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The Neuromarketing Analysis and the Categorization of Television Commercials

This paper is in line with the international and local trend and deals with the categorization of TV ads, defining experiential and functional commercials. Introducing their characteristics and presenting the importance of measuring emotions. Particularly presenting two dimension of factors, the product category and the economic development of a market that can influence the successful and effective TV ad communication strategy.

Keywords: neuromarketing, consumer neuroscience, marketing research, communication strategy, advertising
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Attitudes regarding neuromarketing
The significance of neuromarketing

Starting from the early 2000s a new marketing research method began to gain ground in both business practice and academic research – neuromarketing. The spread of this type of research was made possible by two factors: technological developments that allowed consumer preferences, motivations and expectations to be more readily identified, and the involvement of consumer neuroscience in decision-making investigations, which extended the field of marketing research (Ariely & Berns, 2010). Other factors added to catalyze the development of the field, such as the increasing consumer fragmentation caused by changes in consumer habits. The creation of ever smaller consumer segments has increased the uncertainty of the conventional methods of forecasting, while the demands of advertisers in terms of market research have also undergone changes, with growing expectations for high quality and accurate data, even for these smaller consumer groups. The traditional market research methods are unable to provide exact data in such a situation, as they which depend on assessing consciously articulated answers. For better data, it is essential to analyze the subconscious factors behind consumer decisions, which can be provided by neuromarketing.

Considering this situation, three areas were identified by Vargas et al. (2013) in which neuromarketing has the potential to contribute to forming more successful and effective marketing strategies.

Neuromarketing can increase market success by:

- providing a more accurate picture than ever before on the characteristics of any consumer group and its decisions,
- more accurate market information than before can lead to more efficient product development, which helps make marketing strategies more successful,
- more effective advertising can be designed due to the findings of neuromarketing investigations on the effectiveness of advertising tools.

This study focuses on the area mentioned in the final point, neuromarketing investigations of effective advertising tools, as well as the theoretical background of such research.

Opinions on neuromarketing in Hungary

In order to investigate the presence of and opinions on neuromarketing methods in Hungary, a survey was carried out (Piskóti & Nagy, 2020) based on that of Eser et al. (2011). In which the familiarity, opinions and attitudes of various experts regarding neuromarketing research were

investigated. In the original study, Eser et al. (2011) began with focus groups and then surveyed three different groups – marketing researchers (academics), marketing experts (practitioners), and neurologists – using an online questionnaire. The aim was to identify their positions on neuromarketing methodology. Hungarian research adopted their method, using online questionnaires for the same groups of experts. In addition to the questions included in the original study, some questions regarding how neuromarketing is used and prospective uses of it, were added.

Key findings led to draw the following conclusions that can act as a starting point:

- 41% of the respondents possessed no or little information on neuromarketing research. While the rest had heard of it, only 7% considered themselves fully familiar with the topic. Thus, we cannot say that neuromarketing research is well known or a fact of life in marketing practice in Hungary.
- This conclusion is further strengthened by the fact that 69% of those questioned do not use neuromarketing research, nor have they taken part in it. However, almost three quarters of the respondents have indirectly encountered this research method in marketing practice.
- Attitudes towards neuromarketing as a means of research into consumer behavior and decision making were generally positive, though a certain amount of caution was expressed.
- Respondents considered neuromarketing research to be useful combined with traditional marketing research methods, rather than as a replacement for them.

In general, the marketing practitioners questioned are open to neuromarketing, with no strong reservations regarding the ethical issues. They tend to agree that the theoretical basis is currently weaker than its application in practice, and that it is something that should be given more attention by researchers in the future. Looking at the opinions of marketing experts and researchers separately, however, a more complex picture emerges. The expectations of practitioners for gaining a better understanding of consumer behavior and decision making through neuromarketing research are much more positive than those of the more theoretically oriented experts. Practitioners are more open due to the hope for using research results, while the academic researchers were less interested in the field of neuromarketing. In our questionnaire, we asked which marketing fields would be most likely to apply neuromarketing research methods and which would gain the largest benefits from it (Figure 1). Respondents generally thought it would be most useful in testing product design and packaging and in assessing the effectiveness of advertising, and least useful in product pricing.

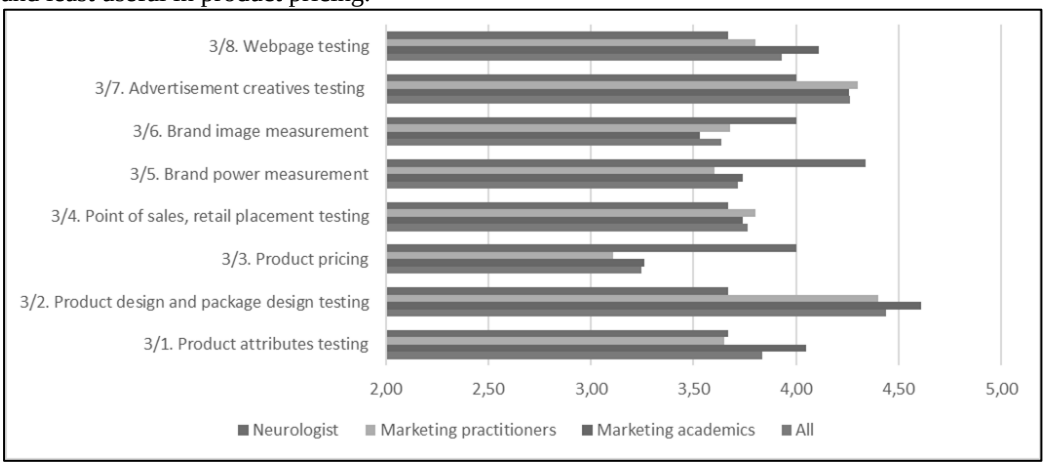

Figure 1. Neuromarketing research interests
Source: Piskóti & Nagy (2020)

Overall, interest and expectations were higher among the marketing experts, who are hoping for information from neuromarketing research that can be readily applied to practice, particularly in the advertising and sales of products. The interest of those teaching and researching in the field of marketing is more moderate, as the theoretical background of this area is not so extended yet what does not encourage them to feel that neuromarketing research could be a useful tool; rather, they consider it relevant and useful to just a few areas of marketing in the future.

International trends in neuromarketing

Reviewing the international researches particularly about advertising impact and effectiveness testing with neuromarketing tools, which is the field in which the Hungarian respondents showed the most interest, it can be seen how much this topic is being researched, what opinions are of it in other countries, and what development trends can be identified. Took Lim's 2018 study in the *Journal of Business Research* as a basis. Lim (2018) performed a content analysis of articles in all of the marketing journals under the Association of Business Schools (ABS). He classified 66 academic outlets into categories based on their prestige:

Type 4* - a world elite journal (5 marketing journals, 7.6 % of all ABS journals)
Type 4 – a top journal (3 marketing journals, 4.5%)
Type 3 – a highly regarded journal (12 journals, 18.2%)
Type 2 – well-regarded journal (21 journals, 31.8%)
Type 1 – a recognized journal (25 journals, 37.9%).

Publications on neuromarketing appeared in 21 of the 66 journals, with 78 articles in all between 2004 – 2017. The largest number of articles on neuromarketing were published in Type 2 journals (33 articles, 42.3% of all neuromarketing articles), followed by Type 4* (17 articles, 21.8%), then Type 3 (19 articles, 24.3%), then Type 1 (8 articles, 10.3%) and finally Type 4 (1 article, 1.3%). Four special issues appeared in the journals, two in 2008, one in 2015 and the most recent in 2016. Many of the publications (33 articles, 42.3%) dealt with research using a neuroimaging procedure (fMRI EEG). This is followed by articles on theoretical aspects and reviews of the topic (31 publications, 39.7%) and then by research done using non-neuroimaging procedures (16 publications, 20.5%) and research done with conventional marketing research methods (4 publications, 5.1%). Lim divides the specific research topics into eight categories:

- introductions to neuromarketing, general information (29 publications, 37.2%)
- neuromarketing analyses of advertisements (17 publications 21.8%)
- introducing new insights in branding (13 publications, 16.7%)
- investigations of consumer decision-making processes (9 publications, 11.5%)
- studies on product packaging (4 publications, 5.1%)
- studies related to pricing (3 publications, 3.8%)
- opinions and attitudes on neuromarketing (2 publications, 2.6%)
- other (1 publication, 1.3%)

The results of Lim's international meta-analysis clearly show that, similar to the Hungarians surveyed, the focus in neuromarketing research is most often on examination of advertising tools and advertising effectiveness. Based on these findings, it can be seen that the research topic of this paper is in line with international and local trends and deals with the area that is drawing the most attention in neuromarketing research. The complexity of the topic is demonstrated by the fact that, despite the particular attention being given to it by researchers, there are still many areas to be explored in the specific aspects of consumer decisions and their relationship to advertising. Well-founded and extensive research in these topics is still in its early stages.

Instruments of neuromarketing research

The tools used in neuromarketing research can be classified along different lines. The simplest approach is to classify them based on the principle of operation (Bercea, 2012):

- Tools that record metabolic activity in the brain: Positron emission tomography (PET), functional magnetic resonance imaging (fMRI)
- Tools that record electric activity in the brain: Steady state topography (SST), transcranial magnetic stimulation (TMS), magnetoencephalography (MEG), electroencephalography (EEG)
- Tools that do not record brain activity: facial coding, implicit association test, eye tracking, skin conductance, facial electromyography, measuring physiological responses.

A rather more complex method is to group the tools used by different neuromarketing methodologies. This leads to three groups (Lim, 2018):

- neuroscience instruments and techniques that record the neural activity inside the brain,
- neuroscience instruments and techniques that record the neural activity outside the brain,
- neuroscience methodologies to control and manipulate the neural activity.

The currently accepted academic standards determine which instruments in what combinations are to be used in order to provide results that are considered reliable and convincing. Due to its cost effectiveness, the most typical technologies at this point are eye-tracking cameras, EEG and various instruments for measuring biometrical reactions, or some combination of these. When considering neuromarketing research it is important to emphasize that the human brain's generally identical structure (though influenced by basic factors such as sex and age) means that a large number of samples are usually not required during researches. Typically 15-20 subjects are considered enough for research, though naturally the larger sample we deal with, the higher quality the data and the easier it is to process it. In the case of a small sample, a legitimate question may arise as to whether the factors influencing consumer behavior are as impossible to identify on a statistical basis without distortion as are personality factors or even intelligence, but there is no clear answer to this question at this time.

Neuromarketing research of television commercials

Categorization of television commercials

It is an accepted fact that the part of our brains labeled the "reptile brain" is most receptive to visual stimuli and to emotions; this is where the newest studies consider to be the true birthplaces of our decisions (Renvoisé, 2007). The importance of visual stimulation and the role of emotions in buying decisions are both areas that conventional marketing research methods either cannot reveal and map or can do so only vaguely when compared to neuromarketing research methods. From this, it is clear why television commercials and other forms of advertising are so important, as the visual stimuli and the feelings generated by them influence most of our decisions on the most basic level, and this is true of consumer decision making, as well. It is worth noting that memory, especially long-term memory, is even more strongly affected by smells and sounds than by visual stimuli, but research up to this point has shown that long-term memory has no direct effect on consumer decision making; the impact of brand recognition and the product image are the main factors (Jones, 2006).

The most common application by far of neuromarketing research is to television commercials. This is demonstrated by the fact that the Advertising Research Foundation (ARF) showed major interest in neuroscience techniques from an early stage, looking at the added value appearing in advertising (Smidts et al., 2014). Despite the massive resources put into it, advertising effectiveness testing is still a rather unexplored and poorly understood area of marketing. Although advertisements have been investigated in several neuromarketing research studies, it is still unclear whether we will be able to identify through neuroimaging research what effect mechanism exists in the brain, and whether we will be able to predict an advertisement's impact (Ariely & Berns, 2010).

With neuromarketing research on television commercials, we must clearly distinguish between two different approaches: *experiential*[10] (we could call it image-focused) and *functional* (promotion or sales-focused). Typically, the functional advertisements are strongly focused on the functional features of a given product, conveying quasi-factual information on it and the price of the goods, both of which can help the viewer when buying the product. In contrast, with experiential advertisements the presentation of the advantages of the product or its use(s) is not the central focus, rather they take an indirect and creative approach that appeals to the emotions to portray positive associations with the product. It is important to note that in most cases we cannot speak of a purely experiential or purely functional advertisement; it is typical for both types of message to be combined to some extent in almost every advertisement.

In their research, Johar and Sirgy (1991) showed that the choice of approach depends on the given product, when all goes well. For instance, if we are advertising a simple and practical object it is suitable to use a functional type of advertisement. On the other hand, Ang and Lim (2006) found that in some cases a different and more creative advertisement is capable of strengthening a feeling of sophistication and the desire to possess the product, regardless of its product category and even for basic everyday items, though viewers also saw the advertisement as less honest. There is no clear standpoint on the issue of whether advertising combining both aspects is a good approach, or rather to be avoided, and if they are mixed, in what ratio. Some researchers propose that a hybrid approach is less effective (Small et al., 2007), and eye-tracking studies have even shown that viewers are more likely to interrupt their television viewing when watching hybrid advertisements (Woltman Elpers et al., 2003).

Other studies, however, have found that any commercial that employs emotional content increases its effectiveness, regardless of the type of product or message (Pham et al., 2013). Others have found that the presence of functional messages is more important and should be emphasized, so that the advertisement appeals not just to emotions but also contains cognitive stimulation, unlike experiential commercials (Zarantonello et al., 2013).

The current unified academic viewpoint is that the two different types of advertising messages affect consumer decision making in different ways, but there is no agreement on how this works. Some researchers say that functional advertisements, with their information of products and evaluation influence on the cognitive level and reduce the uncertainty of consumers, allowing their thinking to be freed up on some level, lightening the burden of decision making and evaluation (Yoo and MacInnis, 2005). Advertisements with an emotional and creative approach create a warm effect and promote positive attitudes towards brands, using emotions to increase the appeal of a brand and the willingness to purchase the item in question (Aaker et al., 1986). If these claims are investigated on the level of processes in the brain, then differences in the processing of information are seen.

Based on this theory, it is possible to distinguish between continuous and non-continuous information processing mechanisms. Continuous processing is typically associated with experiential messages, where the consumer spontaneously processes the information, unconsciously, and this shows a positive correlation with the appeal of a given product. Non-continuous processing, which is conscious, becomes more intermittent and fragmented, because the brain is assessing the information given and attempting to judge what value each bit of information holds for the viewer. During this fragmented process, it makes it easier on the brain if the information given proves to be truly valuable in the decision making of the consumer (Brakus et al., 2014). Finally, it is useful to identify (based on Couwenberg et al., 2017) those elements of advertisements that are most likely to determine a given advertisement's type and its proportion of functional and experiential attributes.

[10] The terminology is borrowed from Abernethy & Franke (1996), Schmitt & Zarantonello (2013). and Couwenberg et al. (2017).

The characteristics of functional advertising that may appear in commercials:

- product attributes
- product application
- product performance
- functional benefits
- functional value of products.

Elements characteristic of experiential advertising that may appear in commercials:

- sensory elements
- feelings and emotions
- imagination and mental stimulation
- behaviors and actions.

Despite all of the above mentioned uncertainties why TV ads categorization is that important? The obvious business answer is that any tiny improvement regarding the effectiveness of TV commercials can generate an enormous result as the TV ad spend worldwide reached 166.3 bn USD[11] in 2019, still owning a 33,6% share of global ad spending. From the scientific point of view TV ads are just perfect subjects of measuring emotional responses in the brain. Emotions can be used as a variable to categorize TV ads, identifying different clusters, which makes easier to locate a certain brain activity and pair it with a stimuli of the commercial. There are researches already trying to create categories which looked at the effectiveness of advertisements as a result of factors such as product category, pricing, innovation (Binet & Field, 2018) or an overall economic development (Zarantonello et al., 2013), and other socio-cultural factors like local vs. global culture (Ritzer, 1993), modern vs. traditional culture (Inglehart, 1997), and individualism vs. collectivism (Lonner et al., 1980). The current study will present based on their emotional affect, using the terms of experiential and functional commercials, the product category based TV ad categorization and the TV ad categorization in a dimension of the economic development.

TV ads suited to product categories

The most recent study of Binet and Field (2018) is an important reference point to deal with this topic, as it used the database of the IPA (Institution of Practitioners in Advertising) consisting of 615 international case studies, which advertisers and advertising agencies had contributed along with data on sales. In the study, the researchers drew a clear distinction between activational and emotional advertisements, which essentially correspond to the categories of functional and experiential advertisements introduced earlier in this paper. In their study of these advertisements Binet and Field (2018)determine the different categories of products also by taking into account the mechanisms of consideration that influence the advertisement's success, the consumer's decision to buy or not. Naturally, as the types of advertisements are hardly pure, the consideration mechanism has a certain degree of emotional consideration and of rational consideration. They found that emotional consideration has the largest proportion (54%) and rational consideration the lowest (20%) in the purchase of fast-moving consumer goods. In contrast, financial services is the category where the rate of emotional consideration is the least (20%) and the most significant is rational consideration (39%) prior to consumption (Figure 2).

[11] https://www.statista.com/topics/5952/television-advertising-worldwide/

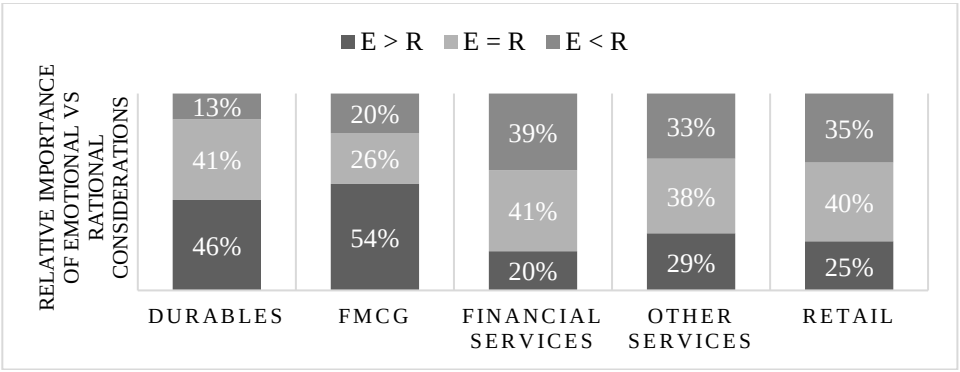

Figure 2. Proportion of emotional (E) versus rational (R) consideration of different product categories, Source: Binet & Field (2018)

When evaluating the effectiveness of the campaigns, Binet and Field (2018) established that in the case of categories triggering emotional consideration, emotion-based advertising had a larger and more direct effect on business, while categories in which rational consideration is more important experienced more success and higher sales when using promotional, activational type advertisements (Figure 3).

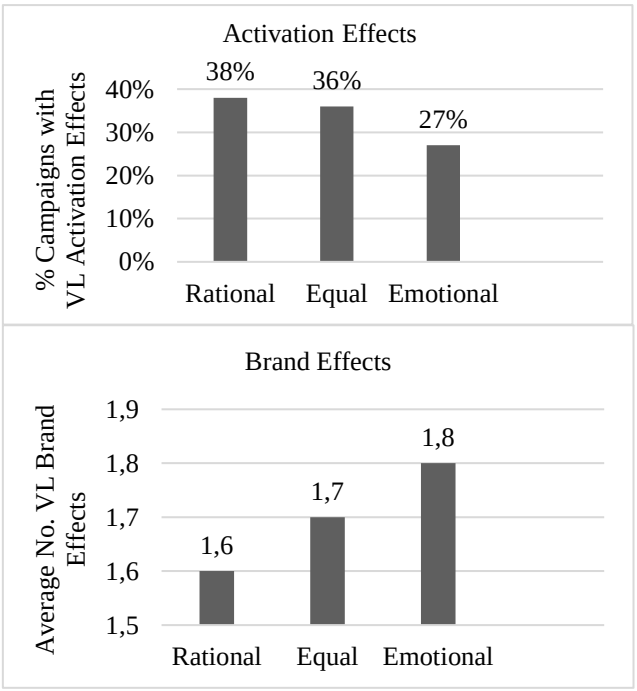

Figure 3. Different decision processes and their marketing effects
Source: Binet& Field (2018)

TV ads suited to economic development

In regard to the effectiveness and efficiency of advertising, not just product category but also socio-cultural factors play a major role. For instance, residents of emerging and developed nations react differently to the same functional and experiential advertisements (Zarantonello et al., 2013). Inglehart (1990) showed how economic development and value change progress together and that

process of economic and technological improvement tranform the individuals' basic values and beliefs (Inglehart & Welzel, 2005).

In advertising, rationality and functional utility is reflected in a predominance of cognitive responses that reflect product application, product performance, and benefits that provide functional value. In general, as markets mature, consumers take functional features for granted. They know when a product works and are less impressed by the functional attributes displayed in ads. They thus focus on deriving positive affect from the experiential ad components and become subject to an experiential route of persuasion (Zarantonello et al., 2013). This shift from functional toward a more experiential communication has been reported over the years, in ad researches conducted in countries with developed economy (Schmitt, 1999; Schmitt, Rogers, & Vrotsos, 2003). The communication trend seems to be the opposite in emerging countries as there consumers still primarily respond to functionality as they are more concerned about fulfilling basic rather than high-order needs. Not to mention that in these countries the quality and proper function and utility of products and services cannot be taken granted. This is a standard of these markets, which are in earlier stages of capitalism and market development.

As a result of the study Zarantonello found that in developed markets, experiential advertising significantly impacts affect and does not impact cognition. Functional advertising also impacts affect, albeit to a lesser degree. In contrast, in emerging markets where functional advertising significantly impacts both cognition and affect. However, in developing countries, experiential advertising has no significant impact on cognition or affect. Thus, we can say that in countries with developed economy and improved capitalism the experiential route is a more important driver of persuasion, it is the functional route that is the key driver of persuasion in countries with a transiting or emerging economy settled in the earlier phase of capitalism.

Conclusion

As we move into an age of more extensive two-way marketing communication, it is important to have a standard by which measures of emotion can be developed, verified, and calibrated. Understanding the method by which the brain interprets emotion is key to understanding which type of ads to use in a successful communication campaign. Moving forward, understanding the impact and a more effective implementation of TV advertisements is more important than ever given the fragmentation of media and the expanding need for creating appeal and engagement in communications. Researchers will be able to more accurately determine these connections that advertising and marketing have created. This study through the interpretation and categorization of TV ads helps to uncover these issues and bring to the forefront the right adjustment of use to the process of emotional response. In addition, emotion assessment should not be limited to TV advertising but extended to areas such as branding impact and tracking (McClure et al., 2004), brand personality (Yoon, Gutchess, Feinberg, and Polk, 2006), and trade-off decision making (Hedgcock and Rao, 2009).

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