

Abstract. *Contemporary marketing is constantly subject to challenges generated by the evolution of market relations. Promoting the holistic conception in marketing determines new theoretical and practical urges in the field. The article shapes conceptual aspects of this new challenge, i.e. neuromarketing. In the context of developing neuroscience - in general – and of neuroeconomy - particularly – one analyzes the main viewpoints of the specialized literature regarding this new field of knowledge. The new border science or simply the management tool in behavioral researches is the key question that authors are confronted with. Investigation techniques used by neuromarketing are subject to a comparative analysis, from the viewpoint of their applications in marketing research. The ideas of the study are completed by examples on applicative issues and the ethics issue in neuromarketing. By causing changes in the physical aspect of marketing researchers, the new field opens a new path to accessing, in depth, the buyer's behavioral decision mechanism.*

Keywords: neuroeconomy, neuromarketing, investigation techniques, neuromarketing ethics, neuromarketing applications.

A NEW CHALLENGE FOR CONTEMPORARY MARKETING – NEUROMARKETING

Nicolae Al. POP

*Academy of Economic Studies, Bucharest
6 Romană Square, 1st district, Bucharest,
Romania
e-mail: nicolae_al_pop@yahoo.com*

Ana Maria IORGA

*Academy of Economic Studies, Bucharest
6 Romană Square, 1st district, Bucharest,
Romania
e-mail: ana.iorga@gmail.com*

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1. Introduction

Remarkably dynamic field of knowledge, contemporary marketing is constantly subject to challenges that market relations' evolution brings about. Given the general background of satisfying in full the requirements of demand carriers (be they organizational or individual), profitable for the economic agents involved, marketing is confronted with the constantly swifter changes in the economic behavior of all stakeholders. These changes are generated by the swift action world – and macro-economic factors. Market globalization, changing the physical aspect of exchange relations – under the empire of generalizing the new electronic communication technologies –, but especially the mutations in the purchase and consumption behavior put theory and practice under the pressure of constant challenge.

At the beginning of the third millennium, the American school of marketing's promotion of Kotler's *holistic marketing concept* (Kotler et al., 2002) was a new challenge for the theory and practice of the field. The need to clarify concepts and to render operational the tools of investigation determines the marketers to explore new marketing developments.

Since it is a social-human science called upon to optimize flows of goods, services, ideas and rights that constantly meet human needs, *marketing* is characterized, first of all, by its *interdisciplinary nature* (Zaharia et al., 2009). Such characteristics generated numerous border fields in marketing research. Computer marketing is only one such example. This is a way of translating the holistic thinking into an empirical-oriented action, a way of turning computer information into a decision-making rationale (Schebesch et al., 2010) with multiple implications (from designing new products to more efficient ways of distribution or to manners of involving directly the beneficiary of the services in the provision of the said service).

During the last decade, a new challenge appeared for this management science (as we call marketing) and that is *neuromarketing*.

This study tries to clarify the conceptual framework of neuromarketing, to validate or invalidate its statute of border science, but especially to decipher its main fields of application.

2. Neurosciences and neuroeconomy's ranking among them

Neurosciences differ from psychology in the sense that the former studies the brain's anatomy and physiology, whereas the latter deals more with studying the mind. The popular saying “...*mind is what the brain does*” (Damasio, 1994) is not entirely true because the brain coordinates numerous vegetative physiological processes, essential for survival, but which our mind does not perceive in a conscientious manner (adjusting the heart beat, adjusting the circadian rhythm (sleep/wake) etc.) (Perrachione, 2008). The progress that IT and medicine made in the last decades opens new fields of knowledge for radiology. Using new techniques of lighting the brain

with electrodes, of analyzing hormonal secretions and telemetry with micro sensors lead to a more in-depth knowledge of the relations in the human brain with the numerous external stimuli that the individual is facing (Georges and Badoc, 2010).

According to Perrachionne (2008), neuroscientific research must take into account three major components: *location, connection and representation*. Location refers to the area in the brain with a more intense activity consequent to perceiving a stimulus. The anatomy of the nervous system is a highly researched topic and numerous *brain maps* exist already, maps that present various areas with their functionalities. For instance, one knows that the hippocampus plays an important role in developing memory (McGaugh, 2000), the amygdala determines fear-triggered answers (Maren and Quirk, 2004) and the superior colliculus controls eye movements (Hanes and Wurts, 2001).

Despite “geographical” segmentations of the cerebral cortex, most cognitive processes are assured by neuron networks which are in various structures of nuclei belonging to certain cerebral areas responsible for: *facial recognition* (Kanwisher et al., 1997), *place recognition* (Maguire et al., 1997), *building language* (Caplan et al., 2003) or other more abstract processes, such as *judgment on others* (Saxe and Kanwisher, 2003) or *self-control* (Miller and Cohen, 2001).

The second component that Perrachione (2008) identified as important in neuroscientific research is *connectivity* – the means through which the neurons located in different cerebral regions build synapse relations in order to process information. This can be highlighted through functional magnetic resonance imaging (fMRI), showing crossed correlations, created between certain areas of interest in the brain and interpreting them with the help of sophisticated statistics.

Representation, the third component of the neuroscience research stated by Perrachione (2008), examines *the encoding process* that is at the basis of storing and processing information in the brain. The neuronal models are analyzed, from the *spikes* of a couple neurons (Harper and McAlpine, 2004) to expanded models, consisting in hundreds of thousands of neurons from various parts of the cortex and highlighted with the fMRI (Haynes and Rees, 2006; Norman et al., 2006) or with the help of an electroencephalogram (EEG).

Along with the development of *neuroimaging*, new research fields adjacent to neurosciences occurred – *cognitive* (Gazzaniga, 2004,) and *social neurosciences* (Cacioppo and Berntson, 2005). These deal with researching the brain activity of the subjects while subject to complex cognitive processes in order to notice and analyze the brain areas which become active for every process. Neurophysiologic researches started to inspire more credibility than behavioral researches due to the process, which is perceived as direct and non-impressionable (Cacioppo and Nusbaum, 2003). Behavioral research already proved that, as far as the decision-making process is concerned, people do not always behave according to the Homo Economicus concept – rationally and trying to maximize the value of every action (Gilovich et al., 2002). All these processes of knowledge are presently valued on several fields of the economic activity: from corporate economy to environmental economy, from human

resources management to customer relations management. The resulting applications aim for a better use of human, material and financial resources of a company.

Neuroeconomy is an interdisciplinary field, at the border between neurosciences and economy and aims to build a neuronal model for the decision-making process in the economic context (Egidi, 2008, p. 1178). With the help of neuroimaging techniques, researchers can study brain activity “in vivo”, as a reaction to certain stimuli and can establish correlations between the respective stimuli and the triggered reactions.

The entire classic economy started from the premise that people are rational human beings and they first of all follow their own interest (Camerer and Fehr, 2006). Thus, the rational hypothesis is built on two major concepts: most of the times, people assess accurately events around them and, when they make a decision, this targets their direct interest. However, researches show that these concepts are not preserved in people’s daily practice. Most of the times, their decisions are rather irrational, bearing a strong emotional load, and people do not always take decisions that only target their own interest (most of the times, if this option benefitted them more and prejudiced the other parties, they are willing to reduce their direct benefit).

Neuroeconomy was consolidated as a fully-fledged field after the increase of the researchers' interest in applying the investigation techniques in neurology on market research. Until recently, the traditional market research believes that the human body is a “black box” that can hardly be apprehended and assessed directly. *“In this respect, numerous theories appeared, trying to explain and interpret the physiological and emotional processes”* (Kenning and Linzmajer, 2011; Howard and Sheth, 1969). Neuroimaging techniques have evolved dramatically in the past years while equipment costs went down, thus allowing researchers to use them on a larger scale in order to “peek” into the consumers’ brain and discover brain reactions that are at the basis of complex cognitive processes. Thus, scientists have the possibility to correlate processes such as decision-making, judgment, encoding memory or emotions with marketing concepts, such as positioning, brand loyalty and consumer reaction to marketing messages (Perrachione, 2008).

The development of neuroeconomy, as a fully-fledged research field, is closely influenced by the collaboration between the specialists in the two component branches: economy and neurosciences. This cooperation is not as simple as it may seem at first glance because the two groups of researchers have different interests and target different objectives. Neuroscience researchers (stemming, most of the times, from neurology or psychology) have concerns regarding the physiology and functionality of the brain per se, while economy specialists are more interested rather in the interpretation of these reactions through economic concepts and the applicability of results in the field of consumer behavior. This is why a successful cooperation between the two fields consists in the manner of phrasing questions that research answers to – phrasing an economic objective as a question focused on brain functionality.

3. Neuromarketing

One of neuroeconomy's most dominant applicative developments consists in *neuromarketing*. Bright House Company in Atlanta was the first to use neuromarketing in a press release on the creation of a market research division that uses medical imaging (<http://www.prweb.com/releases/2002/6/prweb40936.htm>). By applying new research methods that allowed the registration of the subjects' brain activity and the subsequent interpretation of the data, the company aimed to revolutionize the field of market research by applying scientific rules to a dominantly empiric area in which most decisions are taken in random or undetermined universes.

Specialized literature quotes most frequently a study carried out in 2003 and published in 2004 (McClure et al., 2004; Pispers and Dabrowski, 2011), study which was named "Cola Brains" and which focuses on the research of Read Montague from Baylor College of Medicine in Houston, Texas. The experiment carried out by the team coordinated by Montague scanned the brains of a group of people, with the help of functional magnetic resonance imaging, while drinking Coca Cola or Pepsi Cola, stating that the activation of certain areas of the subjects' brain depended on whether they knew the name of the consumed brand. The subjects stated to prefer Coca Cola to the detriment of Pepsi when knowing what they drank, activating the frontal lobe, the cerebral area which coordinates attention and controls short term memory, thus controlling thinking. The experiment highlighted that when the subjects did not know the name of brand they drank they preferred Pepsi, "*activating a structure in the limbic system, which is responsible for the emotional and instinctual behavior*" (McClure et al., 2004; Pispers and Dabrowski, 2011). The experiment showed that Coca Cola ranked on a preferential position in the consumers' subconscious, while the preference for Pepsi was related to taste or experience with the brand.

Another study, showing the cooperation between marketing and neurosciences, was carried out by Plassman et al. (2008) focusing on the impact that the value of a product (a bottle of wine in this case) has on the perception regarding the quality of the product. More exactly, the subjects were asked to taste two bottles of wine and to evaluate the quality of the wine, also knowing – among other details – the cost of the bottles of wine. The more expensive wine received a greater grade from the subjects than the cheaper wine. The subjects did not know that, in both cases, they tasted the same wine. Blind experiment was used up to this point. Then, via functional magnetic resonance imaging, researchers registered the brain activity of the subjects during the experiment and they noticed that, when tasting the more expensive wine, the brain areas responsible for pleasure and reward presented a higher activity than the other areas, suggesting that participants found more pleasure in the more expensive wine. This reaction was not due to a better taste in wine, but to a factor, which apparently had nothing to do with sensorial experience - the price of the product. The added value of this study comes from the fact that it proved that not only psychological reactions can be influenced by external, marketing factors (in this case,

the price level), but also the physiological reactions which, theoretically, were deemed objective and precise.

In order to better understand the underlying message of this reaction, we must see what happens in the brain during tasting. The areas responsible for deciphering pleasure and reward, situated in the medial orbitofrontal cortex (MOFC), showed a more intense activity while tasting the more expensive wine compared to the cheaper wine. Nonetheless, the cortical area responsible for processing taste (the main gustatory area, spreading from the post-central gyrus to the insula) did not show any significant change of the brain activity while tasting the more expensive product. To conclude, the perception of taste is a combination between the sensorial and the cognitive information (creating certain expectations or perceptions with respect to the product). To a certain extent, results can be compared to the Placebo effect, based on the same mechanism, which is to create great expectations from the administered drug.

Ale Smidts, director of the Marketing Management Department of RSM in Erasmus University in Rotterdam positioned the neuromarketing concept as a fully-fledged research area and developed its main applications (Roebuck, 2011).

The definitions of neuromarketing are contradictory and researchers have different opinions regarding the classification of this academic field in the category of border sciences or to only consider it a management tool (Fischer et al., 2010). On the one hand, Lee and his colleagues see neuromarketing as "...a valid field of research", which is far more than just "the application of neuroimaging techniques to sell products" (Lee et al., 2007). To Hubert and Kenning (2008), on the other hand, neuromarketing is just a simple business tool and they propose it was called "consumer neuroscience". For the latter authors, implementing the discoveries of neuromarketing should be used as such in the management practice. On the other hand, Constensen (2011) believes that neuromarketing is an interdisciplinary field of marketing research, relatively new and controversial, where "...one interprets psychological and neuro-psychological knowledge in favor of marketing". Georges and Badoc (Georges and Badoc, 2010) claim that neuromarketing is "*the human brain knowing the information processing mechanisms which can generate ideas for substantiating the decisions of the entrepreneurs that want to communicate with their exchange partners*". The classical model of the human's decision center seen as a "black box" starts to constantly lose its consistency. Thus, for example, the knowledge on the human brain's physiology have allowed designers from the aeronautics industry to design the plane's cockpit or to generate aeronautic messages, making the passengers feel safe during the flight. The abovementioned authors appreciate that probably in a couple of years, the neuromarketing knowledge will merge into the general knowledge of marketing.

If the classical methods of the behavioral research apply to visible stimuli, leading to a certain purchase and/or consumption behavior, nowadays – due to neuromarketing – the possibility to get closer to the invisible part of neuronal connections, made at the cerebral level, is now possible. One knows, for example, that circa 95% of the mental processes occur without being known

(Pispers and Dabrowski, 2011, p. 77). In fact, humans do not express all their thoughts and thus, discussion groups, in-depth interviews and, sometimes, even non-verbal communication techniques used in marketing researches find in neuromarketing a complementary path for entering the decision-making universe of humans.

We appreciate that through the infusion of knowledge brought by neuromarketing in the pertaining area of research, *the physiognomy of studies* will be changed significantly. The methods, the techniques and the classical investigation tools shall not be eliminated but enriched - through complementary input - broadening the horizon of the knowledge in the field. The outcome of this process will consist in the significant increase of the extent to which research will come close to identifying, calibrating and valuing in practice the motivational factors of the purchase and/or consumption action. It is common knowledge that the human judgment often influences the stating of the real causes of the purchase behavior for a product or a service. The fear that the “hidden motives” of the purchase decision will be identified (stemming from modesty or false modesty, from the care for the intimate side of one's own personality etc.) sometimes makes a person state arguments that are more or less closer to one real motivation - during a marketing research, for example.

4. Investigation techniques used by neuromarketing

The ethological studies are deemed to be the precursors of the neuromarketing researches. Ethology is the science that studies animal behavior and includes a section of comparative researches – between the reactions of humans and mammals (Georges and Badoc, 2010). Analogies concern common reactions to fear, stress, reaction to the consumption of certain products, such as alcohol etc. If we were to consider that neuromarketing techniques reunite all the means that register rationally uncontrolled human reactions, than we also can classify – we think – as precursors of the current imaging techniques the *psychophysical* investigations. We consider: *the electrodermal response, eye tracking, measuring the heart rate, breathing or facial electromyography*, sometimes associated with an imaging representation on the computer screen (Roulet and Droulers, 2010, p. 15). Each of these techniques registers different aspects of uncontrolled human reactions to different stimuli generated by images, sounds, smells, shapes or combinations of the said, having as object a product, a message about the product, a market situation enticing people to purchase or to other ways of determining a behavioral manifestation in favor of the respective object.

The main set of tools of neuromarketing is however related to brain imaging techniques. For example, in 2009, over 3000 articles were published in the entire world, also tackling the brain imaging issue (Roulet and Droulers, 2010, p. 10). The most used tools in this context are: EEG, functional MRI, GSR and MEG.

Electroencephalography (EEG) has been used for a long time in neurology for identifying and measuring brain waves. Its purpose is to measure the variation of the electrical field at the level of the scalpel. The brain waves have various patterns,

depending on the status of consciousness of the respective person and are registered with the help of electrodes placed on the scalp. The technique is very efficient in registering the moment when the neurons triggered an answer (temporal resolution), registering reactions almost in real time. The technique lacks efficiency with respect to locating the said (spatial resolution) and does not allow the identification of the location, especially in the case of neurons from the deep structures of the brain.

Magnetoencephalography (MEG) traces minuscule magnetic fields, generated by the electrical activity of the synchronized neurons (Roullet and Droulers, 2010, p. 150). This measures the magnetic field generated by the brain's electrical activity. It has a good temporal resolution and a spatial resolution better than the EEG, but it continues to be limited to the activities of the superficial activities of the brain. It allows the tracing of brain processes every millisecond.

Magnetic resonance imaging (functional MRI) allows researchers to study the deep structures of the subjects' brain while being exposed to various advertising or communication messages – in general. It also measures part of the processes that occur in the brain when subjects are faced with purchase decisions. The important thing is that this technique does not require that radioactive contrast substances be administered, allowing the possibility to repeat the observations on the same subject. The method is based on the difference of the hemoglobin's magnetic signature, if this is saturated or not with oxygen (Constensen, 2011, p. 75). By measuring the level of oxygen in the blood brought by the cerebral arteries, the technology is based on the principle that neurons need oxygen in order to supply their activity. Every time a synapse discharges, they extract more oxygen from the arteries that feed them, thus changing the magnetic field. The essential improvements brought by this technique compared to the other two mentioned above come from its spatial resolution almost 10 times better than in the case of the EEG or MEG (Morin, 2011). Another major advantage is the penetration of the brain's deep tissues, allowing the researcher to notice even the smallest structures (registering the activity of a voxel = cubic pixel). On the other hand, the temporal resolution is not very good due to the fact that it measures an indirect change of the metabolism and this is displayed with a delay compared to the moment of discharge of the synapse.

The *Near-Infrared Spectroscopy* (NIRS) uses the issue of low energy infrared ray beams into a helmet crossing the calvaria. The infrared photons only penetrate the brain on a few mm and are reflected differently by the oxyhemoglobin or by the deoxyhemoglobin in the blood (Roullet and Droulers, 2010). This is how the active brain regions are traced.

Most of the times when researchers want to study both the superficial structures of the brain (responsible for the superior cognitive functions) and the deep structures (related to emotions) specialists combine the presented technologies (e.g., EEG/MEG with the functional MRI) taking into account the strengths and limitations of every technology.

The neuromarketing researches carried out with the help of these techniques allow for a far better accuracy than the classical tools – focusing on verbal

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communication – because they are in the area of non-verbal input and are not based on declarative information. At the same time, the new investigation technologies described above have entered differently in the spectrum of marketing researches. These are most often used in *ad design*, especially due to the very important financial resources absorbed in the field. In the case of advertising, they had the highest level of resonance for online advertising and online retail (Pispers and Dabrowski, 2011). The two main neuroimaging tools used in neuromarketing research are EEG and fMRI. According to the characteristics of the neural activity to be measured, researchers can use either one of the tools or both. For example, short brain activation may not determine a measurable change in the hemodynamic state, therefore may not show up in the fMRI recordings. But it still can be captured through EEG. On the other hand, a strong activity of neural structures situated deep in the brain is not likely to show up on the EEG recording, but it will be picked up by the fMRI scan for sure. Table 1 presents a comparative analysis of the two main research techniques: EEG and fMRI.

Table 1

Comparative analysis of EEG and fMRI

Characteristics	EEG	fMRI
Temporal resolution	Very good, records brain activity milliseconds after stimulus exposure; allows for correlating the neural activity with the respective stimuli	Poor - signal delay 2 seconds after stimulus exposure and reaches max. value 10 sec later
Spatial resolution	Poor, captures only subcortical neurons' activity	Very precise - cerebral activity can be accurately localized, even in deep structures
Neural activity localization	Often impossible; records superficial, sub-cortical neuronal activity involved in the frontal lobe's decision making process	Allows for locating deep structures involved in complex processes (emotions, long-term memory encoding)
Other characteristics	Easy to use, portable, non-invasive	Strict protocols, not portable
	Cost of use and equipment rather cheap	Equipment is very expensive
	Recordings are blurred by adjacent movements: eye movements, blinking, cardiac beat, etc.	Considered the "Golden standard" in Neuromarketing research
Types of research	Allows for real-life shopping environment studies: in-store shopping	
	Studies mainly the neural activity of frontal lobes (decision making studies)	

5. Main areas of application of neuromarketing

The research based on neuromarketing techniques has numerous areas of application, from designing new products to integrated ways and means of communication with the demand carriers. Ariely and Berns present some of the areas where such researches are used successfully in a relatively recent study (2010). These are:

- *Designing food and beverage products*: the perception of flavor is a complex process, which requires the integration of numerous sensorial stimuli, such as taste, texture, smell and looks. The neuroimaging tools proved to be efficient in decoding this complex process and can be successfully used in designing the new product;

- *Architecture for designing a new building*: measuring the brain activity generated by the image of various parts of a building or by integrating the discoveries of imaging into the building design process. This is possible with the help of a virtual reality, which allows researchers to create very accurate building or environment simulations and to measure, with the help of a functional MRI the subject's brain activity that "wander" virtual corridors.

- *Movie industry*: a study with the help of a functional MRI carried out on subjects that looked at a scene from the western movie *The Good, the Bad and the Ugly* showed that the cortical answer triggered is similar for all participants. This experiment yielded the practice to measure different movie scenes and to include or exclude scenes from the final version of the movie depending on the registered brain reaction. The same procedure is applied in the music industry where studies carried out with the help of a functional MRI can predict future listening results of new musical segments.

Other areas of use of the results of neuromarketing researches include: selling various groups of goods (cosmetics, food, exclusive products and services etc.), designing various categories of advertising material, websites or organizing online shops. Researchers can measure or assess – as the case may be – broad areas of emotions, interest, trust, loyalty to a product, service or brand, fear or withdrawal.

One of the questions of great interest for the marketers is "How do buyers select their products?" Aside from the seemingly-rationality of the decision making process, we know that emotions play an important role in how and what we choose. We can therefore "*talk about a new dyad composed of cognitive knowledge and emotional knowledge,*" (Brătianu, 2011, p. 166) that eludes the inquiry of traditional research techniques.

From the desire to attract a larger share from the *buyer's wallet*, companies spend significant amounts to study the purchase behavior and to redesign their product or shop layout. According to Pelău (2011) the products that address basic needs and employ a cognitive-based decision making process should be placed opposite to the store entrance, while products that are more emotional-laden should be placed in the customers' way, as they are purchased based on an emotional, impulse behavior process.

As per an *ESOMAR* study in *2011 Global Market Research Study* (www.esomar.org/web/research-pepers/book.php?id-2253) the value of the marketing research at the world level in 2010 was of circa 31.2 billion USD. We are not surprised that marketers are enthusiastic about any new technology, which promises to answer the abovementioned question. Neuromarketing consists in one of the fields appropriate to offer the necessary tools for as precise an answer as possible to this question.

6. Ethics issues in neuromarketing

A distinct and highly sensitive issue of neuromarketing is *its ethical nature*. Reactions already coming from associations for protecting the rights of consumers against using imaging techniques and other tools of the same nature for researching the buyer's behavior did not take too long to come about. Neuromarketing techniques can surely become manipulative. However, we need to clarify the meaning of this manipulation. *Manipulation* is defined as “...*determining, through means of psychological influence, a human group, a community or a mass of people to act against their interests*” (<http://dexonline.ro/definitie/manipulare>) and it is thus presented as a means of persuasively inducing somebody else's interests. One must discuss about the positive or negative meaning of manipulation. A customer subject to this process is “guided” or not toward its own interest. We believe that the answer to this question can clarify at least partially the positive or the negative sense of manipulation. If we take the example of a book or movie that wants to increase audience, the neuromarketing techniques support the human brain in stimulating reading, watching or hearing. *Cognitive ergonomics* (Georges and Badoc, 2010, p. 32) and specialists in the field can create the favorable environment necessary to reach such an objective. These specialists check the writing or release rules so that the human brain to be fully coached. In a book like “The Da Vinci Code” or a in a movie like “Titanic”, these ingredients are used in full in order to fully coach the reader/viewer. Among the rules for manipulating the human brain of the reader or of the viewer, one can mention (Georges and Badoc, 2010, p. 201):

- playing on the stress of the reader/viewer;
- managing the sequence of information given to the viewer/reader and thus receiving information before the actor or the character, the former knowing something that the latter has yet to find out;
- playing on the memory of the viewer/reader so that the story does not end before receiving the elements of a future sequence;
- playing on the viewer/reading taking a decision etc.

Neuromarketing methods surely influence the human brain and try to build the loyalty of the buyer/consumer, but in a *new, associative manner*, militating to involve the latter, to make him/her a partner.

The classical rules of commercial ethics are fully valid and the marketer's main duties should be to militate consistently for getting them involved.

7. Instead of conclusions

- a) We appreciate the methods and techniques presented in this study as a set of interface elements between medicine and IT that will support of more in-depth knowledge of a human's decision-making system.
- b) Innovation in imaging research and in the other means of investigating human's rationally uncontrolled reactions must serve the central objective of the marketing of the future – discovering and developing the means of higher anticipation and satisfaction of human needs, expectations and tastes.
- c) The entire neuromarketing approach is based on the researcher – subject topic interactivity and aims to reach a better communication with the subject's brain.
- d) The subjects of the research are considered to be partners of the neuromarketing investigators and not “Guinea pigs” of experimental research.
- e) The entire approach of combining the means and techniques of neuromarketing investigation must be thought of so as to reach medium and long-term objectives, specific for a sustainable development of the human society.

One final question can be asked: Can neuroscience – in general – and neuromarketing – in particular – contribute to an obvious progress of marketing research from the area of consumer behavior? The answer is firm: Yes. On the one hand, the theoretical framework of neuroscience provides a coherent understanding of consumer behavior (far more accurate than the explicative – verbal methods and techniques). On the other hand, imaging and imaging-associated techniques allow you to reach unreachable results through any other method of research.

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About the authors

Nicolae Alexandru POP is professor of Relationship Marketing and International Marketing at the Marketing Department of the Academy of Economic Studies, Bucharest. He is co-editor of the international journal *Management & Marketing*. His academic interests are: International Marketing and International Market Research, Strategic Marketing and Relationship Marketing.

Ana Maria IORGA is a PhD student at the Academy of Economic Studies, Bucharest studying Neuromarketing. She is an MD that holds an MBA degree in Marketing and is currently Managing Partner of Lemon Studio, a Bucharest-based advertising agency. Her interests are in Neuromarketing, Marketing, Neuroscience and Entrepreneurship.