we are able to do, to say, etc. In somuch that these possibilities and abilities of the brain overreach the needs of our body, the odds are that the brain will try to encode the next stimuli that usually come from exterior, too.

The next very interesting fact is that our brain works as dual-core processor. The right hemisphere specializes in new situations (that is the reason why it is often called "creative hemisphere"). The left hemisphere is specialized in routine activities, including speech. Experiments with computer technology have shown that such a distribution significantly increases the "compute" processor capacity and thus the brain, too. As we mentioned before the brain controls our thinking, decision-making, behaviour and survival and it also have all information gained in process of evolution encoded according to **O mozgu** (2012)

Suggestions detected by the right brain space are processed by both hemispheres but, stimuli from left brain space are processed only by right hemisphere. That means suggestions

detected by right side of the brain are captured and processed more effectively. The right hemisphere deals with new initiatives, the left uses the learned routines. Falling into routines causes a loss of the ability to solve things creatively.

The human brain is able to save up to seven times more energy than the processing of news by the using of routines. People are not lazy, but their brains are energy efficient. According to newest research, the emotions are three times faster than rational thought. All decisions are emotional and then we justify them rationally.

The main parts of human brain that have influence on behaviour oh human beings:

- **Emotional brain ( inside of brain)**  
*-the centre of emotional responses such as fear, anxiety, aggression, excitement, sexuality, social behavior, memory, etc.*
- **Frontal lobe**  
*-coordinates, evaluates, cognition, planning, formulating goals, seat memory, mediates conscious thought, decision making.*
- **Temporal lobe**  
*-recognizes and interprets sounds, recognizes faces and scenes.*
- **Parietal lobe**  
*-it processes sensorical perceptions, pain, warmth, body posture and the perception of space.*
- **Occipital lobe**  
*-recognizes colors, interprets visual perceptions.*
- **Cerebelum**  
*-it controls balance, coordinated movement and exercise routines.*
- **Broca's area**  
*-controls the movements of lips, tongue, vocal cords and controls speech.*

Neuromarketing can be implemented in marketing practice in many different ways, whether we are talking about planning,organizing,implementation of business strategy, creating of advertising campaigns or about the whole complex of their impact into decision-making process of the consumer.Another important advantage of neuromarketing is that: it brings compelling sales presentations (POP resources), shortens the sales cycle, increases the percentage of successful trade, creates effective marketing and sales strategies, increases sales and profits of enterprises and radically improves the ability to influence others.

Based on empirical research it can be concluded that neuromarketing techniques are used in creating innovations and modifications of products, the choice of pricing strategy, brand strategy, communication mix tools, but also at the level of management of the company, such as building a corporate culture and employee loyalty.In the next section of the paper we will predominantly deal with the examination of neuromarketing in relation to cognition and influencing the consumer behaviour, because the detection of real and true consumer behaviour is the key to future planning, organizing and implementing business strategies leading to the achievement of the objectives set by business subjects.

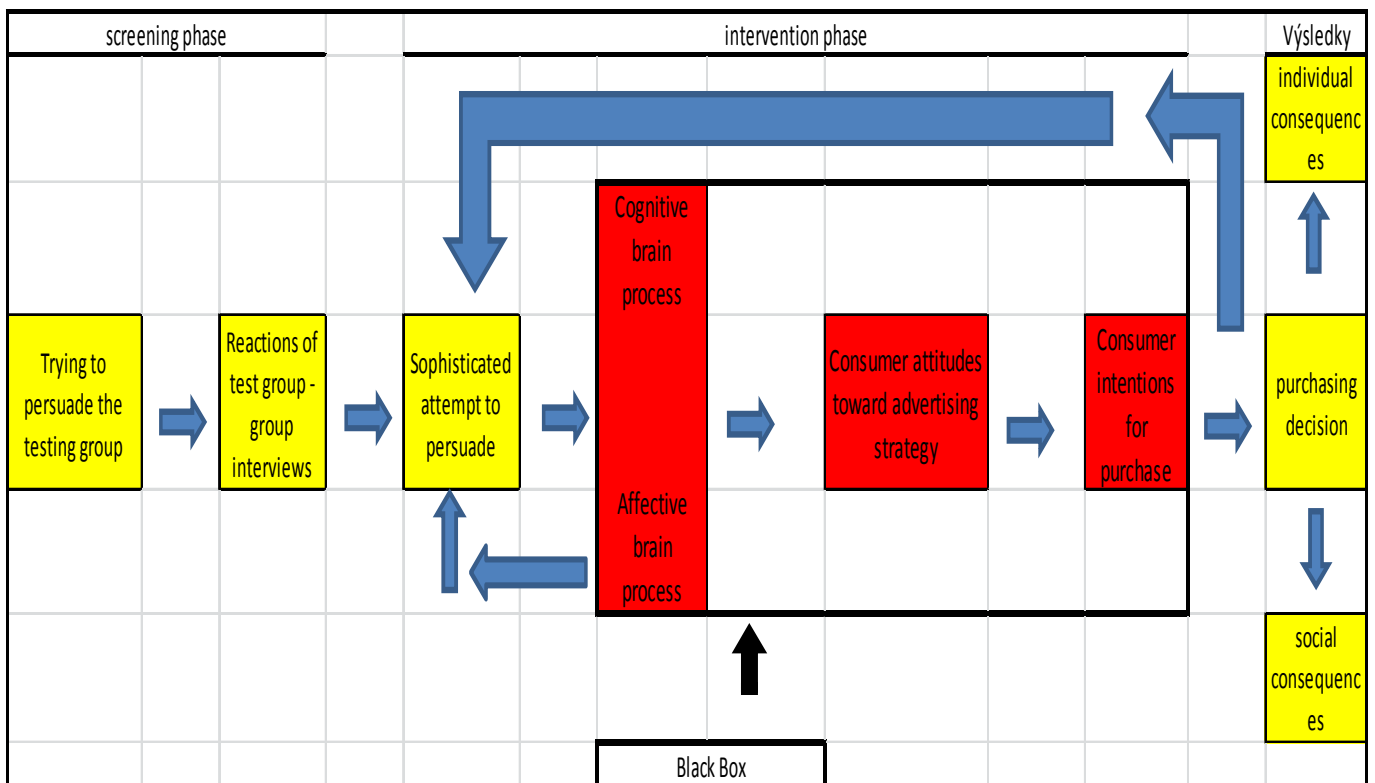
**Wilson, R.M.** (2008) says that a comprehensive shopping decision-making model which indicates what changes in analyzing and influencing consumer behavior provides the application of neuromarketing methods. This is not a classic model of purchasing behavior with traditional black box into which the stimuli enter and responses emerge. On the contrary, it is replaced by an intervention phase in which individual incentives and consumer decision-making processes are analyzed. The author distinguishes traditional model without the use of neuroscience and neuromarketing model where the monitoring of brain activity in individual consumer purchasing process is used.

The process of purchasing behavior in both case consists of three phases:

1. In the first phase is the screening sample of potential consumers exposed to marketing stimuli, while in the second model the technology EEG is used for brain activity observation of the sample. In the traditional model, marketers use classical depth group interviews. Outputs of this phase in both cases are the information that allow marketers the adjustment, respectively better targeting of activities to motivate consumers for purchase.
2. The intervention phase occurs at a time when the consumer is affected by communication activity, his cognitive and affective processes are activated and attitudes and intentions to purchase are formed. While in the traditional model this phase is presented by a black box where the consciousness of consumer are inaccessible to the researcher, the second model by utilizing neuroscience provides information about responses to sensorial stimuli, as well as memories obtained by the action of incentives in the past.

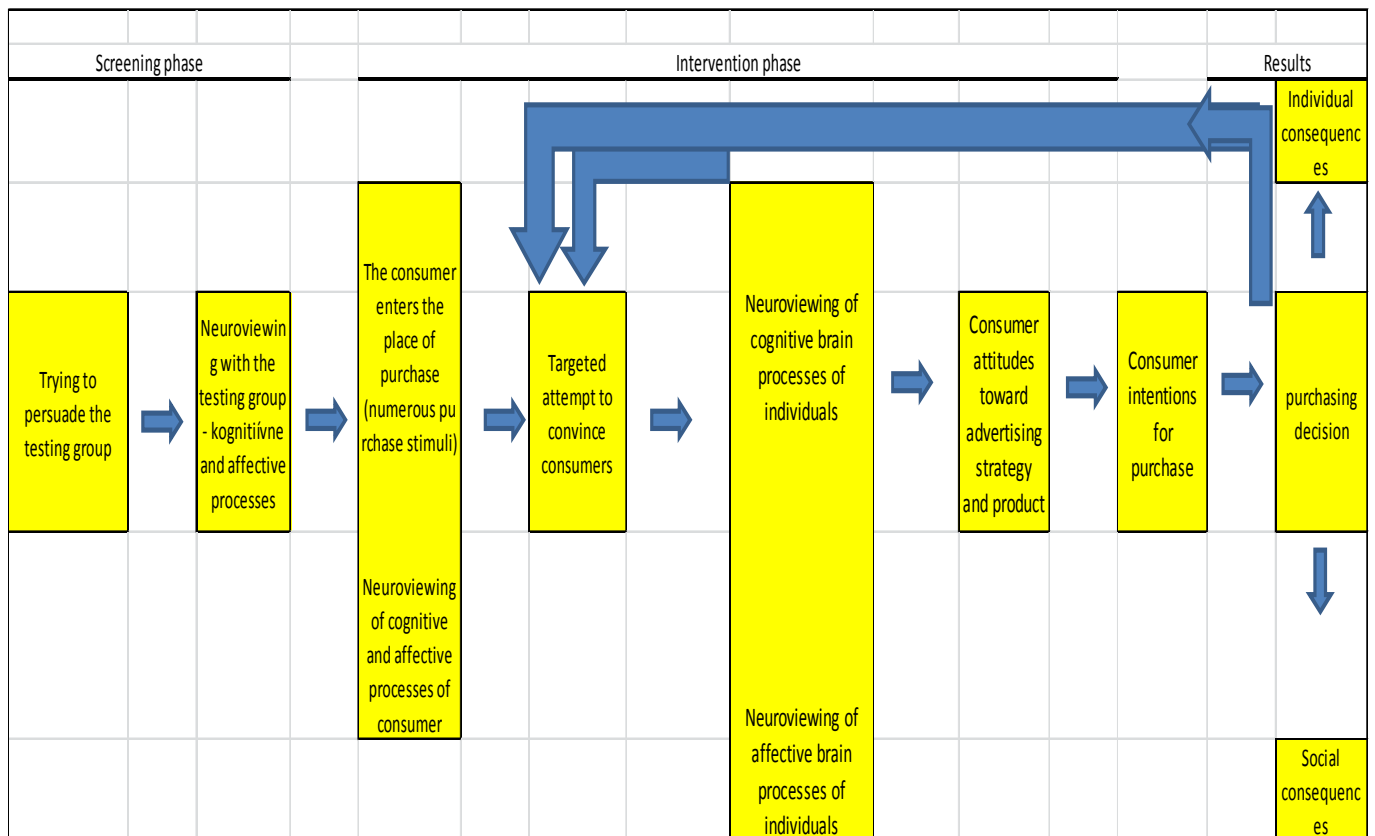
The last phase corresponds to the decision connected with purchase or non-purchase of product and also includes the consequences of those decisions- positive and negative, in connection with the company and also with the individuals.

Figure1 Modeloftraditionalshoppingbehavior



Source: Wilson R.M. a kol. 2008. Neuromarketing and consumer Free Will. In Journal of Consumer Affairs.s.395.

Figure 2 Model of shopping behavior using neuromarketing



Source: Wilson R.M. a kol. 2008. Neuromarketing and consumer Free Will. In. Journal of Consumer Affairs. s. 395.

## 2. The modern neuromarketing methods and their application in consumer research

Eye tracking method:

It is a useful method used for analyzing of consumer behavior and thinking as well as the design of POP resources and retail merchandising. This method measures either where the respondent looks (point of view), or the eye movement relative to the head and dilatation of pupils. There are many different techniques suitable for measuring of eye movements by using of video recording while the consumer is looking for suggestions. Modern devices are able to automatically monitor the position of the head in three-dimensional space relative to the camera. The Eye tracking method is also able to reflect and highlight a different types of consumer behavior by monitoring the oscillation of eye movements. There are two essential categories of eye movement distinguished by scientists. The first is fixation and the second one is called oscillation.

**Zurawicky, L.** (2010) emphasizes that, when the eye movement stops at some point, we are talking about fixation, oscillation is a pass to the next position. The resulting during the reading of some text series of fixations and oscillations are called the scanning path (scan path). Fixation time varies from 200ms during the reading of some text to over 350ms while the eye looks at some scene. The speed of oscillations in process of new object viewing takes around 200ms. Scan path is used in the analysis of visual perception, cognitive intentions and interest in engaging conspicuity. The limitation of this method is the same like in all biometric approaches.

In contrary to previous method, in measuring of brain activity, different parts of the human brain show electrical or magnetic changes that can tell us what feelings going through the mind, what associations are perceived by respondents etc. This theory is based on our knowledge of brain areas. Overcoming of deficiencies in biometric methods can be achieved by using of logical interference and personal interviews with participants.

EEG method:

EEG method is based on measurement of subdural extracellular electrical current which is connected with the activity of many neurons. However, not all cells contribute to the EEG. EEG records the activity from the surface of cortical neurons that are close to the electrode. Such deep structures as: hypothalamus, thalamus and brain stem not contribute to surface EEG activity. Due to the fact the electrical activity comes from neurons located in the underlying part of the brain tissue, it is recorded on the surface via the electrode, and the intensity depends on the orientation and the distance of electrode from the power supply. EEG signal is inevitably distorted by filtration and absorption caused by a layer of bone tissue, that behave as resistor and capacitor in an electrical circuit. This is the reason why the EEG amplitude is potentially (in microvolts) much smaller the source voltage in individual neurons (in millivolts) according to **Sharma, J.K(2010)**

The EEG method shows a typical patterns of activity that can be correlated at different stages of sleep and vigilance. EEG is characterized by a frequency, which is illustrated by amplitude, which shows the electrical activity of the brain. Normal human EEG has activities in the range of 1-30Hz with an amplitude of between 20 - 100uV. Compared frequencies were divided into several groups:

- Alfa (8-13Hz)
- Beta (13-30Hz)
- Delta (0.5-4Hz)
- Theta (4-7Hz)

Alpha waves are waves of moderate amplitude typical for relaxed vigilance and are mostly reflected in occipital part of the brain. The lower amplitude beta electrical activity is mostly screened in frontal area of brain and also across other parts of intense intellectual activity. Theta and Delta waves are normal for sleepiness and soon sleep, but when they occur during sleep, they represent cerebral dysfunction.

### **3. Neuromarketing as a tool of further research**

Like all newly established fields, the neuromarketing still has plenty of scope for further improvement and research. Despite the valuable results it brings, neuromarketing is still not the method which is implemented in practice enough. One of the reasons of this we could find in ethical aspects of neuromarketing. The next negative effect is a huge financial burden. The use of a new approach to the examination of consumer behavior and the application of neuroscience technologies enables marketers effectively reach conscious of their consumers and affect it in the desired direction, on the other hand, marketers have to deal with barriers related to ethical issues of interfering with the privacy of the individuals, according to **Hernandez, CH. (2010)**

The first ethical dilemma is whether consumers are able to aware ubiquitous monitoring of their behavior and targeted exposure to marketing stimuli. A situation where an individual is not able to control his free will due to strong manipulation targetted on the decision-making centers in the brain is one of the possible scenarios, ignoring the ethical aspects of neuromarketing. Other ethical dilemmas are related to the degree of interference with the

privacy of an individual, or the risk of misuse of the information. Here the essential question should be answered, who is the owner or research results, what are the possibilities of disposing with them. These restrictions constitute an obstacle to the formation of a new scientific discipline, at the intersection of medicine and marketing. **Horská, E.** (2009) says that on the other hand, consumers should have basic knowledge about business practices to protect against them.

## CONCLUSION

The article offers conclusions drawn from available literature sources and secondary research, especially in terms of the possible definitions of neuromarketing and its application research, planning, organizing, creating of business strategies of purchasing behaviour of consumers.

The fact is, that well-known or less-known companies that operate in developed countries use the results of neuromarketing very often. These results are usually applied in their management and in process of building a strong position of their brands. This is a strong argument for creating of the sufficient space for exploring this relatively new combination of disciplines. Competitive pressure is constantly growing, so if we want to be successful on contemporary aggressive market, we have to try to keep up with new trends.

We found out that the application of selected neuroscience methods in traditional shopping model is a huge shift in the form of revelations connected with the new phenomena called black box in the consumer's mind. At the same time we have to deal with several ethical dilemmas associated with the interference into privacy, subconscious mind and free will of the individuals. Neuromarketing already has its fans and opponents. In any case, there are still many open questions about "the future of neuromarketing". In the process of answering of these questions the main role will be played by scientists and companies and their further research on the field of neuromarketing.

Another important step will be the application of neuromarketing innovations in practice, as well as the drafting of legislation in the form of supervision of compliance with ethical and moral principles in marketing.

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