The Synthesis of Modern Consumer Preferences with the Use of Social Networks in Supply Chain

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Abstract - In modern realities, the main driving force in the formation of the sales market is marketing technologies. With the development of public information technologies in the face of social networks in supply chain, businesses have new levers of control of the target audience, which allows to synthesize consumer preferences. Social networks in supply chain provide a range of quality information that allows us to offer consumers the goods and services in which they are interested. The adaptation of the achievements of marketing technologies of the past years to the new semantic environment brings results that have a positive impact on economic growth. The study examines the classical marketing techniques in conjunction with the micro-segmentation of the audience of social networks in supply chain. Profiling of search engines is inherently associated with this, the most advanced method of product promotion.

Key words - consumer preferences, marketing, social networks, data, supply chain.

1. Introduction

The behavior of people and organizations in the markets of goods and services is a set of processes, the parameters of which directly depend on the characteristics of the communicative environment in which the subjects of market relations are integrated. One of the most important stages preceding any actions of buyers is the formation of consumer preferences regarding the goods and services offered on the market. The interest of the private and public sector in the results of research on the chosen subject also highlights the importance of ongoing activities to identify and synthesize consumer preferences. These preferences largely depend on the mental processes of perception of the surrounding reality, which are reflected, in particular, individual verbal and nonverbal reactions. The study of the features of such reactions provides additional opportunities to predict consumer behavior. These consumer preferences arise on the basis of information received by the individual in the process of communication with the surrounding social environment. In recent decades, one of the most important channels of human socialization is the Internet and, in particular, social networks in supply chain. From the point of view of psychosemantics, human perception of the world is categorical, that is, indirectly meaning. Accordingly, the perception and awareness of reality are the results of the interaction of the external to the individual communicative environment and personal semantic space of the person.

Social networks in the modern sense is Internet services that are designed to form, reflect and streamline social relations. Today, social networks are a special form of social integration, acting as a set of connections and relationships between people, mediated by the Internet. At the same time, the social network acts as a social adaptation to the lack of live communication within the information society [1]. A significant amount of publications in foreign and domestic scientific literature is devoted to the issues of semantic analysis of social network content in supply chain. However, insufficient attention is paid to the study of the relationship between the features of reflection in social networks of personal semantic space of users and the degree of interest of the latter in the various types of products offered in the market. The identification and analysis of these relationships is of considerable theoretical and practical interest in the study of psychological patterns of consumer behavior.

Today, 82% of all people on the Internet are active users of social services [2]. They account for one of five minutes spent on the World Wide Web. ComScore representatives in 2011 called the growth of social networks a global cultural phenomenon, the value of which the mankind has not yet fully realized. The first scientific research on the definition of social networks date back to the end of the XIX century, when in the works of European philosophers and sociologists appeared the concept of "social fabric" or "web of relations". In the applied aspect, D. Carnegie was one of the first to study social network technologies in supply chain. By combining his own observations and refinements, he laid the basic foundations of Networking in the context as we understand it today. Bestsellers D. Carnegie: "Public speaking and influencing business partners" (1926), "How to win friends and exercise influence over them" (1936), "How to stop worrying and start living" (1948) is still used as a practical guide for sales professionals, politicians, public figures [3]. The theoretical basis of the processes of studying social networks is formed in the works of leading sociologists of the 30s. Among them are publications of The American psychologist J. Moreno, a number of applied
works on sociometry, devoted to interpersonal and intergroup communications [4]. The scientist suggested the term “sociograms”, seeing in the non-matrix image of interpersonal relations social groups.

In parallel with the theoretical aspects, the study of social network technologies is in the applied format. In particular, in 1969, Miligram S. and J. Travers put forward the “theory of six handshakes”, according to which any two people on the planet can establish communication between the six intermediaries - six levels of mutual friends [5].

In the end of XX - beginning of XXI century formed a new direction in the field of social networks - virtual social formations. With their functioning social communication becomes operative global system. At the same time, the form was changed, and the content - the basic communication laws - remained unchanged.

In 1995, Conrads created Classmates.com - the first virtual social network in supply chain (mainly in the USA and Canada). The main objective of the project is to help registered users to establish and maintain relationships with friends and acquaintances with whom they communicated during their life. Seven years later, the world saw Friendster (2002), LinkedIn (2003), MySpace (2003), Tribe (2003), Hi5 (2003). Orkut, Bebo, Yahoo 360 appeared in 2004. In the same year, M. Zuckerberg created Facebook, which today is the undisputed leader in the world of social networks with more than 2 billion users (Web-canape, 2017). On the territory of the CIS were the first Moy kryg (2005), Odnoklassnikiy (2006) and Vkontakte (2006).

Against the background of fragmentation of the media environment by the response of human tastes and preferences (including Internet space), social networks in supply chain are becoming increasingly attractive to advertisers [6]. The main value of networks is a huge database of users who are both real and potential consumers of goods and services. Today, about 70% of the total Internet audience is users of social networks in supply chain [7]. In fact, we are talking about millions of people with different degrees of readiness focused on the positive perception of the advertised brands. Based on this, social networks put on “guaranteed attention”, abandoning the traditional advertising banners targeted at all [8], [9]. The term of so-called “native advertising” came into fashion, when the user's attention is awakened with the help of information that is interesting for him personally.

To this end, special services will be created (for example, the Endorphin project), which, by analyzing data from various social networks in supply chain, help the user to find the experts and professionals he needs on certain “narrow” issues.

In order to start using this program, you need to register on the site, while having accounts in popular social networks in supply chain. After that, Endorphin independently scans the data of friends and followers of the user on the pages of Facebook, Twitter, LinkedIn and Foursquare and builds their sequence depending on the success of a career, achievements, successes, results, influence on others, etc. It’s believed that in this way the total amount of data available in social networks can be used as efficiently as possible.

About the modern study of the question of the use of the data obtained in the course of the stream with micro-segmentation of network users among the many economic papers and publications of related disciplines it is rather difficult to allocate a specific amount of information, who revealed the theory of the question of the application of marketing practices on the profiles of social network users. There are mostly scattered articles with the actual description of the current system without theoretical consideration of the problem. Thus, scientists from China have a publication on the use of databases after micro-segmentation of network users and a description of the possibilities of promoting goods through the media about the General features [10]. In the work of the American scientist Albert Terry, the method of micro-segmentation of users for the consumer market is considered [11]. However, there are a lot of publications about the fact that social networks are a universal base for the implementation of marketing projects. Description of social media [12], the formation of consumer preferences through the organization of the C2C system [13], consumer preferences formed by the semantic field [14] reveal only the subject of marketing in social and information networks. The scientific novelty of this research is the combination of marketing technologies and methods of streaming micro-segmentation of social network users in supply chain.

The purpose of this study is to expand the methods of marketing practice in the analysis of the use of streaming audience micro segmentation in social networks.

2. Methods

Following the system of open systems research methods, the following list of tools was used:

1. Abstraction method-Theoretical and empirical method, which allowed in the process of analytical work to distract from the random, situational, from the non-essential properties, relationships and relationships of the phenomenon under study, and to identify the essential characteristics of interest to us in the framework of the phenomenon under study;

2. The method of analysis and systematization of data involves the structuring of the resulting analytical actions of the materials about the preferences of consumers, followed by the combination of previously disparate concepts and judgments in qualitatively new information.

3. The method of questionnaire analysis is the study of specific characteristics of consumers, on the basis of which scientific hypotheses are formed. The method of mass collection of material using the analysis of questionnaires.

4. The method of bibliographic search is a method of searching for information sources (documents and publications), which contain or may contain qualitative information, supporting the statements corresponding to the logic of the topic disclosure. The use of this method
improves the quality of research, as it allows to obtain all
the necessary information in the traditional information
environment in the optimal time.
5. The method of ascent from abstract to concrete - a
Theoretical method based on the results of the study
based on the transition from the logical study of abstract
dissected profile of the Internet user to a holistic specific
knowledge of it.

3. Data, analysis, and results
In the context of social media, the elements of personal
information reflected on users pages are largely not
demographic but semantic, that is, do not reflect real
data (e.g. age, gender, place of residence), but rather the
semantic aspects of a personal presentation or a range of
interests. For example, the author of the page, represents
a married woman 30 years old and resident of
Khabarovsk, can in real life be a single man 50 years old
from the village of Saratov region. This situation does
not reduce the relevance and value of the study of the
semantics of Internet user’s pages in order to analyze
personal preferences, since this semantic information is,
in fact, an indirect form of expression of these
preferences [8], [9].
In order to study the regularities of the formation of
consumer preferences through the analysis of personal
diges of users of social networks can be used
psychosemantic model of consumer behavior. The basis
of this model is the idea that the objective factors that
determine the behavior of people are perceived by each
subject as a set of values extracted from the
communicative environment surrounding the studied
individual. Interpretation and evaluation of these values
depend on the individual semantic space of the recipient.
This space can be explored by analyzing the content of
verbal and non-verbal communication.
Based on this marketing concept, the process of
formation and implementation of consumer behavior can
be defined as the process of transformation in the human
consciousness of objective needs in the subjective
feeling of effective demand and making appropriate
decisions about the acquisition of goods and services.
Accordingly, the buying behavior is based on the mental
process, which includes the following main phases:
• Deprivation-need;
• Demand - demand;
• Demand-the decision to purchase a product or
service.
At the end of these three phases, specific actions are
taken to purchase goods and services and to make repeat
purchases. The specified psychosemantic model of
consumer behavior is aimed at determining the
regularities of the influence of communications to the
individual on the adoption of market offers.
From the point of view of this model of formation of
consumer preferences is a process of transformation of
needs into actions related to the acquisition of goods and
services. This process, which can be illustrated with the
AIDA purchase funnel model, consists of four steps:
1) Attention to the proposal as a possible means of
meeting the need;
2) Interest in the proposal, for example, the desire to
obtain additional information, etc.;
3) The desire to have a product or use the service, that is,
the formation of demand;
4) Action (purchase and further retention of the client)
[7].
Sometimes in the literature separate repeated purchases
as the fifth stage of the “purchase funnel”. This version
of the model is called AIDAR.
To determine the most effective semantic content of
marketing communications, it is advisable to study the
features of the personal semantic space of people at
different stages of the "purchase funnel" with respect to a
certain market offer.
Social networks provide significant opportunities for
consumer preference research [15]. The objects of the
research can be the samples, self-formed from users who
to some extent participate in information exchange on
the pages of network communities. The volume of these
samples may be sufficient to obtain statistically
significant conclusions about the relationship of
semantic elements of user pages, members of the groups,
with the consumer preferences of these users, which are
evaluated using the AIDA model.
During the research, the analysis of semantics of the
pages of users of the "Vkontakte" social network, which
are part of the groups created by the real estate company
located in Moscow using the methodology of socio-
demographic research [16], was performed. As a
criterion of user’s attention to the market offer of the
company was considered the fact of subscription to the
news of the group of the company. The criterion of
interest to the proponent was the fact of user's
participation in the information exchange on the pages of
the group. Statistically significant semantic features of
user’s personal pages were found, which showed interest
in market offers.
In particular, the data of the group of companies with the
conventional name "A" were analyzed, in which 1635
people were registered (subscribed to the company
news), including 571 pages of men (34.9%) and 818
women (65.1%). As noted above, we are talking about
data presentation personal pages of the authors and not
about the actual sexual structure of the investigated
multiple users. Accordingly, the following data on the
number of "men" or "women" means those who present
themselves as people of the corresponding gender on
their social network pages in supply chain.
In addition to the gender indicated on the pages, data
were collected on the age specified by the authors, the
semantic content of the sections of personal data and the
"tape" of messages, as well as the nature of the user's
image. The fullness of personal data was assessed as 0 if
less than 1/3 of the text fields for the relevant
information were filled in and 1 otherwise. The content
of the "feed" was rated as 0 if there were no personal
messages in the "feed" during the last week, and 1
otherwise. Further analysis revealed no statistically
significant links between the specified age and content of
the pages sections on the one hand and the user's attitude to the company's information. It should be noted that a significant part (more than 40%) of people who subscribed to the company's news did not specify their age, which further reduced the statistical value of this information. In accordance with the nature of the image on the page, three groups of users were identified, namely:
- Without image-155 pages (9.48%);
- With image that is a photo of a person or fragments of a person - 1131 page (69.17%);
- With abstract or stylized image-349 pages (21.35%).

![Figure 1. Analysis of the presence of user self-identification through the use of an avatar in the social network profile.](image)

Note that a relatively small number of pages without a user's image did not allow to identify significant patterns related to the preferences of the authors of the pages. Users of the social network "Vkontakte", who drew attention to the market offer of the company (that is, are at the first stage of the "purchase funnel"), on the specified sex can be divided into groups that have certain statistically significant features of the semantics of personal pages, namely:
- in the studied set of users who represent themselves as men, are much less inclined to choose a photo of a person as their image on the page and are significantly more inclined to use abstract images;
- Users who have indicated on the pages of the female sex, demonstrate opposite preferences for the choice of images, that is, much more often choose a photo of a person.

From 1635 persons who subscribed to the company's news, 53 users showed some activity on the main page of the company's news group or on its other pages, links to which were placed on the main page. Forms of activity were the expression of preferences in the form of "likes" under the messages on the pages or registration on the company's electronic resources. From the author's point of view, this indicates the interest of network users to the company and its proposals, which can be identified as the first stage of the "purchase funnel".

A more detailed semantic analysis of personal pages was carried out for this sample of 53 people. In addition to the parameters of sex and the nature of the user's image, data on other groups of users of the Vkontakte network, to which each of the users that entered the sample is signed and the pages that he regularly visited (such pages are displayed in the "Interesting pages" section on the user's personal page), were considered. The topics of these network communities were grouped into 20 main topics, such as "news","fashion and style"," local information"," sport and leisure"," humor " and others. The analysis showed that in this sample the most popular were the following main topics: "sports and active rest", "humor" and "local information" (of interest to 17, 12 and 10 people, respectively).

![Interesting topics of social network for users](image)

The most significant difference that was found in the study was the significant deviation of the "sex structure" of the sample from the many pages of users who drew attention to the proposal. If the latter was almost equally divided into "women's" and "men's" pages, the sample of interested users from 53 people included 37 (69.8%) pages of men and 18 (30.2%) pages of women. The preferential use of a person's photo as an image of the user (44 pages or 83.0%) is also confirmed. Thus, actual proposals for persons with indicators in the questionnaire data diverging from the data of typical target audiences may not actually correspond to the usual model of selection of the target audience using the personal data of users directly. Further stages of the "purchase funnel" were not considered in this study.

Thus, users who are interested in the information posted by the company can be described as a group of people, most of whom represent themselves as men, choose to image themselves photos of a person and are interested in sports and active recreation and are a potential market for this category. Such information can be used by advertising and marketing services of companies to develop advertising campaigns, design websites and pages on the Internet, configure the semantic structure of advertising and PR texts, etc. It should also be added that the analysis of large data takes place in an automated mode and covers the sample of much larger sizes. After proper analysis procedures, a marketing strategy is selected.

Marketing in social networks includes: creation of representative offices of manufacturers and sellers in social media, interaction with a variety of Internet blogs (blogosphere), building a long-term strategy for creating, controlling and maintaining the desired image of the manufacturer and seller, i.e., engaging in reputation management, forming in the minds of consumers a certain impression of the personalities of manufacturers and sellers (personal branding), as well as SMM-promotion of non-standard methods [17].

The most popular form of marketing in social networks is the traditional broadcasting of brand advertising through video hosting formats, radio and press in the
form of news and press releases. Another type of social media marketing is brand dialogue communication with the audience through chat rooms or forums. Such promotion creates and educates loyal consumers of goods and services, as well as generates useful information for them about new products, their quality characteristics. At the same time, it is possible to explore the interests and preferences of consumers. The most effective type of marketing in social networks is a dialogue between consumers, both with the brand and with each other. At the same time, a community is formed around the brand, uniting groups of consumers with similar interests who communicate with each other in certain interests, which forms a certain semantic field [2].

The dialogue of consumers, both with the brand and with each other, is provided by various marketing tools of SMM: the formation of a community of brands; occupation of certain niches in social networks "Vkontakte", "Odnoklassniki", Instagram, Facebook, Twitter, and others; creation and promotion of content; interaction with bloggers, the creation of viral advertising; personal branding; creation of a rating system; daily content updates and activity in networks; interactive interaction and feedback with consumers [12]. It is desirable to have on the website of the manufacturer of the virtual store. The advantage of the manufacturer is to take into account the individual wishes and preferences of the consumer. Information about the management of the manufacturer must be complete and specific, and contain not only phone numbers and email addresses, but also visual photo or video information about the managers.

4. Discussion

As additional information about the manufacturing company, you can bring a map of the area in which the company is located, the optimal path to the office of the company and to the warehouses of goods. This information will be of interest not only to consumers, but also to potential partners. A popular marketing strategy is known, which consists in purchasing goods directly from manufacturers. This guarantees certain discounts and other favorable conditions for the consumer. It is important to attract new consumers with all the tools of modern trade – loans, installments, forms of payment and shares and sales.

The most used format of influence on social media users consists of a number of procedures. How to use social networks to not only encourage consumers to buy a particular product, but also to make it loyal to the company's products? The list of the most popular procedures is as follows:

1. Tracking consumer opinions is an integral function of online marketing in social networks in supply chain, which should work constantly. This monitoring allows you to continuously receive feedback from customers. According to a survey conducted by Dimensional Research in April 2016, about 90% of potential buyers during the selection of goods are guided by the opinion of consumers left in social networks in supply chain (reviews, reviews) [18].

2. Responding to the emerging needs of consumers - the basis of dialogue between the seller and the buyer – is the participation of two parties who want to share information. Therefore, in order to create a favorable public opinion about the company, it is not enough just to monitor the opinions of consumers, it is necessary to respond to their requests and meet their emerging needs. For example, after a wave of information about the increase of the retirement age in social networks in 2015, many network users began to get acquainted with the systems of non-state pension provision to optimize contributions [19].

If a consumer contacts the company's support service, he or she gets positive or negative experience. And in the latter case, studies show that it is highly likely to share its negative opinion about the company on the Internet [20]. Therefore, the customer service Department should respond quickly to such cases, so as not to give negative information about the company to spread.

3. Strengthening of positive activity – the creation of a system of relationships with consumers, in which they will share positive information about the company. Customer support can't help every customer, especially when it comes to a large company. Trends in working time also run counter to positive reviews about the company [21]. Therefore, a lot of individual responses to consumer requests are not a guarantee of forming a positive opinion about the company's products. The involvement of the consumer in the process, when the company in the system of relations between the seller and the buyer smoothly passes from the defendant to the moderator of the discussion, is one of the strong psychological techniques for creating a loyal audience.

4. Leadership in change may be traditional marketing tools (advertising campaigns, promotions), but the advantage of social networks is feedback, which logically integrates into the customer engagement in the changes taking place in the company [15]. For example, a network of restaurants KFC, in his group in the social network "Vkontakte" offers its visitors to leave a review on the work of one of the restaurants in which they have been. Leaving your feedback, designed to fix the level of service and possibly get suggestions to improve the service, the consumer receives a coupon for a free purchase of goods or purchase of goods at a discount.

5. Software user monitoring - there are many software add-ons that can read information from the hardware and software resources used [21]. The information trail that remains after each visit to a particular resource is quite an interesting field for research.

Thus, the development of the Internet and the emergence of social networks has led to a change in the classic business model of B2C. Now it has one more C – consumer ready to share his opinion about the company and its products. Due to the increasing number of Internet users every day, the company's single response to reviews cannot be an effective way to influence consumer opinion, so the use of the Tracking – Response
– Strengthening – Leadership model is the best tool for interaction with the client in social networks today.

5. Conclusion

Management of consumer behavior on the basis of social and network technologies is proposed to be considered as a process of synthesis of consumer preferences under the influence of the use of innovative marketing tools and psychological approaches to achieve the goals of an economic entity (company, enterprise, Corporation), the main of which was and remains profit from the sale of products. The progress of social networks continues in supply chain [22]. There is an almost avalanche-like complication not only of organizational forms, but also of the content parameters of social and network influence on large social groups.

Forms and methods of state (corporate) control of human network activity clearly lag behind the scale of penetration of the "world wide web" in the structure of individual and group life.

The quantitative and qualitative diversity of the economic component of social and network communications continues. Its main tools are active, sometimes persistent advertising of goods and services, wide banking offers, continuous analysis of the competitive environment, the design of new ways to gain human attention in order to increase the consumer audience.

The Internet is not a frozen substance, it is constantly changing, developing and improving. The manufacturer or the seller should regularly monitor media resources of close focus, identify the emergence of new media resources or changes on the websites of competitors, monitor blogging content dedicated to the company's products and products of competitor firms, regularly collect and analyze statistics of site visits, offers and comments of customers. The best solution for a progressive company thinking about the future, as well as further development, would be to create a media marketing Department, in extreme cases, inviting a specialist in the field of SMM-promotion to the staff on a permanent basis or as a consultant.

In conclusion, it should be noted that the promotion of goods in social networks will give an opportunity to improve the image of the manufacturer, to create a group of loyal consumers of manufactured and sold goods, to expand the sale of goods, as well as to constantly improve the range, characteristics and quality of goods, based on the views of consumers, using feedback through social networks in supply chain [23].

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