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**Nataliia Letunovska**ORCID: <https://orcid.org/0000-0001-8207-9178>Doctor of Economics, Associate Professor  
Associate Professor of Department of Marketing**Daryna Synenko**ORCID: <https://orcid.org/0009-0001-9820-5615>PhD Student  
Sumy State University  
(Sumy, Ukraine)

## RESEARCH INTO THE EMOTIONAL IMPACT OF MARKETING COMMUNICATIONS USING NEUROMARKETING TECHNOLOGIES<sup>1</sup>

The article analyzes existing scientific work on the study of the emotional impact of communication materials on consumers. Theoretical approaches to the study of the emotional perception of advertising are considered, the mechanisms of formation of emotional reactions and their influence on consumer behavior are analyzed. The primary neuromarketing methods used to evaluate the emotional engagement of the audience are summarized. The role of emotions in the consumer decision-making process and the formation of brand loyalty is determined. Examples of successful advertising campaigns that have achieved emotional impact are provided. The results obtained contribute to a deeper understanding of the practical potential of neuromarketing technologies in increasing the effectiveness of marketing communications.

Keywords: neurotechnology, neuro-influence, emotional effects, perception, consumer experience.

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**Statement of the problem in general form and its connection with important scientific or practical tasks.** In the era of rapid technological development and societal change, traditional marketing technologies that were popular 20 years ago are losing their effectiveness today; as a result, marketers are seeking new tools to influence consumers. As for marketing research, classic tools for analyzing consumer reactions, such as surveys, focus groups, and interviews, demonstrate the relevance of conclusions based solely on the respondents' judgments, without providing insight into their actual thoughts and feelings. According to [1], global advertising spending is growing at an annual rate of over 7.3%, and competition between brands is intensifying. In 2023, there were over 333 million businesses worldwide, representing a 14% increase from 2018. At the same time, the level of trust in traditional advertising among consumers is decreasing, with only 34% of users considering advertising messages to be reliable [2].

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In these conditions, the primary task of business entities is to develop reliable methods for predicting consumer behavior, enabling the creation of effective advertising campaigns. For these reasons, interest in progressive innovative methods of analyzing consumer behavior has begun to grow, one of which is neuromarketing. The use of neuromarketing cannot be considered a complete alternative to traditional marketing, but it effectively complements it, enabling a deeper understanding of consumers' perceptions. Existing research in the field of neuroscience demonstrates that emotions are the fundamental basis that largely determines an individual's nature and behavior [3-5]. An important task is to invest resources in marketing strategies that enable emotional engagement of consumers, which becomes possible through a preliminary analysis of their hidden needs and desires.

**Analysis of the latest research and publications, which initiated the solution of this problem and on which the author relies.** The use of neuromarketing as a tool for analyzing consumer emotions is a relatively new area of scientific research that emerged at the intersection of marketing, psychology, and neuroscience. J. Zaltman was one of the first to study the subconscious processes that influence consumer behavior and developed the ZMET methodology to identify deep emotional associations [6]. A. Trindl studied the mechanisms of influence of neuromarketing technologies on decision-making and consumer behavior in the context of communications in a digital environment [7]. A. Yavor [8] and A. Damasio [9] focused on the neurophysiological processes that form the emotional component of advertising perception and economic decision-making. The research group analyzed in detail the perception of food marketing tools by users when using various digital platforms in their work [10]. Scientists found that the effectiveness of advertising on digital platforms significantly depends on its ability to emotionally and socially engage the audience. They confirmed that the lower level of negative emotions when watching advertisements on the Twitch platform compared to YouTube indicates affective dynamics influenced by the interactive environment. The authors of [11] employed eye tracking and analyzed the emotional valence and arousal of users on hotel websites. The results of their study showed that labeling hotel industry services has a significant impact on consumer behavior, influencing their decision to choose a particular establishment. In [12], an attempt was made to test the possibility of predicting purchases of both familiar and unfamiliar brands based on a study of psychophysiological reactions to digital advertising, which was conducted using EEG, electrodermal amplitude, and eye-tracking tools. To determine which psychophysiological variables explain the largest share of the variance in the final purchase decision, they used a logistic regression model. They found that only the electrodermal peaks per second were significant for predicting consumers' subsequent purchase decisions. The authors of [13] employed neuromarketing tools to investigate consumers' perception of artificial intelligence in modern digital communications. They used the GSR skin conductance analysis tool and the Affectiva AFFDEX SDK classifier to analyze the emotional reactions of recipients of communications. The authors' study concluded that the emotional content is crucial for attracting the audience of digital marketing communications and that the effectiveness of using neuromarketing tools in studying consumer perception of digital information is also important. The paper [14] is devoted to the study of advertising materials using the eye-tracking method with the analysis of the emotional impact of different colors and their combinations on the brain activity of potential consumers of a public catering establishment. Such research provides an opportunity to obtain valuable insights into how consumers perceive visual stimuli, which is the basis for enhancing marketing communication strategies, particularly in developing information materials for diverse environments. M. Lindstrom [15] in his work has shown the practical application of neurotools for creating brands that appeal to human emotional triggers. P. Ekman [16] laid the foundation for the classification

of basic emotions and methods for their recognition, which are used in modern neuromarketing research.

**Highlighting the previously unresolved parts of the general problem to which the article is devoted.** Despite the availability of scientific works on the study of the emotional impact of communication materials on the perception of brands and companies by individuals, the issue of integrating neuroscientific approaches into modern marketing research on the perception of communication materials in different environments and substantiating the mechanisms of the influence of emotions on the perception of advertising messages, in particular those placed on digital platforms, has not been thoroughly analyzed. This study deepens the understanding of the relationship between emotions and neuromarketing, and also enhances the systematization of modern approaches to analyzing the emotional impact of advertising on consumers in various environments.

**Formulation of the purpose of the article (statement of the problem).** The purpose of this study is to analyze approaches to studying the emotional impact of advertising messages using neurotools and to examine practical examples of neuromarketing tools in action, focusing on the emotional impact of content on consumers in various environments.

**Statement of the main material of the research with full justification of the scientific results obtained.** Emotions are a crucial component of the human psyche, influencing behavior, cognitive processes, and interpersonal interactions. They provide a person's adaptive response to external stimuli, influencing the processes of perception, purchasing decisions and social communication. In the context of marketing research, emotions become an important object of analysis, because it is through emotional involvement that consumers' trust, loyalty and commitment to the brand are formed. To deepen our understanding of the essence of emotions, let's consider how this concept is explained from the positions of different fields of knowledge (Table 1).

Table 1 – Comparative approaches to defining the concept of “emotion”

Approach	Source	Formulation	Main accents
Neuroscientific	Antonio Damasio (1994). Descartes' fallacy: Emotions, reason, and the human brain	Somatic markers that reflect the physiological state of the body and help make decisions	Neurophysiological basis of behavior
Medical and biological	Jaak Panksepp (1998). Affective neuroscience	Innate affective brain systems that coordinate the body's motivational responses	Biological regulation and survival
Social and cognitive	Lisa Feldman Barrett (2017). How emotions are born	The result of the brain's interpretation of bodily sensations in a social context	Constructivist approach, the role of experience
Behavioral	Martin Lidndström (2012). Brand washing: The tricks companies use to manipulate our minds and convince us to buy	A consumer behavior shaping tool that activates subconscious reactions and brand decisions	Using emotions in advertising and branding
Psychological	Paul Ekman. (2003). Psychology of emotions	Universal short-term psychophysiological reactions to significant events	Versatility and expression through facial expressions

Continue Table 1

Neuromarketing (the definition of the authors)	Own definition	A complex of psychophysiological reactions that arise in response to external or internal stimuli, integrate neurobiological, cognitive, and social mechanisms, and determine a person's behavioral response	Crucial role in shaping the perception of a communication message in different environments
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Source: formed by the authors based on [9; 15; 16]

Neuromarketing is a relatively new interdisciplinary field that combines approaches from neuroscience, psychology, and marketing to analyze consumer behavior [17]. A bibliometric analysis of scientific publications in the Scopus database was conducted to identify trends in the development of neuroresearch focused on analyzing the emotional impact of communication messages on consumers. The following keywords were used for the search: "neuromarketing", "advertising", and "emotion". The search was conducted using titles, keywords, and abstracts, which enabled the maximum coverage of relevant sources. The analysis covered all available publications from 2009 to 2025 inclusive. A total of 101 documents were identified through the thematic query. Exclusion by type of documents was not carried out, since each type of publication: scientific article, conference proceedings, book chapter, review, or monograph, contributes to the development of the topic and reflects different aspects of its scientific study.

The results of the analysis of the geographical distribution of scientific publications (Fig. 1) indicate that interest in the topic of neuromarketing and research on the emotional impact of advertising is global, encompassing 43 countries worldwide. The largest number of works was published by scientists from Spain, Italy, and the USA. These countries are the leading centers for the development of neuromarketing research. High indicators are also demonstrated by India, China and Malaysia, which may indicate the active introduction of technological innovations into the field of marketing communications. The participation of Ukraine, which is gradually integrating into the global scientific space in this field, deserves special attention. Although the number of Ukrainian publications remains small, their presence in the Scopus database indicates a growing interest in the use of neuromarketing methods in the study of consumer behavior and the development of interdisciplinary approaches at the intersection of psychology, marketing and neuroscience.

Figure 2 shows the results of clustering key terms obtained in the process of bibliometric analysis of publications from the Scopus database on the topic of "neuromarketing and emotions in advertising". VOSviewer software was used to visualize the data. The minimum number of repetitions of terms was three, and words that did not have a direct semantic connection with the subject of the study were filtered out.



The analysis revealed five main clusters that reflect the leading directions of modern scientific research in the field of neuromarketing. The largest cluster (yellow) covers the concepts of "neuromarketing", "emotions", "consumer behavior", "decision making" and reflects the interdisciplinary nature of consumer behavior research. The second cluster (red) is represented by the terms "psychology", "human", and "electroencephalography", which characterize the psychophysiological aspect of the impact of advertising. The third cluster (green) includes the terms "emotion", "neuroscience", "memory", and "attention", which describe a more cognitive level of information perception. Two smaller clusters combine terms related to technological methods of analysis – "gaze tracking", "artificial intelligence", and "information systems" - as well as the socio-communicative dimension of neuromarketing, including "social marketing" and "advertising effectiveness". The results obtained indicate that modern research in the field of neuromarketing is comprehensive in nature, combining emotional, cognitive, technological, and social approaches to studying the impact of advertising messages on consumers.

Figure 3 shows the distribution of publications by subject area in the Scopus database related to neuromarketing research. The analysis reveals that the subject of neuromarketing is interdisciplinary, encompassing a broad range of scientific fields. The largest share of works is in the field of business, management and accounting (16.5%) and social sciences (13.6%), which indicates the practical focus of research on improving marketing strategies and understanding consumer behavior. A significant part of the works belongs to computer science (12.1 %) and psychology (8.7 %), which reflects the use of neurotechnology, machine learning, and experimental psychology to study consumer reactions. There is also a significant share in economics, econometrics, and finance (7.8 %) and neuroscience (6.8 %), which provide a theoretical basis for understanding the cognitive and physiological processes that underlie decision-making. Other fields, including engineering, medicine, decision sciences, and agricultural and biological sciences, have smaller but notable shares, highlighting the multidisciplinary nature of neuromarketing research.

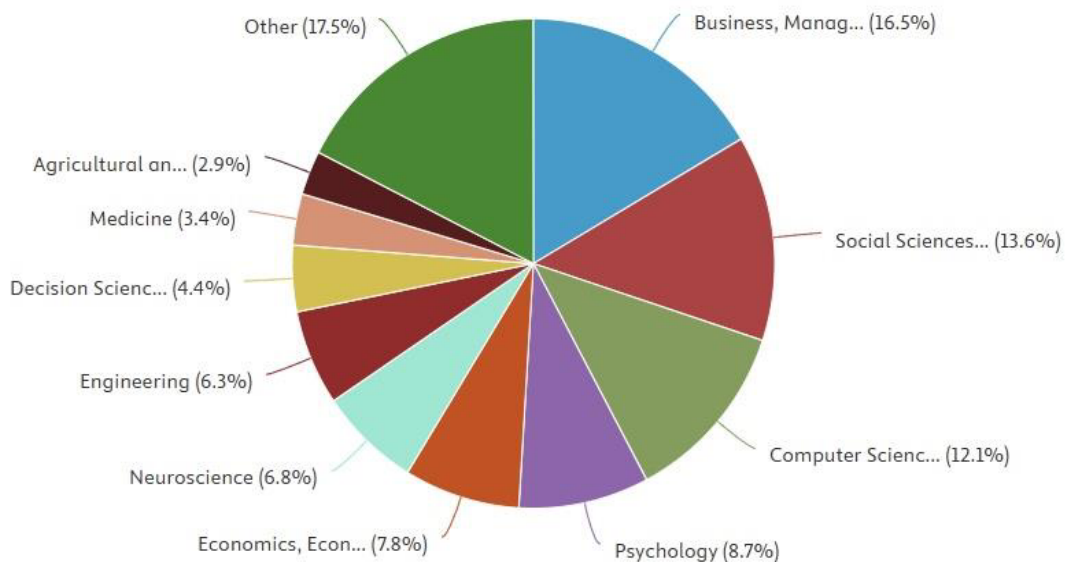


Figure 3 – Distribution of publications by subject areas on the topic of "neuromarketing"  
Source: created by the authors based on Scopus Preview data

Neuromarketing combines neurobiology and marketing, studying the response of consumers' nervous systems to various marketing stimuli (advertising, branding, packaging, etc.). Its main goal is to understand consumer behavior in order to create more effective marketing strategies that use knowledge of psychology and neurobiology.

In general, neuromarketing can be classified according to the psychophysiological mechanisms by which advertising stimuli influence the consumer. Based on this criterion, it is advisable to distinguish three main types of neuromarketing:

- Emotional neuromarketing is a subfield that focuses on understanding consumers' emotional responses. It aims to identify which emotional factors influence decision-making, helping brands create a positive impression of their products;
- Cognitive neuromarketing is a subfield that covers aspects related to the mental processes that play a role in decision-making. It examines how information is perceived, processed, and how this influences consumer choices;
- Social neuromarketing is a subfield that focuses on the influence of social factors on consumer behavior. It examines how social media, group dynamics, and interactions with other people can influence consumer decisions.

This classification is based on the fact that the process of perceiving an advertising message covers three interconnected levels of the human psyche—emotional (limbic system response, formation of feelings and motivation), cognitive (information processing, memory, decision-making), and social (the influence of social interactions, empathy, trust and social norms). The proposed division enables a comprehensive analysis of how advertising affects individuals, from their primary emotional reaction to socially conditioned behavioral patterns. For a deeper understanding of these processes, neuromarketing relies on specialized methods that enable the recording of consumers' physiological and neural reactions during interactions with marketing stimuli. When people are exposed to advertising, their brain activity and behavioral reactions are recorded using a wide range of neuroimaging and psychophysiological technologies. Neuromarketing methods can be categorized into distinct groups based on their operational principles and the types of data they collect. The most widely used are presented in Table 2.

Table 2 – Classification of neuromarketing methods

Technologies/instruments	Indicators that measure	Use in marketing research
Methods that analyze brain activity		
Electroencephalography (EEG) and magnetoencephalography (MEG)	Electrical activity of the brain	<ul style="list-style-type: none"> <li>- examines immediate reactions to a stimulus and reveals the level of attention and emotional arousal to advertising, branding or other marketing materials;</li> <li>- helps to reveal activity in different areas of the brain responsible for emotions and cognition</li> </ul>
Functional magnetic resonance imaging (fMRI)	Activity in small structures of the human brain, changes in blood flow	<ul style="list-style-type: none"> <li>- shows which areas of the brain are activated when making decisions, viewing advertising or interacting with a brand;</li> <li>- allows you to determine not only the emotional reaction, but also to assess the level of positive perception</li> </ul>

Continue Table 2

Functional near-infrared spectroscopy (fNIRS)	Blood oxygenation level, activity of certain brain areas	- analyzes consumer reactions to marketing stimuli (commercials, packaging, logo, website design); - allows you to predict emotional engagement, attention and decision-making process
Methods that analyze physiological responses		
Galvanic Skin Response (GSR) Measurement	Electrical conductivity of the skin, which changes as a result of emotional arousal, when the level of sweat glands in the feet or palms changes	- analyzes the level of emotional involvement in advertising content or a product - assesses the level of stress or tension that consumers may experience when interacting with advertising
Heart rate variability (HRV)	Heart rate, which is an indicator of the autonomic nervous system	- helps determine whether a consumer is stressed or excited when interacting with a company's product or advertising
Methods that analyze behavioral responses		
Electromyography (EMG)	Electrical activity of facial muscles	- assesses subconscious facial expressions that may reveal a consumer's true emotions toward a product or advertising stimuli
Eye-tracking	Eye movement and gaze concentration	- helps to identify which elements attract attention, and also influences advertising and packaging design, product placement on the shelf, and site effectiveness

Source: developed by the authors

The specified groups of methods enable the collection of various types of data, providing a multidimensional analysis of consumer behavior. Thanks to these approaches, researchers can study not only rational decisions but also subconscious reactions to marketing stimuli. At the same time, neurotechnologies primarily serve as an auxiliary tool that complements traditional marketing research methods, such as surveys, interviews, and focus groups. Their application enables the deepening of the obtained results, confirming or clarifying the conclusions, as well as revealing hidden emotional and cognitive mechanisms underlying the perception of advertising messages.

The key arguments supporting the application of neuroscientific methods in advertising research include the following:

- neuromarketing allows brands to create campaigns that respond to consumers' emotional needs;
- tracking and analyzing consumers' emotional reactions allows product developers to optimize packaging, promotional materials, or website design;
- using neurobiological data allows for more precise customization of messages that resonate most with target audiences.

Based on the analysis of research, it can be argued that emotions play a key role in decision-making. Emotions are an important component of the human psyche, which directly affects behavior, cognitive processes and interaction with the world around us. As Antonio Damasio notes, emotions are not an obstacle to rational decision-making; they are its fundamental component [19]. Researchers have also found that emotional experiences can be

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more powerful than rational arguments, particularly in cases of spontaneous purchases or quick decisions [20].

Among the most well-known theoretical approaches to studying emotions, it is worth highlighting [21-24]:

1) Paul Ekman's Theory of Basic Emotions. According to this theory, there is a universal set of emotions, such as joy, anger, fear, surprise, disgust, and sadness. These emotions are fundamental to all people, regardless of culture, and can be expressed through facial expressions and nonverbal cues;

2) James-Lange theory. This theory states that emotions are the result of physiological changes in the body in response to external stimuli. For example, a person feels fear because their heart rate increases and their muscles tense;

3) Robert Plutchik's "Wheel of Emotions" theory. This classification identifies eight basic emotions, each with its own intense version and opposite emotion: joy – fear, trust – disgust, surprise – expectation, and fear – anger. Emotions by intensity, for example, anger can range from irritation to rage, and joy – from pleasure to ecstasy. In neuromarketing, this classification allows for a deeper understanding of the intensity of the consumer's emotional state;

4) Schechter-Singer's two-factor theory of emotions. According to this approach, emotions arise as a result of a combination of physiological response and cognitive appraisal of the situation. A person evaluates the context of an event and based on this determines what emotion they are feeling.

According to cognitive theories, emotions arise in response to specific mental processes. This highlights the significance of consumer perception of advertising and the interpretation of the messages conveyed. Different emotions can activate distinct memory mechanisms that influence the formation of a positive or negative brand image. Psychophysiological models focus on the biological basis of emotional reactions. Measuring physiological indicators (heart rate, sweat rate) can help determine the level of emotional response to advertising. All of these theories allow us to understand how emotions arise and influence human behavior, which is important for marketing research. Understanding basic emotions, their intensity and impact on decision-making helps marketers develop advertising campaigns that not only inform, but also evoke an emotional response in consumers.

Modern research in the field of neuromarketing enables a deeper understanding of the mechanisms of emotion and their impact on various aspects of human life, including consumer behavior. Studies show that emotionally colored messages are better remembered than neutral ones [26]. This is explained by the fact that during an emotional reaction, certain areas of the brain responsible for processing information are activated, which helps to better remember and perceive the advertising message. Emotions directly affect the functioning of the brain, the main structures that play a key role in the formation of emotions are the limbic system, the amygdala and the prefrontal cortex.

The application of neuromarketing research in practice allows companies to create effective advertising strategies that evoke an emotional response. For example, advertising that evokes feelings of joy or delight can create a positive attitude towards the company and stimulate a purchase. At the same time, inducing negative emotions such as fear or anger can also be effective in certain situations, such as in social media campaigns or advertising aimed at increasing safety. Understanding which emotions a particular message evokes allows you to optimize it for maximum effectiveness.

In modern advertising, researchers distinguish several main types of emotional appeals [27]:

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– happiness and joy – marketers try to associate feelings of joy with the product or service they are offering. They use vivid stories and visually appealing images to evoke positive emotions such as joy, delight, laughter, and pleasure. For example, in advertising for beverages or food, scenes of a happy family vacation or moments of enjoying life are often inserted;

– fear, anxiety, and worry – advertising that evokes feelings of fear is based on the instinctive human need to protect oneself. This advertisement can highlight the potential disadvantages of refusing a product or service, emphasizing the urgency of taking action to mitigate the risk. For example, insurance companies often use this emotion in their advertising to convince potential customers to purchase insurance products;

– nostalgia – an emotional appeal that evokes feelings of warmth and takes consumers back to the past with memories. It is used to build trust in the brand and create emotional comfort. Nostalgia is most often used by brands in the food, children's, fashion or retro brands to evoke a connection with pleasant moments of childhood or youth;

– compassion and empathy – advertising appeals that seek to demonstrate the company's commitment to social responsibility and moral values. For example, a communication appeal with information that the company cares about the environment or does not test its products on animals;

– surprise and intrigue – most often used in advertising that seeks to interest the audience with unexpected news. For example, such emotional accents are often used in advertising by companies producing technological products.

Neuromarketing enables companies to gain a deeper understanding of the psychological mechanisms underlying such appeals. By analyzing brain responses, researchers have demonstrated that emotional advertising fosters stronger brand loyalty and influences purchasing decisions more effectively than rational arguments [29].

An important aspect is the balance between the emotional and rational components of advertising. Too much emotional intensity can distract from the main message or product, so it is necessary to clearly define the goals of the advertising campaign and form emotional content accordingly. Emotions directly affect consumer behavior. For example, positive emotions such as joy or satisfaction can increase brand loyalty and encourage repeat purchases, while negative emotions can lead to a negative attitude towards the product. At the same time, extremely strong emotions, sadness or fear are appropriate in social or charity advertising, but are usually not effective for commercial campaigns.

Due to the impact of advertising on consumers through various emotions, a positive effect is created for the company. First, advertising that evokes strong emotions more effectively holds the viewer's attention. Second, such advertising is more likely to be remembered and remains fixed in the consumer's mind for a longer period. Third, after exposure to such an advertising stimulus, the desire to purchase the advertised product typically increases. Fourth, such advertising is a means of increasing consumer loyalty to the company or its products. Fifth, this type of advertising often works like viral marketing: consumers, feeling an emotional connection with the company, become more inclined to recommend its products to other people.

To more effectively predict consumer behavior, companies invest in their own neuromarketing laboratories, hire scientists, or partner with research centers (Google, Frito-Lay, CBS, E-Television). Neuromarketing research is conducted on an ongoing basis by numerous prominent companies, including Coca-Cola, Pepsi, McDonald's, Visa, PayPal, Microsoft, Nike, Zara, Samsung, Hugo Boss, Mercedes, Lexus, Omega, Hilton, Apple, Starbucks, Calvin Klein, and others. These are just a few of the companies that openly use neuromarketing approaches in their activities, although in reality there are many more such companies. Coca-Cola has been

using emotional appeals in its advertising campaigns since 2010, focusing on emotions such as joy, happiness, and friendship. The marketing campaign “Share a Bottle of Coca-Cola” is an example of emotional advertising that evokes positive emotions through the personalization of beverage bottles, encouraging consumers to share happy moments with friends and family. Nike actively uses motivational appeals in its advertising campaigns, evoking emotions of pride, achievement and inspiration. The campaign “Just Do It” inspires people to overcome their limitations and achieve better results, creating an emotional connection with the brand through a sense of confidence and strength. Apple’s advertising initiative called “Think Different” demonstrates not only the technical advantages of products, but also focuses on how gadgets can change users’ lives, evoking emotions of creativity, innovation and pleasure.

Ukrainian businesses also frequently employ emotional appeals in their advertising campaigns to enhance communication with their target audience and elicit a positive response to their products. An example is the advertising project from Kyivstar, launched during the COVID-19 pandemic, titled “The Connection That Unites.” The emphasis was on the importance of connecting with loved ones during quarantine. The advertisement reminded that even at a distance, people stay together thanks to technology. The main emotions used were support, reliability, and love for family. The “Protect Your Own” advertising campaign of the Armed Forces of Ukraine aims to create a strong emotional connection with Ukrainian citizens, motivating them to support the army and help soldiers who defend their homeland. The emotional appeal is based on patriotism, support, and unity. The advertising initiative of the company "Nova Poshta" called "Native Ukraine," during the full-scale invasion by the Russian Federation, emphasized the importance of unity among Ukrainians and support for one another in difficult times. It focused on the reliability of delivery to the most remote corners of the country, assistance to the army and volunteers. The main emotions are patriotism, hope and concern for others. All these examples demonstrate that foreign and Ukrainian companies successfully utilize emotional appeals and neuromarketing approaches to establish trusting relationships with consumers, thereby enhancing the impact of advertising messages by understanding the subconscious emotional reactions of their audience.

#### **Conclusions from this research and prospects for further developments in this area.**

Emotions play a crucial role in neuromarketing, significantly impacting the effectiveness of advertising messages. The application of neuroscience principles and approaches enables marketers to better understand how emotions influence consumer behavior, thereby opening up new opportunities for enhancing the effectiveness of marketing communication strategies. Theoretical approaches and practical methods for studying the emotional impact of advertising messages allow companies to interact more effectively with their audience, which is critically important in a competitive business environment. Emotions directly affect consumer decision-making, modifying their attention, memorization, and attitude towards the brand. The issue of studying the emotional impact of advertising messages remains relevant both in scientific and practical contexts. Further research is needed to analyze the impact of emotions on cognitive processes and consumer memory, to study the differentiation of emotional reactions depending on the type of advertising content (visual, audio, interactive), and to assess the effectiveness of combining neuromarketing technologies with digital tools for user behavior analytics in the modern marketing environment.

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*Летуновська Наталія Євгенівна, доктор економічних наук, доцент, доцент кафедри маркетингу, Сумський державний університет (Суми, Україна).*

*Синенко Дарина Василівна, аспірант Навчально-наукового інституту бізнесу, економіки та менеджменту, Сумський державний університет (Суми, Україна).*

***Дослідження емоційного впливу маркетингових комунікацій за допомогою нейромаркетингових технологій***

*У статті проаналізовано існуючий науковий доробок щодо дослідження емоційного впливу комунікаційних матеріалів на споживача. Розглянуто теоретичні підходи до вивчення емоційного сприйняття реклами, проаналізовано механізми формування емоційних реакцій та їхній вплив на поведінку споживачів. Узагальнено основні методи нейромаркетингу, які використовують для оцінювання емоційного залучення аудиторії. Визначено роль емоцій у процесах ухвалення споживчих рішень і формуванні лояльності до бренду. Наведено приклади успішних рекламних кампаній, які базуються на емоційному впливі. Отримані результати сприяють глибшому розумінню практичного потенціалу нейромаркетингових технологій у підвищенні ефективності маркетингових комунікацій.*

**Ключові слова:** нейромаркетинг, емоції, бібліометричний аналіз, нейронаука, рекламні повідомлення, споживацька поведінка.

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