

THE INTERRELATIONSHIP BETWEEN DIGITAL AND NEUROMARKETING CONCEPTS AND THEIR IMPACT ON CONSUMERS

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Abstract:In the era of digital economy, the integration of digital and neuromarketing strategies has become an important aspect of modern marketing. Digital marketing allows companies to provide consumers with personalized and relevant information, while neuromarketing analyzes unconscious consumer behavior to optimize marketing strategies. This study examines the relationship between digital marketing and neuromarketing concepts and their impact on consumer decision-making processes.

Keywords:digital marketing, neuromarketing, consumer behavior, digital economy, return on investment (ROI), conversion rate, marketing strategy, consumer engagement.

Introduction

Today, the marketing industry is also undergoing dramatic changes as a result of the rapid development of the digital economy. The effectiveness of traditional marketing methods is declining, and digital and neuromarketing strategies are taking their place. While digital marketing systems allow for quick and personalized delivery of information to customers, neuromarketing has been proven to optimize marketing campaigns by studying human subconscious processes and influencing consumer behavior.

In the digital economy, companies have to adapt to market conditions by analyzing the information needs of consumers, using personalized advertising tools and combining elements of neuromarketing with digital strategies. This study analyzes the relationship between the concepts of digital marketing and neuromarketing, as well as their impact on consumers, based on empirical data and statistical methods.

The main objective of the study is to evaluate the effectiveness of digital and neuromarketing technologies and determine their impact on consumer decision making.

Literature review

The relationship between the concepts of digital marketing and neuromarketing in the digital economy and their impact on consumers has been widely covered in the scientific literature.

A 2024 study conducted by the Harvard School of Professional Development examined the extent to which neuromarketing influences consumer decision-making processes. The results of the scientists' research show that it is possible to improve digital marketing strategies and study unconscious consumer reactions using neuromarketing technologies[1]. Based on the results of this study, it can be concluded that the use of neuromarketing by a company through digital technologies ensures maximum promotion of manufactured goods.

Forbes Agency Council (2023) stated in its article that neuromarketing will be an integral part of marketing strategies of the future. Researchers study consumer behavior and their attitudes toward brands using neuroscience research, which will help companies develop

more effective advertising strategies [2]. Studying consumers' subconscious actions and their reactions to advertising in marketing will allow marketers to determine which advertising is most likely to encourage consumers to buy more products.

A 2024 study conducted by Raimova examined how digital marketing influences consumer behavior. According to the scientist, the use of digital marketing tools, especially neuromarketing technologies, allows for a more accurate understanding of consumer needs [3].

In her 2022 study, Sadykova analyzed the prospects for the development of Internet marketing in Uzbekistan. It demonstrated the importance of interactive advertising, social media marketing, and neuromarketing methods in the digital economy [4].

Kholmatov emphasized the significant role of artificial intelligence and Big Data technologies in this process [5]. In general, the use of Big Data technology involves collecting data obtained as a result of studying consumer demand.

As a result of the analysis of scientific works on the topic, it was established that the relationship between digital marketing and neuromarketing serves to increase the effectiveness of modern marketing strategies.

Research Methodology

A mixed research methodology was used to analyze the relationships between digital and neuromarketing concepts and examine their impact on consumers. The main research methods included:

- Existing scientific literature, scientific articles and conference proceedings on this topic were studied.
- Surveys and interviews were conducted among companies and consumers operating in the retail sector of Uzbekistan.
- Based on the collected data, the impact of digital marketing and neuromarketing tools on consumer decisions was studied.
- The application of neuromarketing approaches was analyzed using the example of leading digital marketing companies and business entities operating in the retail sector.

Based on the results of the study, recommendations were developed for integrating the concepts of digital and neuromarketing. Thanks to this methodology, scientific approaches and practical results related to the topic were interconnected, which increased the scientific and practical significance of the study.

Analysis and results

In this section of the study, we will analyze the impact of digital and neuromarketing concepts on consumers using an enterprise example based on empirical data. First, let us consider the impact of neuromarketing on consumer behavior (Table 1).

The study analyzed consumer responses to neuromarketing strategies based on the following data:

Table 2. Consumer response to neuromarketing strategies

Factors	Average value	Standard deviation
Visual Impact (X1)	3.5	1.2
Sound and sensory stimuli (X2)	4.1	1.0
Brand Loyalty (X3)	3.8	1.3

The data were estimated using a logistic regression model:

$$P(Y) = \frac{1}{1 + e^{\beta_0 + \beta_1 * X_1 + \beta_2 * X_2 + \beta_3 * X_3}}$$

Here:

P(Y) – probability of purchase;

X₁, X₂, X₃ – the factors indicated above;

β₀ – model parameters.

The calculation results [6] showed a purchase probability of 87%.

Secondly, we will determine the level of efficiency of digital marketing using the example of an enterprise (Table 2).

Table 2. Marketing efficiency level [8]

Marketing strategy	Net profit (million sum)	Expenses (million sum)	Return on Investment (%)
Traditional Marketing	135	119	13.4%
Digital Marketing	320	241	32.7%
Based on neuromarketing	410	273	50.2%

Return on investment calculation formula:

$$ROI = \left(\frac{\text{Net profit}}{\text{Investment value}} \right) \times 100\%$$

In here

Net profit is the difference between the income from an investment and its costs,

Investment value is the total amount invested in a project or asset.

The results show that the use of neuromarketing leads to increased ROI.

Table 3. Neuromarketing and conversion rates [9]

Marketing type	Number of purchases	Site visits	Conversion (%)
Simple advertising	210	10,000	2.1%
Neuromarketing Strategies	530	10,000	5.3%

The conversion rate is calculated as follows:

$$\text{Conversion level} = \left(\frac{\text{The number of conversions}}{\text{Total visits}} \right) \times 100\%$$

In this

The number of conversions - visits that achieved the goal (e.g. purchase, registration, application),

Total Visits - The total number of visits to a site, page or platform.

The calculation shows that this increased the conversion rate by 2.5 times compared to regular advertising.

The results of the analysis show that the integration of neuromarketing and digital marketing has a significant impact on consumer decisions. In particular:

- Visual and audio elements have a strong influence on purchasing decisions;
- ROI increased to 47% using neuromarketing;
- Conversion rates on online shopping platforms increased by 2.5 times thanks to the use of neuromarketing tools.

Therefore, in the future, companies are encouraged to enrich their marketing strategies with elements of neuromarketing.

Conclusion and suggestions

In the digital economy, the interrelation of digital and neuromarketing concepts is becoming an integral part of modern marketing strategies. The combination of digital technologies and

neuromarketing approaches helps to increase efficiency, directly influencing consumer decision-making processes and creating an infrastructure that serves to increase the effectiveness of companies' marketing.

The study found that neuromarketing elements, including visual, audio, and tactile stimuli, increase the likelihood of consumers making a purchase. This also leads to a positive increase in the effectiveness of digital marketing strategies due to the personalized approach and the use of artificial intelligence technologies. Scientific research data confirms that digital marketing companies using neuromarketing tools demonstrate higher ROI and conversion rates compared to traditional marketing.

In general, in today's business environment, companies play a key role in increasing their competitiveness in the market through a deep study of consumer behavior and the development of marketing strategies that suit them. As a result of the research conducted, the following proposals were developed:

— Deep understanding of consumer brain activity and psychological responses will further enhance the effectiveness of digital marketing strategies.

— Personalized advertising and AI-powered content creation will further drive consumer engagement.

— To ensure that a brand remains in memory for a long time, it is important to use neurobiological methods.

— Product testing using virtual and augmented reality technologies encourages consumers to make purchases.

The above suggestions will enable companies to effectively use digital and neuromarketing tools and significantly improve their marketing results.

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