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The role of neuromarketing in digital marketing

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Abstract

This study was conducted with the aim of examining the role of neuromarketing in digital marketing. The research methodology is applicable in terms of purpose; quantitative in terms of execution; and descriptive-correlational in terms of nature and method. The statistical population of the study consisted of customers of active online stores in Tehran province. Using a simple random sampling method and Cochran's formula, 384 individuals were determined as the sample size. To collect research data, a standard questionnaire based on a 5-point Likert scale was used. The content validity of the instrument was confirmed by specialists and experts; and to measure the reliability of the instrument, Cronbach's alpha and composite reliability methods were used. By distributing the questionnaire, the validity of the instrument was assessed using three methods: construct validity (outer model), convergent validity (AVE), and discriminant validity. The AVE value for all variables should be greater than 0.5. SPSS and PLS software were used for data analysis. The research findings indicate that the dimensions of neuromarketing (interest and engagement, knowledge and awareness, and ethics) influence digital marketing.

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Extended Abstract

Introduction

Neuromarketing is an interdisciplinary science rapidly emerging in consumer cognition research worldwide. It is also considered a creative field in marketing research that challenges the traditional marketing model to improve the understanding of the process related to purchasing behavior. Neuromarketing is a method that examines the customer's decision-making process for purchasing (Alkhudari et al., 2023). Based on the marketing concept regarding this process, customer purchasing decisions are presented as a two-system approach. System 1 is an automatic and fast process, while decisions made by System 2 are deliberate, with conscious reasoning, and slow. In the study of consumer behavior cognition, these processes constantly guide purchasing decisions. Furthermore, neuromarketing is a combination of at least three basic sciences, including neuroscience, behavioral economics, and social psychology (Salaripour, 2021). On the other hand, due to intense competitive pressures today, one of the most important strategies through which service organizations can achieve a sustainable competitive advantage is to improve communications and advertising through cyberspace (Bílková et al., 2021). Therefore, applying the digital marketing approach in market activities facilitates and expands the strategic behaviors of marketing managers of companies in cyberspace (Sattarii et al., 2022). Consequently, digital marketing is considered one of the important items of strategic assets and modern marketing tools. Gathering and evaluating information related to competing companies in developing a modern digital marketing approach plays a vital role. On the one hand, building capacity for the development of digital marketing requires providing the necessary training and skills with a digital approach and the growth of commercial enterprises based on societal needs at all levels. On the other hand, the development and growth of digital businesses require understanding and removing obstacles and creating suitable grounds for the development of service activities (Kaushik, 2021). Adopting digital approaches and social media has gradually become one of the most critical marketing strategies for organizations (Saruklai et al., 2022). Digital and social media are essential sources for expanding individuals' social lives or understanding consumer behavior, especially for contemporary global trends, such as Industry 4.0, intelligence, and even the metaverse. Therefore, for marketers and those who want to stay at the edge of market trends, "digital marketing" has become an inevitable paradigm in the business field. While the high potential of digital marketing in various business areas has been proven, the approach to this technology in financial markets is slightly different. A significant challenge facing the marketing team of financial institutions is digital transformation. Cyberspace creates many opportunities for the financial services industry in terms of customer acquisition and retention. In every economic unit, there is a close relationship between the economic unit's ability to generate operating cash flows and the capital needs required for the next period. Like other behavioral phenomena, the adoption trend of digital marketing in online companies can be analyzed using the principles stated in behavioral theories. Hence, the present study seeks to answer the question: What is the role of neuromarketing in digital marketing?

Theoretical Foundations

Neuromarketing

Neuromarketing is an emerging field that examines customer behavior using neuroscience tools and has rapidly become a topic of interest for marketing researchers. Neuromarketing is not a replacement for traditional marketing; rather, it is considered a complement to improve

it. In fact, the relationship between neuromarketing and traditional marketing can be likened to the relationship between neuro-psychology and psychology (González-Mena et al., 2022).

Digital Marketing

Marketing is an essential activity for generating revenue from key customers and other ones. Therefore, companies facing budget cuts must exercise sufficient caution in identifying essential and non-essential expenses. Digital marketing is a general term for any effort by a company to communicate with customers through electronic technology, including email, location and mobile marketing, social media, online communities, and other video-based content (Wang et al., 2021).

Pirzada (2025) conducted a study titled “Neuromarketing in Digital Advertising: Insights and Case Studies from India.” By leveraging advanced neuroimaging techniques and biometric tools, businesses can create more effective advertising strategies that resonate with consumers at an unconscious level. This study identifies key neuromarketing strategies employed by Indian companies and examines their impact on consumer engagement and decision-making. Additionally, it discusses ethical considerations and potential challenges associated with implementing these techniques.

Devi (2025) conducted a study titled “Decoding the Consumer Mind: Integrating Neuromarketing Principles into Digital Marketing Strategies.” This study, supported by current trends from 2023 to 2025 and emerging neuroscience research, invites students to identify key opportunities and ethical challenges that marketers may face in creating psychologically optimized, technology-driven campaigns. Furthermore, the urgency of these developments is amplified by the acceleration of digital engagement in the post-pandemic era and the growing presence of artificial intelligence technologies.

Research Methodology

This research is applicable in terms of its objective, and descriptive-correlational in terms of its method. The statistical population of the study consists of customers of active online stores in Tehran province. Due to the unlimited nature of this population, 384 individuals were determined as the sample size using simple random sampling and the Cochran formula. A researcher-made questionnaire on a five-point Likert scale was used to collect data. The findings from the Cronbach’s alpha and composite reliability tests to measure the reliability of the research instrument are reported in Table 2. Content validity (expert consultation) was used to assess the instrument’s validity, and its credibility was confirmed. Then, by distributing the questionnaire, the instrument’s validity was measured using three methods: construct validity (outer model), convergent validity (AVE), and discriminant validity. The AVE value for all research variables must be greater than 0.5. To test the research hypotheses, structural equation modeling was used in the SmartPLS2 statistical software environment.

Findings

Data analysis indicated that neuro-based marketing, with its components of knowledge and awareness, ethics, interest, and engagement, has a significant positive impact on digital marketing. The results suggest that neural triggers, by accessing the subconscious layer, reduce mental resistance and facilitate customer decision-making in the online space. Ultimately, the research model explained that adhering to ethical principles, alongside emotional engagement, leads to the sustainability of digital trust and loyalty in the target market.

Discussion and Conclusion

The present research was conducted with the aim of analyzing the role of neuro-based marketing dimensions in enhancing digital marketing among customers of online stores in Tehran province. The findings from data analysis using Structural Equation Modeling (SEM) with PLS showed that all formulated hypotheses were confirmed, and the conceptual model of the research has a good fit.

Explaining the first hypothesis regarding the impact of “interest and engagement” in neuro-based marketing on digital marketing, the results of statistical analysis showed that this component, with a beta coefficient of 0.594 and a t-statistic of 5.421, played the strongest explanatory role in the model, and the hypothesis was confirmed with 99% confidence. This finding is very consistent with the results of Devi (2025) and Millagala (2023), as neuro-based marketing, by influencing subconscious layers, identifies stimuli that lead to deeper emotional engagement of the customer in the digital space. In fact, as Gohain (2024) also pointed out in his research, in the current era where capturing consumer attention is difficult, using neural techniques to evoke interest makes digital marketing strategies move beyond simple messages and become resonant experiences in the audience’s mind, leading to their active participation and loyalty on online platforms.

The second hypothesis, which examines the role of “knowledge and awareness” in neuro-based marketing on digital marketing, yielded results supporting a significant positive effect of this variable with a beta coefficient of 0.411 and a t-statistic of 6.189, indicating a high stability of this relationship in the studied population. This result is consistent with the findings of Moradi ziba et al. (2023), who consider customer knowledge as one of the main reasons for success in digital strategies, as well as with the results of Zhang et al. (2023) regarding the importance of awareness in dynamic environments. In interpreting this effect, it can be argued that neuro-based marketing improves comprehensive decision-making by enhancing brand cognition and clarifying the message in the audience’s mind. In other words, when customer awareness is strengthened through optimal neural stimuli, digital tools such as websites and applications are perceived more effectively in their minds, and by reducing mental resistance, they pave the way for interaction with online stores.

Finally, the third hypothesis of the research regarding the impact of “ethics” in neuro-based marketing on digital marketing was also confirmed with a beta coefficient of 0.419 and a t-statistic of 4.980, indicating the importance of value dimensions in the adoption of new marketing techniques. The confirmation of this relationship aligns with the emphases of Pirzada (2025) and Devi (2025) on the necessity of managing ethical challenges in the use of novel marketing technologies. This finding suggests that among the customers of online stores in Tehran, adherence to ethical principles acts as a strengthening and enabling factor (consistent with the model of Bagheri anilu et al., 2023). In fact, commitment to an ethical charter in the use of neural data and biometric tools leads to the creation of “digital trust” in customers and acts as a shield against potential distrust, which ultimately allows digital marketing techniques to influence purchase intention and consumer behavior more sustainably and effectively.