

THE USE OF NEUROMARKETING RESEARCH METHODS IN THE DIGITAL ECONOMY: A PATH FORWARD FOR EMERGING MARKETS

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Annotation. As the digital economy reshapes how businesses connect with consumers, traditional marketing tools are struggling to keep up with complex, data-driven environments. Neuromarketing—a blend of neuroscience, psychology, and marketing—emerges as a powerful alternative. By using tools like EEG, fMRI, and eye-tracking, marketers can access subconscious consumer responses and design more emotionally resonant, targeted campaigns. This paper explores the relevance of neuromarketing in digital ecosystems and evaluates its feasibility for countries like Uzbekistan, where marketing practices are rapidly evolving. The findings highlight not just the potential but also the challenges of introducing neuromarketing in developing markets.

Keywords: neuromarketing, marketing techniques, digital marketing, fMRI, EEG, GSR, consumer psychology, marketing stimuli, digital economy.

Annotatsiya. Raqamli iqtisodiyot biznes va iste'molchilar o'rtasidagi aloqalarni tubdan o'zgartirmoqda. Oddiy marketing vositalari bugungi murakkab, ma'lumotlarga asoslangan muhitda yetarli emas. Neyromarketing — bu neyrofanda, psixologiyada va marketingda birlashtirilgan yangi yondashuv bo'lib, EEG, FMRI va ko'z kuzatuv texnologiyalari kabi vositalar orqali iste'molchilarning ongsiz reaksiyalarini aniqlash imkonini beradi. Ushbu maqolada neyromarketingning raqamli iqtisodiyotdagi o'rni va uning O'zbekiston kabi rivojlanayotgan davlatlar uchun moslashuvchanlik darajasi tahlil qilinadi. Natijalar neyromarketingning nafaqat imkoniyatlarini, balki uni tatbiq qilishdagi qiyinchiliklarini ham ochib beradi.

Kalit so'zlar: neyromarketing, marketing usullari, raqamli marketing, fMRI, EEG, GSR, iste'molchi psixologiyasi, marketing stimullari, raqamli iqtisodiyot.

Аннотация. Цифровая экономика коренным образом меняет взаимодействие между бизнесом и потребителями. Традиционные маркетинговые инструменты оказываются недостаточными в условиях сложной, основанной на данных современной среды. Нейромаркетинг представляет собой новый междисциплинарный подход, объединяющий нейронауку, психологию и маркетинг. С помощью таких инструментов, как EEG, fMRI и технологии отслеживания глаз, он позволяет выявлять подсознательные реакции потребителей. В данной статье рассматривается роль нейромаркетинга в цифровой экономике и его адаптивность для таких развивающихся стран, как Узбекистан. Результаты исследования раскрывают не только потенциал нейромаркетинга, но и трудности, связанные с его внедрением.

Ключевые слова: нейромаркетинг, маркетинговые методы, цифровой маркетинг, fMRI, ЭЭГ, ГСР, психология потребителя, маркетинговые стимулы, цифровая экономика.

Introduction. The acceleration of the digital economy has heightened the need for marketing strategies that move beyond surface-level analysis of consumer behavior. Traditional tools such as surveys and focus groups often fail to capture subconscious cognitive and emotional responses that drive purchasing decisions. Neuromarketing, which integrates neuroscience with consumer psychology and marketing science, provides an alternative by enabling data collection at the neural and physiological levels. This discipline has seen growing adoption in advanced markets, where digital competition necessitates increasingly precise targeting and design. For emerging economies such as Uzbekistan, neuromarketing offers a pathway to developing marketing practices aligned with consumer-centric innovation and digital transformation.

Literature review. The foundation of neuromarketing is the measurement of subconscious processes involved in consumer decision-making. Ariely and Berns [1] provide an overview of the technological evolution in neuroimaging, emphasizing its value in revealing implicit consumer preferences. Morin [2] explores the shift in marketing paradigms introduced by these tools, demonstrating their effectiveness in capturing emotional engagement. Plassmann et al. [3] critically assess the application of neuroimaging in brand perception, arguing for the integration of brain-based insights in marketing strategy development. Ramsøy [4] advances this by introducing an operational framework for consumer neuroscience, while Hubert and Kenning [5] focus on the convergence of physiological metrics and behavioral outcomes. Lim [6], in a more critical tone, addresses the conceptual challenges and ethical concerns that come with the application of these methods in commercial environments.

Methodology. The methodological framework of this paper is qualitative and comparative in nature. It employs content analysis of peer-reviewed literature to extract theoretical principles and application patterns. Secondary data from marketing campaigns employing neuromarketing technologies such as fMRI, EEG, GSR, and eye-tracking were examined. Emphasis was placed on campaigns by global companies—Amazon, Coca-Cola, and Google—where these tools were used to evaluate attention, emotional arousal, and cognitive engagement. The study also includes a contextual assessment of Uzbekistan's digital marketing ecosystem to gauge feasibility and constraints in neuromarketing adoption.

Analysis and results. Findings indicate that neuromarketing technologies provide measurable improvements in advertising effectiveness and user interface design. EEG and fMRI allow for segmentation based on neural engagement, rather than declared preferences, offering higher predictive validity [1][2]. Eye-tracking data has informed webpage and product layout optimization by highlighting areas

of visual salience [4]. GSR, in turn, captures the strength of emotional responses, correlating well with memory retention and brand recall [5].

In developed markets, these tools are integrated into iterative design cycles, contributing to dynamic content testing and adaptive branding strategies. In contrast, emerging markets lack infrastructure, technical expertise, and ethical regulation to support wide-scale adoption. However, the increasing availability of portable EEG and eye-tracking devices reduces entry barriers. Furthermore, collaboration with academic institutions can offset skill limitations and ensure methodologically sound applications.

For Uzbekistan, initial applications could focus on low-cost neurometrics such as eye-tracking for digital content optimization. Strategic partnerships between marketing firms and universities could facilitate knowledge transfer, while government incentives may catalyze adoption in sectors such as e-commerce, education technology, and tourism.

Conclusion. Neuromarketing stands as a critical evolution in consumer research, aligning well with the data-intensive nature of the digital economy. Its ability to unveil latent cognitive and affective patterns makes it especially relevant in an era where user engagement and personalization are central to competitive advantage. For emerging economies, incremental adoption supported by targeted investment and institutional capacity-building presents a feasible path forward.

It is recommended that emerging markets prioritize:

1. Pilot projects using eye-tracking and EEG in digital campaign analysis.
2. Formation of ethics committees to oversee the responsible use of neuromarketing data.
3. Integration of neuromarketing modules into marketing education curricula.
4. Development of partnerships between private firms, academia, and government agencies.

Such initiatives can establish a foundation for responsible, scalable, and effective neuromarketing practices within developing digital economies.

References

5. Ariely, D., & Berns, G. S. (2010). Neuromarketing: The hope and hype of neuroimaging in business. *Nature Reviews Neuroscience*, 11(4),
6. Morin, C. (2011). Neuromarketing: The new science of consumer behavior. *Society*, 48(2), 1
7. Plassmann, H., Ramsøy, T. Z., & Milosavljevic, M. (2012). Branding the brain: A critical review and outlook. *Journal of Consumer Psychology*,
8. Ramsøy, T. Z. (2015). Introduction to Neuromarketing & Consumer Neuroscience. *Copenhagen Business* 5.
9. Hubert, M., & Kenning, P. (2008). A current overview of consumer neuroscience. *Journal of Consumer Behaviour*,
10. Lim, W. M. (2018). Demystifying neuromarketing. *Journal of Business Research*,