

USE OF NEUROMARKETING TOOLS DURING THE PANDEMIC

Tetiana Yanchuk¹, Olga Fedchenko²

Abstract. This work determines the current state of research and its results in the field of neuromarketing and artificial intelligence, the attitude and awareness of society to the concepts, results, advantages and disadvantages. It also proposes to form a system of principles for the security of society and opportunities to anticipate and prevent various catastrophic situations. The subject of research is the theoretical, methodological, and practical features of the use of neuromarketing tools during a pandemic. *Methodology.* Methods such as observation (to collect primary data), questionnaires (to determine the impact of various neuromarketing tools during a pandemic), analysis and synthesis (to substantiate practical recommendations), and graphics (for visual display) were used to solve the tasks set in the paper. *Results.* The article describes the basic concepts that formed the basis of neuromarketing research. In the paper the main stages of neuromarketing time-tracking are highlighted and described. The article is about the issues related to the special neuromarketing tools that marketers use to obtain relevant results in the course of research. Also, the main reasons for the use of specialized tools were revealed and the indicators, which the researchers will analyze in the formation of conclusions and recommendations for the customers, were determined. An example of the practical application of neuromarketing for the business is proposed. It is established that a well-developed brand, which is effectively used in the activities of a enterprise, can become its special intangible asset. Moreover, it can be the basis for expanding a loyal target audience and a tool to help the company survive the crisis. People want to experience emotions together with the company, to feel unity with its idea. *Practical implications.* Neuromarketing technologies in the pandemic are gaining popularity and are increasingly being used as a powerful tool to influence the behavior of the target audience. The result neuromarketing reflects the highest stage of development of research and development, the right choice, which makes invisible and gives a sense of interrelation of all parts of the investigated system. *Value/originality.* It has been proved that neuromarketing is an effective tool for carrying out activities during the pandemic. Practical aspects of the introduction of neuromarketing techniques into the work of enterprises during the pandemic have been proposed.

Key words: Neuromarketing, artificial intelligence, subconscious, biometric systems, algorithms, iTracking.

JEL Classification: A11, M21, M31, M37

1. Introduction

Various foreign and Ukrainian information sources show the interest and popularity of methods and applications of artificial intelligence (AI). Modern research in the field of neuromarketing shows a lot of results that people more often cannot control their subconscious reactions. During the pandemic, neuromarketing tools that can evoke feelings of altruism or reasonable selfishness in the consumer's mind by influencing his subconscious are the best for businesses. Even the strongest tools of neuromarketing are unable to evoke in the minds of consumers a thoughtless desire to spend their money

without prerequisites, instead, they can significantly strengthen the existing desire to use certain services, due to stimulating subconscious motives of the consumer, which they cannot even imagine. This topic is relevant and needs further research, as modernity during the pandemic changes the vision of the classical business.

Scientific research of the practical neuromarketing aspects with the help of mechanical network connections and AI systems is carried out by such scientists as O. Zhnevsky, K. Yun, B. Knutson, K. Herbs, L.A. Casado-Aranda, D. Angel, R. Blackwell, P. Miniard, F. Kotler, and others. Well-known scientists

Corresponding author:

¹ Vasyl' Stus Donetsk National University, Ukraine

E-mail: tani2006@ukr.net

ORCID: <https://orcid.org/0000-0003-3901-7670>

ResearcherID: https://www.researchgate.net/profile/Tanya_Yanchuk

² Vasyl' Stus Donetsk National University, Ukraine

E-mail: fedchenko_o@donnu.edu.ua



This is an Open Access article, distributed under the terms of the Creative Commons Attribution CC BY 4.0

such as Paul Glimcher, Martin Lindstrom, Arndt Trindle, and others have studied the problems of neuromarketing in more detail. At the present stage, this area of research has been developed by such scientists as O.D. Boyko, A. A. Kopeiko, M. A. Auckland, E. Kahn, and others.

The research aims to study and analyze the basic principles and concepts of the phenomenon of neuromarketing as an effective tool for conducting activities during a pandemic; consider the practical aspects of implementing neuromarketing techniques in the work of enterprises during a pandemic.

2. Application of neuromarketing tools in the activities of enterprises

Neuromarketing is the use of brain activity visualization technologies to objectively assess the true reactions of a potential consumer to various marketing materials, whether visual advertising, brand, or style. Neuromarketing is sometimes equated with artificial intelligence. It is not advisable to deny the presence of artificial intelligence as such in the life of each of us, as there are many examples of its use: smart sensors; face recognition (machine vision); deep learning; expert systems; recognition of language, texts, images; smart home systems; business analyst (Adams, 2020).

The global market for software using artificial intelligence algorithms reached \$ 51.5 billion in 2021, an increase of 21.3% compared to 2020. Such data was published in November 2021 in the research company Gartner. The market contained in Gartner includes applications with built-in AI capabilities, such as machine vision software and AI software. Virtual assistants are called the largest segment of the market by analysts, as the cost of them globally in 2021 will be \$ 6.21 billion, which is 12% more than a year ago (Oleksii, 2021).

One of the leading areas is machine vision programs, which use human biometric systems for recognition and authorization. Biometric systems include fingerprints, facial scans, voice or iris recognition. We sometimes don't realize that neuromarketing surrounds us everywhere. Let us take our devices: these are selections of movies/series/music/goods – all this is the result of careful analysis by artificial intelligence of behavior, interests, and time spent on particular content. YouTube analyzes what a user watches multiple times, what they like or dislike, what videos they watch, and more. The well-known company Netflix, based on the user's behavioral experience, offers a movie or series that is interesting to him/her. We can take their latest achievements in the film industry. For example, the series "Squid Game". An important component of successful product placement is the organic use of the product in the frame. Vans' slip-on shoes were integrated without a bright logo, but they were the daily helpers of the characters in their tasks, perfectly solving the problems of the characters, their pain. The main message that remains in your head is "Running, jumping, sitting, and doing everything else in Vans is convenient".

Unique marketing information can be provided by a neuromarketing tool such as video or iTracking. With its help, experts understand what the consumer pays attention to and where he looks for the longest time. This method is now widely used in studies of the effectiveness of advertising, perception of the text, used by programs and sites. It is an indispensable tool for analyzing advertising images, directing attention while watching video clips, various design elements, including packaging. With the help of an iTracker, you can make a "heat map" that uses color to show where and for how long a person has been looking. Some companies use iTrackers or monitor involuntary facial expressions (Coleman, 2016).

Segment	2021 Revenue	2021 Growth (%)	2022 Revenue	2022 Growth (%)
Knowledge Management	5,466	17.6	7,189	31.5
Virtual Assistants	6,210	12.0	7,123	14.7
Autonomous Vehicles	5,703	13.7	6,849	20.1
Digital Workplace	3,593	13.7	4,309	20.0
Crowdsourced Data	3,483	13.6	4,171	19.8
Others	27,049	14.1	32,827	21.4
Total	51,503	14.1	62,468	21.3

Source: Gartner (November 2021)

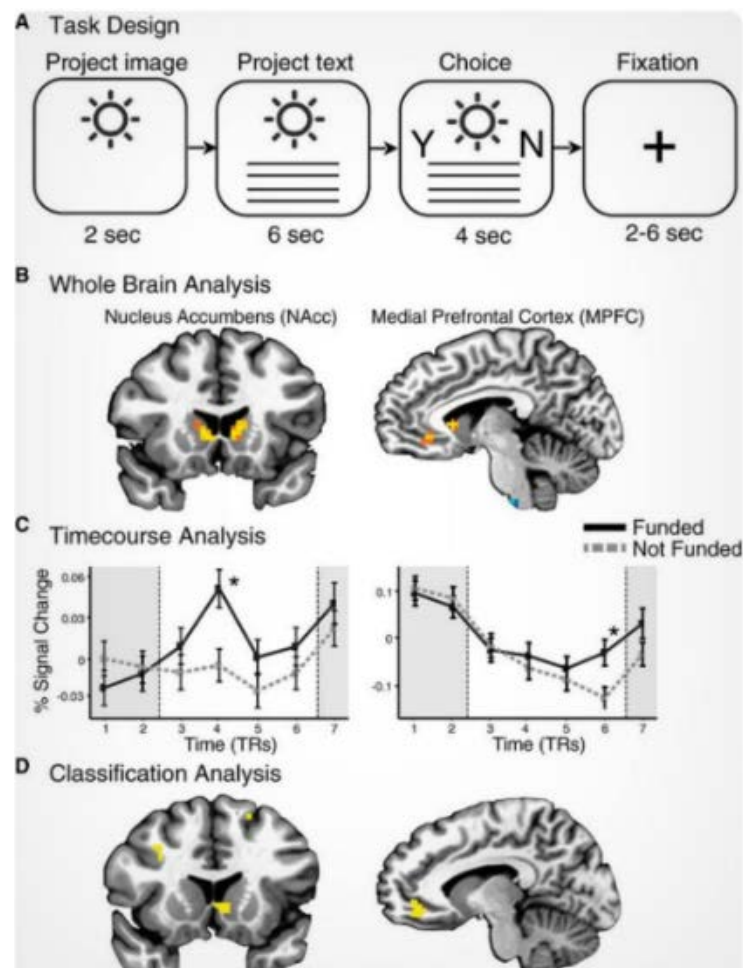
Figure 1. Modern AI software market and forecast based on usage (Oleksii, 2021)

Unilever company conducted research combining iTracking with a demonstration of a virtual 3D environment. As a result, they changed the packaging design of Axe shower gel and deodorant, highlighting the product name, and recommended that sellers place products on sloping shelves so that the bottles always slide forward and face the buyer. At one of the sellers, sales in the deodorant category increased by 3.5% (Coleman, 2016).

Tracking also confirmed that the human face is always the focus of attention. People subconsciously perceive even a schematic image of a person. In a study of print advertising depicting a shampoo product (Sunsilk) and the face of a girl looking at the camera, people focused on the slogan above and the girl's face. Only 6% of 200 people looked at the packaging of the shampoo. If the girl did not look straight, but on the left, at the package, people looked after her, and in this case, 84% of the participants looked

at the package. Thus, a minimal change that takes into account typical human behavior has improved perception and further drawn attention to the logo at the bottom of the page (Coleman, 2016).

There are lots of studies in this area, such as the possibility of predicting the behavior of a large audience. For instance, Alexander Genevsky, Carolyn Yoon, and Brian Knutson used the crowdfunding site Kickstarter for their experiments. The study looked at whether brain activity could predict the outcome of crowdfunding in a week. During the experiment, they showed 30 subjects 36 different fees to finance startups. Subjects had to say whether they would give money from their scholarship to help a particular project or not. While the participants were making their choice, special devices were recording the activity of their brains (Genevsky, 2017). A few weeks after the end of the fundraiser, the researchers began comparing the results of the questionnaire and



A – experimental task: view the image of the project (2 seconds), read the description (6 seconds), make a choice (yes / no), fixation (2-6 seconds)

B – whole-brain analysis

C – time course analysis

D – classification analysis

Figure 2. The essence of the experiment of predicting behavior (Genevsky, 2017)

the analysis of brain activity. It turned out that brain activity was the main indicator of how successful the crowdfunding campaign would be. This conclusion was confirmed during the repeated experiment (Figure 2).

During the pandemic, people began to save and choose goods more carefully. Businesses that have used neuromarketing tools at the point of sale have begun to think about which tools to use online. A modern consumer reacts to the price and form of payment, so their reaction can also be explored using knowledge of neuromarketing. L. A. Casado-Aranda, F. Liebana-Cabanillas, and H. Sanchez-Fernandez are engaged in this topic and have conducted their research in this area. (Casado-Aranda, 2018) They focused on two main methods of payment: debit cards and PayPal – biometric payment system (Apple Pay, Samsung Pay, and Android Pay) (Figure 3).

During the experiment, the researchers analyzed the activity of neurons in the subjects. The participants had to make simple purchases online. It turned out that making risky payments activated areas of the brain associated with negative emotions.

And when the subjects performed safe financial transactions, they activated the area of the brain

that is responsible for receiving rewards (Casado-Aranda, 2018).

Most business companies are attracting artificial intelligence technologies and improving economic performances. For example, in banks, the decision to approve or disapprove a loan is decided by the AI – analyzing the entire credit record the AI predicts how responsible the payer will be. In medicine, AI calculates the likelihood of stroke in humans, detects and classifies cardiac arrhythmias based on electrocardiograms, synthesizes human speech, "reads" the neural activity of the auditory cortex, and helps to restore control of paralyzed limbs.

With the right tools for neuromarketing, you can recoup your investment quickly, make a profit by optimizing costs and increasing sales.

3. The impact of neuromarketing on the human subconsciousness

To understand the situation among young people, respondents aged 16-21, a study was conducted on awareness of the areas of application of AI systems through biometric systems. The survey was carried out through a questionnaire. The questionnaire was

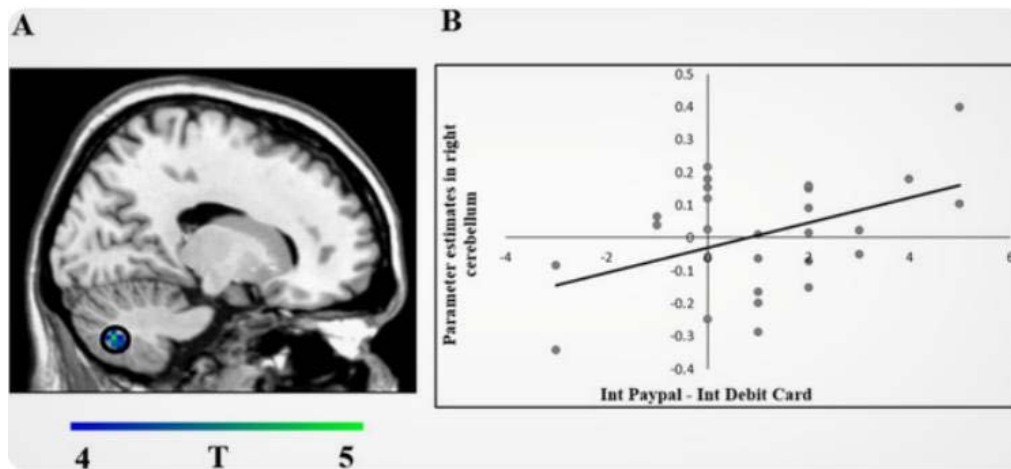


Figure 3. Different payment methods are trusted by users to the greater or lesser extent (Casado-Aranda, 2018)

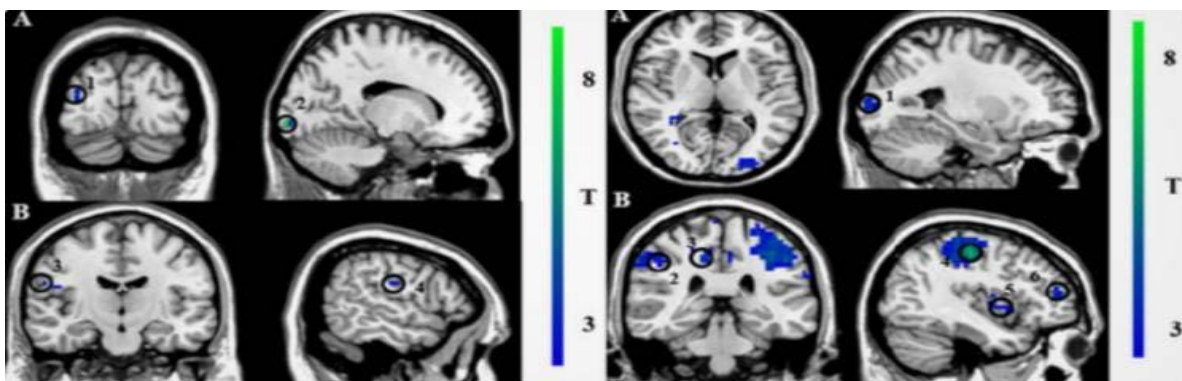
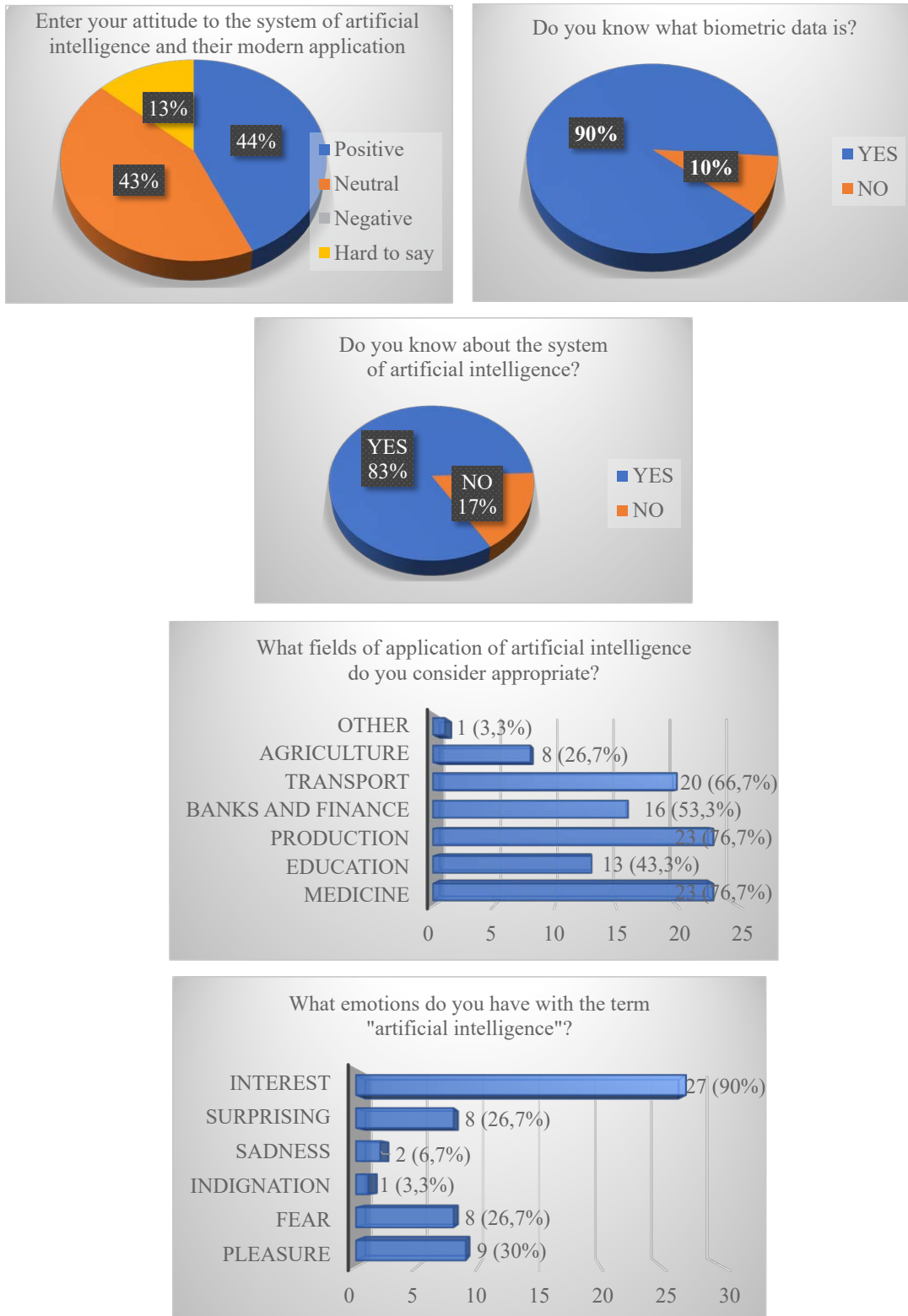


Figure 4. Reaction of neuronal activity in participants' brains (Casado-Aranda, 2018)

attended by 87 people and was conducted during December 2021. The results of the survey are shown in Figure 5.

The analysis of the given data of the distribution of respondents' answers allows drawing conclusions that:

- the majority of respondents are aware of the areas of biometric systems (90%) and AI (83.3%);
- more than half of the respondents are positive about biometric systems and their performance (56.7), but the attitude towards AI systems is different. 43.3% of respondents are neutral, 43.3%



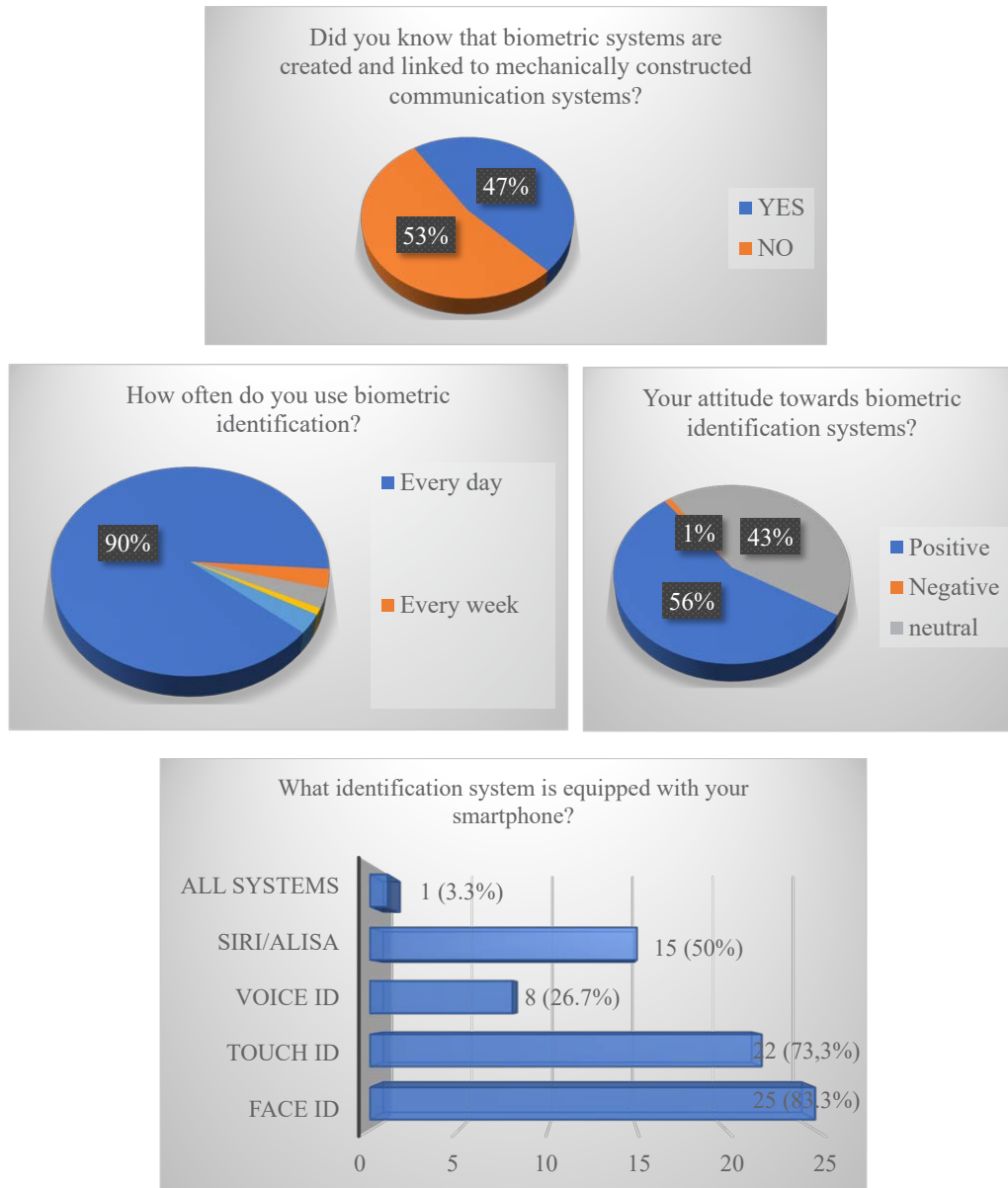


Figure 5. The results of the answer distribution to the questionnaire

are positive and 13.3% of respondents find it difficult to answer;

- 83.3% of respondents use the Face ID recognition system, while 73.3% use the Touch ID4 fingerprint recognition system;
- 90% of respondents use biometric authentication systems (BSA) every day, but only 53.3% of respondents know that the BSA is created and connected to the AI system;
- the AI system in respondents often evokes related emotions of curiosity (90%), fear (26.7%), and joy (30%).

Respondents believe that the use of AI will be appropriate in such areas as medicine (76.7%), manufacturing (76.7%), and transport (66.7%). The answers to the questionnaire provided an interesting

cross-section, showing a rather contradictory picture. The respondents know, use, and have a positive attitude towards the achievements of AI – biometric authentication systems, but almost half of the respondents did not know that the BSA was created due to AI and AI evokes the emotion of fear in a quarter of respondents. The reasons may be ignorance, neutral attitude, lack and inaccessibility of sufficient information, minimal coverage of the situation by the media, lack of much transparency in the already published results.

All this contributes to the fact that consumers are users of AI results, but do not even guess that it is possible thanks to it. Most respondents have a positive attitude towards AI systems, so it is possible to make assumptions that they know about its main

advantages. However, it is not known whether they are aware of the shortcomings and threats that may be real shortly for the world.

4. Conclusions

The results of the study conclude that people know what AI is, its benefits and opportunities, but are not aware of the specific areas of its application and that it is always with us. Manipulation of the consumer's subconscious leads to increased sales and profits. Algorithms help us better understand not only the world around us, – but also the inner world, that is our neural connections and subconscious reactions, which we are often unable to control or explain, as neuromarketing research shows.

Artificial intelligence is a tool that is able to communicate between virtual agents and bots and an operational group that monitors and records products in stock, and provides maximum return on investment for commercial organizers, as they seek to uncover the full potential of data, process, and change the mechanisms of business processes.

To understand the situation among young people, respondents aged 16-21, a study was conducted on awareness of the areas of application of AI systems through biometric systems. The answers

to the questionnaire provided an interesting cross-section, showing a rather contradictory picture. The respondents know, use, and have a positive attitude towards the achievements of AI – biometric authentication systems, but almost half of the respondents did not know that the BSA was created due to AI and AI evokes the emotion of fear in a quarter of respondents. The reasons may be ignorance, neutral attitude, lack and inaccessibility of sufficient information, minimal coverage of the situation by the media, lack of much transparency in the already published results.

Neuromarketing technologies in the pandemic are rapidly gaining popularity and are increasingly used as a powerful tool to influence the behavior of the target audience. Improving the productivity of the work (based on artificial intelligence) is the reason for differences between developed and developing countries when workers are easily replaced by jobs. In addition, this improvement will generally contribute to income growth, but will also increase income inequality, at least in the transition period and possibly in the long run for some groups of workers, both in developed and developing countries. Neuromarketing today is one of the marketing technologies of the future, and therefore needs further study.

References:

- Adams, N.-S. (2020). Neurolaw, privacy and neurotechnology. Available at: <https://www.michalsons.com/blog/neurolaw-privacyand-neurotechnology/45137>
- Casado-Aranda, L. A., Liébana-Cabanillas, Fr., & Sánchez-Fernández, J. A. (2018). Neuropsychological Study on How Consumers Process Risky and Secure E-payments. *Journal of Interactive Marketing*, 43, 151–164.
- Coleman, K. (2016). Why These 4 Fortunate Companies are Using Neuromarketing. Available at: <https://edgylabs.com/four-companies-using-neuromarketing>.
- Genevsky, A., Yoon, C., & Knutson, B. (2017). When Brain Beats Behavior: Neuroforecasting Crowdfunding Outcomes. *Journal of Neuroscience*, 37(36), 8625–8634.
- Harari, Y. N. (2018). 21 lesson for the 21 Century. Israel: Spiegel & Grau, Jonathan Cape, 372 p.
- Herbes, Carsten & Friege, Christian & Baldo, Davide & Mueller, Kai-Markus, (2015). Willingness to pay lip service? Applying a neuroscience-based method to WTP for green electricity. *Energy Policy, Elsevier*, 87(C), 562–572.
- Skriabin, O. M., Sanakoiev, D. B., Sanakoieva, N. D., Berezenko, V. V., & Liubchenko, Yu. V. (2021). Neurotechnologies in the advertising industry: Legal and ethical aspects. *Innovative Marketing*, 17(2), 189–201.
- Richardson, D. C., Griffin, N. K., & Yan, J. (2018). Measuring narrative engagement: The heart tells the story, 243 p.