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### THE INFLUENCE OF SYNERGY OF NEUROMARKETING AND VISUAL SOLUTIONS ON CONSUMER BEHAVIOR

**Abstract.** The article is devoted to the study of the role of synergy of neuromarketing and visual solutions in modeling consumer behavior. The authors emphasize that in the digital era, visual elements are becoming important tools for influencing consumer consciousness. The authors analyze the interaction of such elements as color, typography, shape, texture, and their impact on the emotional perception of products and brands. Particular emphasis is placed on the use of modern neuroimaging methods to assess reactions to marketing stimuli.

The authors investigate how the emotional coloring of visual content affects the formation of brand trust and loyalty. The authors propose the concept of synergy, where neuromarketing enhances the effectiveness of visual solutions in advertising campaigns. Examples of successful brands that integrate neuromarketing into their strategy are provided. The social and cultural aspects of adapting marketing campaigns in a global context are considered. The main factors that ensure a stable emotional connection between the brand and the consumer are identified.

The advantages of using interactive and dynamic visual solutions are analyzed. The concept of emotional branding based on the synergy of visual effects and neuromarketing data is proposed. The influence of culture and individual characteristics on the perception of advertising is analyzed. The article highlights the role of design in creating a sustainable emotional connection between the brand and the consumer.





The article outlines future research directions in the field of neuromarketing and visual technologies. The findings emphasize the importance of adapting marketing strategies to changes in the perception of visual content. The study results confirm that optimally selected visual design can significantly increase the effectiveness of marketing communications. Attention is focused on the use of visual triggers to stimulate subconscious desires. Prospects for the development of methods for studying consumer behavior using artificial intelligence are considered. Practical recommendations for marketers to optimize visual solutions are offered.

**Keywords:** marketing, visual style, design, emotional branding, advertising.

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## **ВПЛИВ СИНЕРГІЇ НЕЙРОМАРКЕТИНГУ ТА ВІЗУАЛЬНИХ РІШЕНЬ НА ПОВЕДІНКУ СПОЖИВАЧІВ**

**Анотація.** Стаття присвячена дослідженню ролі синергії нейромаркетингу та візуальних рішень у моделюванні поведінки споживачів. Автори наголошують, що у цифрову епоху візуальні елементи стають важливими інструментами впливу на споживчу свідомість. Розглянуто взаємодію таких елементів, як кольорова гама, типографіка, форма, текстура та їхній вплив на емоційне сприйняття продуктів і брендів. Особливий акцент зроблено на використанні сучасних методів нейровізуалізації для оцінки реакцій на маркетингові стимули.

Досліджено, як емоційне забарвлення візуального контенту впливає на формування довіри до бренду та підвищення лояльності. Автори пропонують концепцію синергії, де нейромаркетинг посилює ефективність візуальних рішень у рекламних кампаніях. Наведено приклади успішних брендів, які інтегрують нейромаркетинг у свою стратегію. Розглянуто соціальні та культурні аспекти адаптації маркетингових кампаній у глобальному контексті. Визначено основні фактори, що забезпечують стійкий емоційний зв'язок між брендом і споживачем.

Запропоновано концепцію емоційного брендингу, яка базується на синергії візуальних ефектів і даних нейромаркетингу. Проаналізовано вплив культури та індивідуальних особливостей на сприйняття реклами. У статті





висвітлено роль дизайну у створенні стійкого емоційного зв'язку між брендом і споживачем.

У статті окреслено майбутні напрями досліджень у сфері нейромаркетингу та візуальних технологій. Висновки підкреслюють важливість адаптації маркетингових стратегій до змін у сприйнятті візуального контенту. Результати дослідження підтверджують, що оптимально підібраний візуальний дизайн може значно підвищити ефективність маркетингових комунікацій. Акцентовано увагу на використанні візуальних тригерів для стимулювання підсвідомих бажань. Розглянуто перспективи розвитку методів дослідження поведінки споживачів з використанням штучного інтелекту.

**Ключові слова:** маркетинг, візуальний стиль, дизайн, емоційний брендинг, реклама.

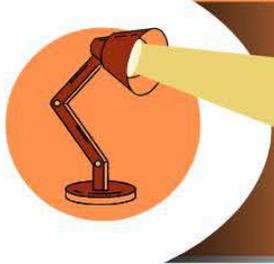
**Problem statement.** In modern marketing, the success of a brand largely depends on its ability to attract the attention of consumers and influence their decisions. Increasing competition forces companies to look for innovative approaches to communicating with the audience. One of these approaches is the synergy of neuromarketing and visual solutions, which allows creating emotionally appealing and commercially successful campaigns. Neuromarketing provides tools for analyzing consumer behavior. At the same time, visual solutions (colors, fonts, design) are becoming key elements that form an emotional connection with the brand. The problem is that companies often underestimate the importance of aligning these two aspects, which can reduce the effectiveness of marketing strategies.

In practice, there is insufficient research on how the combination of emotionally charged visual elements with neuromarketing data affects consumers. In particular, the issue of determining the optimal visual triggers that evoke positive emotions and stimulate activity to purchase goods or services requires attention. There is also a need to take into account cultural and individual peculiarities of visual content perception.

Thus, the problem lies in the insufficient study and practical use of the synergy of neuromarketing and visual solutions for modeling consumer behavior. This requires new theoretical and practical solutions that will help optimize communication strategies in modern marketing and increase the effectiveness of advertising campaigns, improve interaction with the target audience, and strengthen brand loyalty.

**Analysis of recent research and publications.** In recent years, a number of studies have been conducted on the impact of neuromarketing and visual solutions on consumer behavior. One of the main areas is the study of how people's neurobiological reactions change under the influence of certain marketing strategies. The paper "Neuromarketing as a means of enhancing the impact of





advertising” (2022) reveals the role of colors in shaping the emotional perception of goods. The problem is that companies often underestimate the importance of aligning these two aspects, which can reduce the effectiveness of marketing strategies.

Smells also serve as important triggers of emotions and memories, making neuromarketing a powerful tool for influencing the target audience [2].

The work by Mazur K., Lymanets A. [3] (2024) characterizes the features of using neuromarketing to influence consumer behavior by identifying the positive and negative aspects of this type of marketing.

The ethical problems of using neuromarketing are considered and ways to overcome them are presented. The analysis of visual solutions shows that colors, fonts, and design are no less important for shaping consumer experience.

The study by Afanasieva O. K. and Belous K. V. (2023) proved that emotional reactions of consumers in the decision-making process caused by external factors, in particular, the visual style of design, can be no less significant than rational arguments [1]. The authors identify the key factors that influence consumer behavior and describe in detail the methods used in neuromarketing research. Particular attention is paid to the analysis of communication channels that can effectively transmit the impact of neuromarketing technologies. The psychological semantics of colors, such as red or yellow, can evoke different emotions that influence consumer decisions.

Bentahar A. (2023) notes that neuromarketing's knowledge of consumer brain activity provides companies with recommendations for developing digital marketing strategies that are suitable for the brain's processing of online information, such as optimizing website design and content, respectively [7].

The article emphasizes that neuromarketing is becoming a key tool in future marketing strategies, as it allows for a deeper understanding of consumer behavior by analyzing their emotions and reactions to sensory stimuli. The author emphasizes the effectiveness of using neuroscience to create personalized and emotionally resonant campaigns that increase brand loyalty and drive sales. The article also draws attention to the ethical aspects and challenges of implementing such technologies.

However, research integrating neuromarketing and visual solutions is still limited. Particular attention is paid to the analysis of communication channels that can effectively transmit the impact of neuromarketing technologies. In addition, the authors have identified the main reasons that hinder the widespread adoption of neuromarketing approaches.

Thus, despite the existence of numerous studies on neuromarketing and visual solutions separately, a comprehensive analysis of the synergy of these two factors remains insufficiently disclosed.

The authors set out to investigate how neurobiological processes interact with visual stimuli to explain the mechanisms that govern consumer behavior.





**The purpose of the article** is to study the synergy of neuromarketing and visual solutions and their impact on consumer behavior in both Ukrainian and international markets.

The objectives of the article are:

1. To analyze the basic concepts and methods of neuromarketing and visual solutions used in modern marketing.
2. To study the mechanisms of interaction between neurobiological and visual factors that influence consumer decisions.
3. Evaluation of the effectiveness of the combined use of neuromarketing and visual strategies in the context of modern advertising campaigns.
4. Formulation of practical recommendations for businesses on how to use the synergy of neuromarketing and visual solutions in marketing strategies.

The purpose of the article is also to make a new contribution to understanding how these two approaches can complement each other to achieve a more effective impact on consumers.

**Summary of the main material.** Neuromarketing studies how consumers' subconscious brain processes, emotions, and instincts influence their choices when making decisions about purchasing goods or services. Using methods such as functional magnetic resonance imaging and electroencephalography (EEG), neuromarketers study the brain activity of consumers in response to various advertising stimuli.

Research shows that most consumer decisions are made subconsciously, based on emotional feelings and cognitive simplifications.

These intuitive reactions can have a significant impact on how consumers perceive a brand, even if they are not aware of the reasons behind their decisions. For example, an ad that evokes positive emotions can help foster a positive attitude toward a product, even if the product itself does not meet all the promised characteristics.

Neuromarketing also helps to identify the effectiveness of various marketing techniques, such as branding and packaging. For example, there is evidence that a product that has premium packaging is perceived as being of higher quality, even if its actual characteristics do not differ from similar products. Studies have shown that chocolate in expensive, sophisticated packaging evokes a stronger sense of satisfaction than chocolate in plain packaging, even if the product itself is identical. This perception affects the price consumers are willing to pay. Different colors have different emotional impacts: red is associated with energy and urgency, blue with reliability and trust, and green with health and environmental friendliness.

Accordingly, certain colors are associated with the concepts of “expensive” and “exclusive” in the consumer's mind. For example, red and gold packaging colors are often associated with luxury and premium. Neuromarketing tests have shown that packaging using these colors can increase sales by 15-20%, as consumers intuitively perceive such products as being of higher quality [6].



Frito-Lay used EEG technology to study how consumers react to different packaging designs [4]. The study showed that the matte surface of the package evokes more positive emotions than the glossy one. Adding images of ingredients, such as potatoes or seasonings, also improved the perception of the product. This led to a packaging redesign that helped increase sales. PepsiCo used EEG and gaze tracking to study consumer reactions to bottle shape and label design.

It turned out that more sophisticated shapes and dynamic patterns on labels attracted more attention and evoked associations with quality and freshness. This data helped create a new bottle design that increased the product's appeal [5].

Font is also important for shaping brand perception.

The choice of a corporate font directly affects how the audience perceives the company, its values, and products. Let's take a look at a few examples of how different fonts shape the brand image. For example, serif fonts create an impression of stability, tradition, and reliability. Serifs: create a sense of class and trust. They are often used in the financial sector, education, and luxury brands. Brands that use such fonts include The Times, Harvard University, and Chanel.

Sans-serif fonts are perceived as simpler and more minimalistic, they look more modern and neutral, and are suitable for technology companies, startups, and brands that strive for simple and clear communication. Examples of such brands are Google, Apple, and Coca-Cola. For a youth clothing brand, choosing a bright and unconventional font will evoke associations with energy and creativity. At the same time, for a law firm, a classic serif font will be more appropriate, symbolizing reliability and professionalism.

A work by Becker (2011) notes that the use of legible, simple fonts can increase brand trust, while complex fonts can cause a sense of confusion or negativity [6].

In turn, fonts with graceful lines can create an impression of elegance and prestige, which is important for luxury and premium products. Using EEG and eye movement tracking, neuromarketers have found that simple and minimalist brand logos are easier to remember and evoke associations with reliability and quality.

Moreover, the correct use of visual elements can significantly improve the consumer experience. For example, when developing websites or mobile applications, the ease of navigation and visual appeal of the interface can have a significant impact on user loyalty and their willingness to use the brand's services again.

The integration of neuromarketing approaches with visual strategies creates a powerful effect that allows brands to maximize their impact on consumers. The interaction between neurobiological responses and visual stimuli provides a more comprehensive approach to developing marketing campaigns, where each element works towards a common goal - influencing consumers.

One of the most striking examples of the successful use of this synergy is Coca-Cola with its new packaging and logo. During the launch of the advertising



campaign, Coca-Cola adapted the packaging design, using red to increase the emotional response, while working with the neuropsychological aspects of brand perception. With the help of neuromarketing research, the company was able to create a positive emotional response that reinforced the brand's association with joy and a festive atmosphere in the minds of consumers.

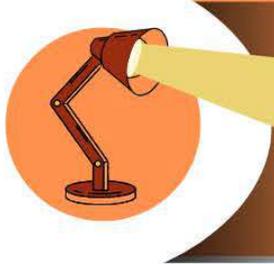
Keller's (2019) research confirms that brands that successfully combine neuromarketing strategies and visual solutions can not only increase sales but also create a deep emotional connection with their audience. For example, when developing an advertising campaign that included a combination of visual elements and neurobiological stimuli, the results showed a significant increase in campaign effectiveness [8].

The concept of emotional branding, backed by neuromarketing data and visuals, opens up new horizons in marketing, allowing companies to create deep emotional connections with their consumers. With the help of neuromarketing, companies can measure the emotional reaction of consumers to different product designs and, based on the data obtained, optimize the product design to evoke the most positive emotions among consumers. An example is the design of smartphones, which emphasizes their elegance, technology, and prestige. The use of smooth surfaces, metal elements, and thin lines creates a sense of sophistication and a desire to own such a device.

The perception of advertising is a complex process that largely depends on the cultural context and individual characteristics of a person. For example, ads that emphasize family values will be effective in cultures where the family is an important institution. Thus, in societies where food is linked to social interactions and family values, food advertising campaigns tend to focus on these aspects. In the United States, car ads often emphasize individuality and freedom, while in Japan they emphasize reliability and practicality. Understanding these nuances allows you to create more effective advertising campaigns that take into account both cultural characteristics and individual differences of consumers.

The use of artificial intelligence opens up new horizons for consumer behavior research and neuromarketing. AI will allow analyzing large volumes of visual and textual data, such as product images, customer reviews, and social media posts, to identify hidden patterns and trends, which will open up new opportunities for personalizing marketing campaigns and creating more effective products and services. In addition, AI will allow for more accurate forecasts of future consumer behavior, which will help companies make more informed business decisions.

**Conclusions.** The study of the synergy of neuromarketing and visual solutions allows to draw several important conclusions. First, neuromarketing, with its ability to study subconscious consumer reactions, is a powerful tool for creating more effective marketing strategies. Using neurobiological data allows us to understand how emotional reactions influence consumer decisions and how these emotions can be channeled to the benefit of the brand.



Secondly, visuals such as color, font, and packaging design have a significant impact on brand and product perception. The right choice of visual elements can create the desired emotional atmosphere that enhances the effectiveness of marketing campaigns.

Thirdly, the combination of neuromarketing and visual solutions opens up new opportunities for deeper impact on consumers. Thanks to this synergistic effect, brands can not only attract attention but also create long-term emotional connections with the audience. It is also important that such integration allows brands to fine-tune their strategies to achieve maximum effect.

The prospects for further research lie in expanding the understanding of the interaction between neurobiological and visual factors, which will allow marketers to create even more personalized and effective strategies to influence consumer decisions. Particular attention should be paid to the study of specific cultural differences in the perception of visual elements and neuromarketing stimuli, which can help adapt strategies for the global market. The use of AI in consumer behavior research opens up new business opportunities, allowing companies to better understand their customers and create customized offers, more personalized products and services.

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