

Neurolinguistic and neuromarketing effects on consumer behavior

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Abstract — The current market environment is extremely competitive. In recent years, increased competition and competitiveness among companies has grown exponentially, increasing the range of products on the market. In this regard, the development of business strategies that guarantee their long-term survival is becoming increasingly difficult. In addition, changes in customer behavior contribute to the creation of new business models that continue to attract and motivate customers, as well as a new marketing concept adapted to this situation, capable of creating new communication channels. Traditional marketing, offline advertising, and strategies are losing efficiency in a new era in which the consumer gains more power and influence. Therefore, in addition to improving and developing the characteristics of products, it is necessary to pay attention to experience working with clients, since it has the potential to increase customer loyalty. Neuromarketing offers advanced methods for studying the behavior of potential buyers, based on the previously obtained information. Thus, it is possible to predict consumer behavior more efficiently than using traditional market research methods, providing companies with a competitive advantage to satisfy their customers' emotional needs, providing unique consumer experiences with the goal of convincing them of decision-making and loyalty in the future.

Keywords — *neuromarketing, consumer behavior, manipulation, advertising*

I. INTRODUCTION

Currently, advertising accompanies a person everywhere, daily looking through hundreds of advertising messages. They are placed not only in the media (television, radio, Internet, press), but also in other places (streets, buses, mailboxes, stadiums, etc.). Social and commercial campaigns are based on similar principles and methods, despite the fact that their goals are different. The purpose of commercial advertising of products or services is their further sale to consumers, which will bring tangible benefits and profits. The purpose of the social campaign is the provision, expansion of social knowledge, participation in social affairs. At the same time, the rules determining the effectiveness of advertising on social topics are comparable with the rules for evaluating commercials. They are based on the ability to influence a person's behavior and are

associated with his cognitive processes, emotions or motivations. Advertising becomes effective in cases where the recipient of the message notices it and then remembers the content that is its purpose (company logo, product name, name of the candidate for the election, desired social behavior, etc.). If the result is not achieved, this means that the advertisement did not make sense. It follows that advertising messages, including on social networks, should attract the attention of a potential buyer.

The comprehension of the experience of neurolinguistic programming (NLP) and its registration in the model and technique made it possible to quickly go beyond the boundaries of psychotherapy. Today, the principles and techniques of NLP are in demand in various fields when addressing issues related to improving the competence of employees, managing time planning, creativity, innovation, etc. Neurolinguistic programming was developed and proposed by American scientists John Grinder and Richard Bandler in the 80s of the last century. In the practical aspect, neurolinguistic programming can be defined as the study of outstanding results in the activities of individuals in various fields in the process of communication, as the art and science of personal mastery [1], [6], [7], [10]. In the conditions of increasing competition when creating advertising messages, marketers are actively using the practice of neurolinguistic programming.

To achieve the goals planned by the creators of advertising messages, various methods of influencing the consciousness and control of the human subconscious are used. They include, among other things, effects on memory, emotions, and the subconscious. Theories of cognitive psychology claim that a person is actively involved in obtaining information, including through advertising. Based on this assumption, models of human communication were developed. In the context of advertising, models have been developed for the impact of advertising on the recipient. They describe the mechanism of advertising, as well as the processes of processing and use of information by recipients and differ in the number, type and sequence of steps. The most popular impact models for advertising are linear

models, and the less common are models with several paths (wider). Linear effects hierarchy models include a three-element sequence: Think-Feel-Do models that can be customized in different ways. Each of them suggests that advertising can cause one of three reactions [8]:

- Cognitive, related to the level of knowledge of the buyer, resulting from the information transmitted by the advertising message. Among the indicators are advertising awareness, advertising review, advertising recognition, brand recognition, brand recognition.
- Emotional, associated with the formation of consumer attitudes to goods and companies under the influence of advertising. The indicators are: brand attitude, user image, brand preference.
- Behavioral behavior caused by the motivation of a potential buyer to act in accordance with the expectations of the sender of the advertising message. At the same time, the intention to purchase goods (services) of a certain brand and its use are indicators.

Models of advertising impact on the recipient of information also represent a hierarchy of advertising effects in combinations of elements such as understanding, emotions and behavior. This is due to the existence of various communication goals, among which the provision of information to the recipient, the desire for action, changing habits or beliefs. The result should be a cognitive, emotional or behavioral reaction of the potential buyer. Below are the most famous models of the impact of advertising, including their various stages (Table 1).

TABLE I. CONSUMER IMPACT MODELS

Abbreviation	Content
SLB	stay, look, buy
AIDA	Attention, Interest, Desire, Action [17]
AIDAS, AIDAL, AIDAR, AIDAE, AIDCAS	Attention, Interest, Desire, Conviction, Action, Satisfaction [2]
DAGMAR	ignorance, awareness, understanding, condemnation, action [23], [5]
DIPADA	definition, identification, confirmation, acceptance, desire, action [9]
Lavidge-Steiner	awareness, knowledge, sympathy, belief in preferences, purchase [12]
Ray's Model [22]	a) Scheme 1, steps: Awareness, Understanding, Condemnation, Action; b) Scheme 2, steps: Action, Condemnation, Awareness, Understanding; c) Scheme 3, steps: Awareness, Understanding, Action, Condemnation;
FCB	Foote, Cone, Belding [22]
ELM	development probability model [4]
Reed and Ewing Model [20]	-

For more information on the assumptions of advertising impact models, see A. Kozlovskaya [11].

It should be noted that there is no single universal model that could determine the basic conditions for choosing a specific method of influencing consumer decisions. Nevertheless, the effectiveness of achieving goals at some stages can be well analyzed by applying modern research methods, such as methods of cognitive neurobiology. Based on their use, it is possible to find out what emotions cause certain scenes of advertising, what elements of advertising the recipients paid special attention to or what was remembered [3], [15], [18]. This type of research apparatus has been developed and used for many years in various research centers. Carrying out such studies requires the use of appropriate research methods that allow you to read and analyze the pulses generated by the brain, heart muscle, skin surface, etc. The development of consumer culture and the study of the behavioral aspects of the buyer led to the emergence of a new direction in marketing, neuromarketing. The development of a new area of neuromarketing has potentially great potential in the successful implementation of the company's strategy. The concept of neuromarketing was proposed in the 90s by psychologists at Harvard University and is based on the assertion that the subconscious region of the brain is responsible for 90% of the mental activity of the consumer and his emotions. From which it follows that this area can be manipulated in order to introduce the necessary reactions into the minds of consumers. Among the researchers involved in this issue, scientists from various scientific fields should be distinguished, including A. Traindl, [21], D. Lewis [13], M. Lindstrom [14] and others.

II. METHODS

The authors conducted an in-depth study using the experimental method as part of the applied research work on the state assignment for 2019. The research part included an analysis of the scientific and methodological work of Russian and foreign authors in the field of neuromarketing and neurolinguistic programming, preparation of a research program, development and “piloting” of the test material, field research phase (organization and conduct of the experiment using special equipment: stationary eye-tracker), data processing using specialized software, analysis and interpretation of results, formulation of conclusions.

The object of the study were residents of Moscow over 18 years old. The subject of the study was advertising incentives that determine consumer behavior in a digitalized society. The aim of the research was to study the degree of influence of various advertising incentives on consumer behavior in a digitalized society. In accordance with this goal, a test material was developed containing three groups of graphic images, including advertising incentives used by organizations in the financial, food and non-food markets (websites of organizations). At the stage of choosing the research methodology, it was decided to conduct a laboratory experiment using specialized Tobii Pro Glasses 2 Live View Wireless 50 HW IT tracker equipment and Tobii Pro Lab Analyzer Edition software.

TABLE II. Distribution of respondents who participated in the experiment in accordance with the calculated sample (by gender and age)

Sex/ age	Young 18-40 y.o.	Middle 41-60 y.o.	Senior 61 and older	Total
male	5	5	5	15
female	5	5	5	15
Total	10	10	10	30

When developing the program part of the study to determine the sample of participants in the experiment, two indicators were identified: gender and age (two sexes and three groups of 18-40 years old, 41-60 years old, 61 years old and older, in accordance with the parameters defined in the questionnaire). The minimum number of respondents required to conduct an experiment with the selected indicators is 30 residents of the city of Moscow over 18 years old (Table 2).

III. RESULTS

In accordance with the stated goal of studying the degree of influence of various advertising incentives on consumer behavior in a digitalized society, the following tasks are formulated:

1. identify advertising incentives that determine consumer behavior of various socio-demographic groups of consumers;
2. identify advertising incentives that determine consumer behavior in various markets (financial, food, non-food);
3. determine the degree of influence of various advertising incentives for various socio-demographic groups of consumers.

So, when considering heatmaps from respondents of different genders, it is clear that men are more carefully studying the “best” offers from the bank, the offer of Internet banking, and also focus more on the image of a person. At the same time, among female participants, a lower concentration of attention (and, consequently, interest than that of men) of all elements of the site can be noted. Distinctive is the focus on the center of the girl’s face, located inside a bright element of the site’s design and which is a contrasting advertising incentive (Fig. 1).

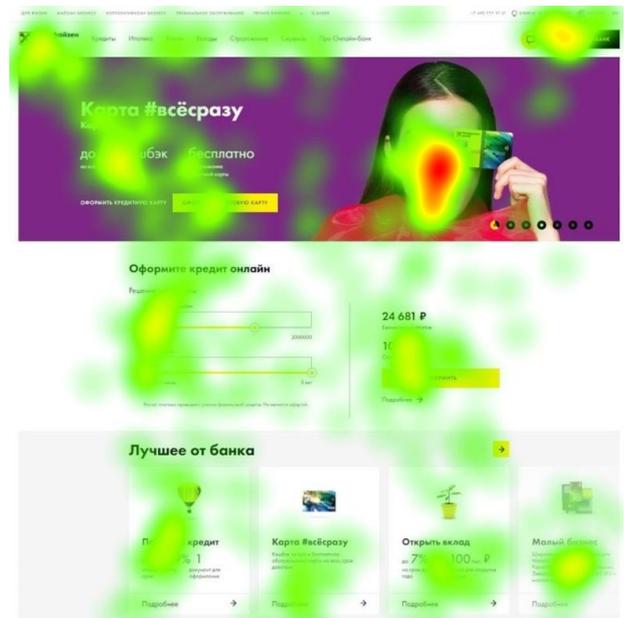


Fig. 1. Heat map of concentration on the financial institution website

During the study, it was interesting to identify the frequency of attention to advertising incentives on the website of a financial organization. For this, advertising incentives were highlighted in separate fragments and encoded in the following classification:

1. navigation elements;
2. brand identity elements;
3. image of products (goods);
4. image of products (goods);
5. color and graphic triggers;
6. price/financial triggers;
7. neurolinguistic triggers;
8. image of people;
9. image of elements of flora and fauna.

Figure 2 shows the distribution of the frequency of attention to various advertising incentives used on the website of a financial organization. As you can see, women more often than men returned to all the incentives presented, which may indicate a more fluent browsing of the page. However, knowing that the respondents were allotted the same amount of time to view the page, it can be concluded that male respondents are more focused on their attention.

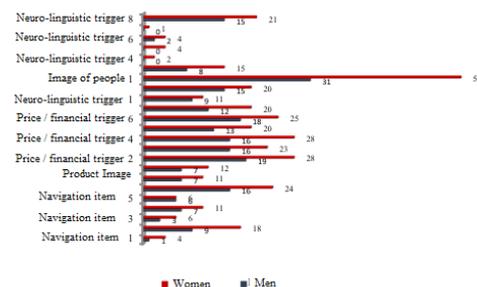


Fig. 2. The number of appeals of respondents of different sexes to advertising incentives presented on the website of a financial organization

Respondents of different age groups also demonstrate activity of browsing the financial institution's website in different ways. Thus, respondents of the older age group more actively pay attention to various types of advertising incentives, as evidenced by the largest number of views. The correlation dependence shows the opposite picture with a decrease in age among respondents. However, young and middle-aged neurotest participants are more attentive to the main part of price/financial triggers (Fig. 3).

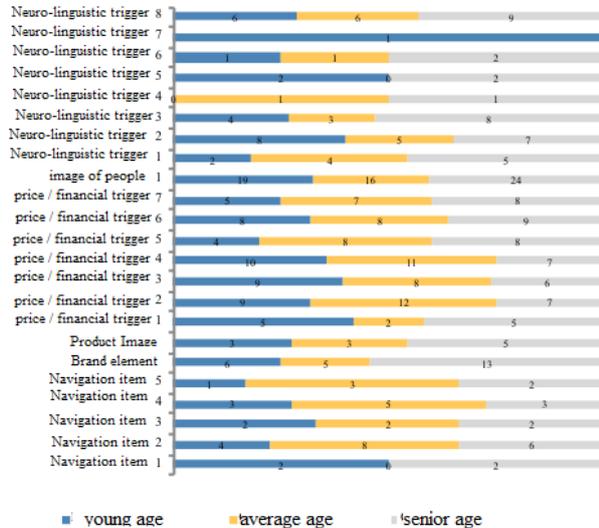


Fig. 3. The number of appeals of respondents of different age groups to advertising incentives presented on the website of a financial organization

At the same time, the female testing audience more carefully and for a long time studied the navigation bar and the image of products/goods (mouth-watering bruschetta) on the right side of the site. Also, without the active attention of men, there were price proposals at the bottom of the screen.

IV. DISCUSSION

Based on the analysis of respondents' attention on the main page of a financial institution's website, it was found:

1. The most attention is paid to the trigger associated with the image of a person at the top of the page. A larger number of respondents drew attention to the girl's slightly open mouth on the advertising banner and on the bright background of the banner.

2. The next to attract the attention of respondents were neurolinguistic and price triggers, which contain the name and conditions of the advertising offer (Map # allinone), as well as brand identity elements and website navigation elements.

3. Also, the respondents' attention was attracted by another offer of the bank - issuing a credit card. Respondents drew attention to the conditions (amount and terms) of obtaining a loan.

4. The least attention was paid to other special offers of the bank located at the bottom of the page (Fig. 1).

When analyzing the distribution of respondents' attention between advertising triggers posted on the website of an organization operating in the food market, it was found that:

1. The largest and most striking image of the product at the top of the page (a special offer dedicated to Italian cuisine), elements of the store's brand identity, as well as a neurolinguistic trigger containing a phrase in a foreign language, attracted the most attention.

2. Also, respondents' attention was attracted by site navigation elements (catalog, personal settings, shopping basket).

3. The third group of triggers that attracted attention was the store's special offers, with the image of goods and their prices at the bottom of the site.

Analysis of test advertising material of a company operating in the non-food market (furniture and household goods), the following most effective trigger groups were identified:

1. Most of all, the respondents' attention was drawn to the image of the face of a sleeping person, the image of the family, bright colors against the background of advertising banners, as well as the image of objects of nature (the image of animals and plants).

2. Also, the respondents' attention was attracted by neurolinguistic triggers, performed either by the newly formed apartment "Kvartiroteka" (from "apartment" and "mortgage"), or phrases with the double meaning "Learn to play".

3. Less attention was paid to the images of the products themselves offered by the company (household utensils and home decoration).

4. The group of triggers associated with site navigation elements (menus, search, shopping cart), as well as brand identity elements of the manufacturer, remained the least noticeable for respondents.

The frequency of visits to the advertising incentive indicates both the interest shown by the participants in the visual components of the site and the distracted look. The gender distribution of participants in neurotesting shows women's great interest in navigation elements, as well as the largest image of a product / service, as was shown on the heat map (Fig. 1, 4). At the same time, male respondents more quickly studied the presented page of the website of the organization working in the food market, demonstrating a more frequent return to elements of advertising incentives. Moreover, the concentration of attention among respondents of different age groups differs in the frequency of returns to advertising incentives on the website of an organization operating in the food market. The greatest interest was shown among middle-aged participants to all the advertising incentives presented. At the same time, young respondents are more interested in neurolinguistic triggers and the image of goods/services. In turn, older people pay more attention to brand elements, navigation elements and the image of goods/services. It is worth noting that the study of the site page of an organization operating in the non-food market by respondents of different sexes has distinctive features, in particular:

- women study the central image of the top of the site more closely, in particular the details of the proposals;

- men place more emphasis on the centers of advertising incentives presented on the company's website.

When testing an element of a page of a site of an organization operating in the non-food market, participants showed the greatest activity in relation to advertising incentives with the image of plant and animal world elements and navigation elements. The male audience more often returned to color triggers and images of people. The interest in neurolinguistic triggers did not reveal a clear correlation between respondents of different sexes. We noted that older respondents are more interested in neurolinguistic and price/financial triggers than other participants, while younger participants in neurotesting are actively paying attention to navigation and image elements of products/goods.

From the foregoing, we can conclude that all participants in the neurotest are mainly attracted by the bright banner with a contrasting image located at the top of the main page of the site. Women, as well as respondents of the older age group, have a more diffused look when they visit the page of a financial institution and often shift their attention from one incentive to another, which may be associated with a lack of understanding of the description of banking services, and on the other hand, with a desire to cover a short time span is the largest amount of information.

V. CONCLUSION

The results of the study indicate the achievement of the goals and objectives set as part of the research work on the state assignment for 2019, namely, advertising incentives that affect consumer behavior in the context of financial, food and non-food markets, various socio-demographic groups have been identified consumers, as well as the extent of this influence.

The study of neuromarketing in modern conditions is becoming especially relevant. However, given the ambiguity of positions regarding the possibilities of using this method of sales promotion, we will dwell on some problems of its development:

- the rules in the field of neuromarketing are not clearly defined; in this regard, it is necessary to create a set of scientific, legal and ethical standards that regulate and ensure the psychological safety of consumers;
- there is a risk of manipulation of consumer behavior and the elimination of personal responsibility for making decisions in the process of making a purchase;
- special protective measures should be developed for vulnerable populations.

Given the above, it can be argued that in modern conditions of consumption, neuromarketing is becoming one of the most powerful tools for manipulating consumers. Neuroimaging methods provide specialists and experts not only the predictions of consumer behavior, but also their management.

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