Evaluation of Customer Orientation of Russian Companies Using Machine Learning Methods

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Abstract. In this paper, the researchers' attention was focused on how the strategy of customer orientation is reflected in the internal documents of companies and materials posted on the websites. The authors used a formalized method of studying text information—content analysis. The results of the pilot study indicate that for a number of reasons, the client-oriented approach is not a business ideology for many large companies; most of the sample studied is characterized by a formally stated interest in the needs of customers. In order to ensure the possibility of carrying out large-scale regular research, the concept of building a software package for the analysis of customer orientation companies using machine learning methods—SP ACOC has been developed. To implement this concept, the quality metric of classification algorithms was determined; several algorithms were trained; a program was developed and tested, which determines the degree of customer orientation of the company according to its documents according to the chosen algorithm. Automation of the process of evaluation of customer orientation companies will reduce its complexity, expand the range of objects studied, improve the accuracy and objectivity of the results.

Keywords
Customer orientation, research of the level of customer orientation of companies, Russia, content analysis, software package for the analysis of customer orientation companies, machine learning methods.

1. Introduction
Customer focus as a business philosophy is becoming more popular, an increasing number of companies are introducing elements and technologies of customer-oriented approach into practice.

Most fully reflects the essence of customer orientation definition given in the works of Narver J., Slater S.: "understanding the current and future goals and objectives of the client, sufficient to constantly create value for him" [1]. Attention to this business concept is due to a number of reasons, including the increasing turbulence of the environment, increased competition and high commutativity of customers, the complexity of creating sustainable and difficult to reproduce competitive advantages.

However, many researchers have noted a low level of client orientation of Russian companies [2, 3] and suggested that there is a simulated customer orientation. This explains the relevance of research related to the study of the specifics of the implementation of the client-oriented approach in Russia.
In the course of studying this issue, the authors were primarily interested in the methods of collecting and processing information used in such studies, as well as a set of indicators used for customer orientation. Research on the level of customer orientation of companies has been carried out since the 80s of the last century by both foreign and Russian scientists. Considering in retrospect the evolution of views and ideas related to the client-oriented approach, it should be noted that it is associated not only with the refinement and concretization of the conceptual apparatus, but also with changing trends in the macro- and micro-environment of companies. So, the emerging concept of network approach requires the organization to achieve a balance of interests of key stakeholders, including network partners (suppliers and other contractors).

Changes are also associated with the process of transformation of economic value, the core of which is the personal experience of the consumer and useful information. These changes entail an increased role of communication, interaction and emotionally painted relationships with customers. It is obvious that this transformation should be reflected in the approaches to measuring the level of customer-oriented business.

2. Problem statement

Attention to the external client, that is, directly to the buyer of the goods and services offered, the ability to best meet his needs are the key to the welfare of the organization.

We will consider customer focus as a characteristic of the business, the state of which is achieved as a result of the implementation of a customer-oriented strategy. In turn, the strategy of customer focus can be defined as the direction of business development, which is based on the focus on the needs of the client in the formation of commodity policy, the design of business processes and communications. The purpose of this strategy is to build a special long-term mutually beneficial relationship with the client. The purpose of this strategy is to build a special long-term mutually beneficial relationship with the client [4].

The analysis of client orientation of Russian companies was carried out many times by different researchers. In most cases, quantitative methods (surveys, including online questionnaires) were used as the main research method. It is known that these methods have errors related to the bias of respondents, low awareness, wishful thinking (so-called intentional and unintentional errors of respondents). Also among the shortcomings of the survey as a method of data collection include the formal approach of respondents to fill out questionnaires because of their weak interest in obtaining objective results of the study. At the previous stages of the study we also used quantitative and mixed methods as methods of data collection: expert survey [4], survey of senior, middle and lower managers of enterprises and organizations [5, 6], in-depth interview of consumers [7] and elements of projective techniques. As a result, the main hypotheses that require further testing were formulated.

The authors suggest that the introduction of a client-oriented approach to the practice of domestic business may be difficult under the influence of a number of factors, such as the inertia of the entrepreneur (Manager); unwillingness, and often fear of the introduction of new management technologies; the prevailing culture of doing business in Russia; the formal nature of the stated benchmarks for the activities; low efficiency of internal communications and violation of the relay of information between management levels and executors. In the framework of this study, the concept of analysis of the specificity and depth of implementation of customer focus in Russian companies using the method of content analysis of documents is implemented. That is, in this case, it was decided to assess the degree of implementation of the client-oriented approach on the basis of a single indicator-fixing priorities, values, criteria, indicators, instructions and acceptable ways of behavior of employees in the documents of companies.

Content analysis is a special rather strict method of qualitative and quantitative analysis of the content of documents in order to identify or measure social facts and trends reflected in these documents. Despite the complexity of carrying out and discarding poorly manifested information, content analysis has a serious advantage, which is a high degree of objectivity of this method. The influence of both the researcher, whose task is to register the analyzed semantic units and the
interpretation of their use, and the respondents, whose participation this method does not provide, to conduct such an analysis and obtain results is minimal [8].

The object of the research is the documents and materials of companies open to the public.

The subject of the research is the use of concepts related to customer focus on the websites of the largest Russian companies. At the same time, to ensure the objectivity of the data obtained, processing of large amounts of data is required.

Automation of this approach to the measurement of customer focus of companies will allow to conduct regular research of the Russian market, to track changes in marketing concepts, spending much less time on such analysis. At this stage, the main purpose of the study is to create and test a software package to automate the analysis of content content of information resources (websites of companies) about the goals, strategy, priorities, values and directions of development of companies (hereinafter the software package analysis of client-oriented companies - SP ACOC).

The developed software package should accept the documents of the company and give the output level of its customer focus, using the methods of machine learning.

To create this complex it is necessary to solve the following tasks:
1) determine the quality metric of classification algorithms;
2) on the existing sample from previous studies to train several algorithms for automatic classification of companies according to their documents;
3) choose the best algorithm from trained by a certain metric;
4) create a program that classifies companies by their documents using the resulting algorithm;
5) develop a user interface for this program and carry out testing SP ACOC.

3. Theoretical part
Under the category of content analysis is understood a set of words, united on some basis in accordance with the purpose.

The categories of content analysis were chosen:
- documents of strategic importance: mission, goals, strategy, values of the company, which are separate documents or pages of websites;
- Employee Code of conduct, Code of ethics and other company documents;
- reporting documentation (Annual reports, sustainability Report, corporate social responsibility and sustainability Report, Social report);
- statements, interviews, publications of managers (top management).

The number of certain words or their combinations was taken as a unit of account.

Content analysis units are elements of content, which is its semantic part. As a result of a series of pilot studies, lexical units were identified, directly or indirectly indicating the presence of client-oriented principles and business processes in the activities of companies. In accordance with the accepted methodology of search research at this stage, a continuous unstructured search was used (first, the fixation of lexical units was carried out, and then their grouping was made). In the analysis and grouping of lexical units, the authors used original formulations found in the studied documents and adhered to the principle of homogeneity of groups. A total of 12 groups of lexical units were recorded.

During the pilot study arrays of documents posted on the websites of the thirty leading companies of the rating in 2016 and sixty of the companies-leaders of the rating of 2018, under the version of Forbes. The data obtained are used to identify four levels of client-oriented companies and in the process of learning algorithms. It is obvious that a fully implemented client-oriented strategy involves all elements, both commercially oriented (study and consideration of needs, satisfaction of needs) and development-oriented, joint work with the client (interaction, cooperation with clients). Another important aspect is partnership (trust in relationships, awareness of the value of the client, etc.).

In this regard, the authors distinguish 4 levels of customer orientation, listed below. At the same time each next level includes the characteristics of the previous levels. The content analysis units recorded during the pilot studies are distributed by levels of customer focus (table 1).
Thus, the fact that the client-oriented approach is implemented in full will be evidenced by the reference of the company to the fourth level.

| Table 1. Distribution of content analysis units by levels of customer focus. |
|---------------------------------------------------------------|
| **Levels of customer focus** | **Corresponding groups of lexical units** |
| Level 1 | Attention and respect to the client, friendly service, individual service. |
| 4) study and consideration of needs; | 5) satisfaction of needs; |
| 7) quality priority. | |
| Level 2 | Prompt solution of customer's problems, attraction of all necessary resources to solve customer's problems, prevention of customer's problems in the future. |
| 6) customer orientation. | |
| Level 3 | Cooperation. The employee of the company is an internal client. Monitoring of relations with external and internal clients, showing initiative in helping the client, anticipating his needs and offering new personal opportunities (new product line, additional services). |
| 3) cooperation/joint actions with the client, reciprocity in relations; | 10) customer/consumer satisfaction monitoring; |
| 12) employee of the company - internal client. | |
| Level 4 | Creation of innovative products, creation of emotional value; non-sales-oriented information; consumer involvement in value creation. |
| 3,4,5,6,7,10,12; | 1) long-term relationship; |
| 2) trust in relationships; | 8) emotional aspects of the relationship; |
| 9) willingness to do more for the client than usual. | |

4. Results

The structure of the program complex of the analysis of client orientation of the enterprise is shown in figures 1 and 2.

SP ACOC was developed on the operating system "Windows 10" 64-bit using a text editor "Sublime Text 3". To solve this problem the language Python was used (libraries «Tika», «Re», «Pandas», «Numpy», «Scikit-learn», «Codecs», «TkInter»). The algorithm "k-nearest neighbors" and "ensemble of random trees" were selected and trained using a training sample.
Figure 3 shows an example work of SP ACOC: the third level of customer focus is defined for the company "Severstal".

![Figure 3. Graphical user interface of SP ACOC.](image)

5. Conclusion

Automation of customer-oriented research processes will allow them to be carried out on a regular basis, while providing a wide coverage of the studied objects, improving the accuracy and objectivity of the results (excluding the human factor) and reducing labor intensity. A significant increase in the sample size at the same time will make it possible to analyze business strategies both in sectoral or territorial sections, and in General in the country.

The authors believe that the insufficient amount of information presented on the resources (websites) of companies is not in this case a significant factor affecting the representativeness of the results. In our opinion, the inaccuracy, incompleteness of the data provided by the companies on the official websites, and even more so their unreliability directly indicate that they are not customer-oriented.

Research in these areas, both qualitative and quantitative, can have both scientific and practical significance, on the one hand, identifying and identifying specific models and ways of behavior of business agents in the market, on the other hand, determining the priorities of managers at all levels of management, to improve the culture of doing business, the growth of the number of financially successful companies in the Russian market, increase stability in business and consumer markets, increase customer satisfaction.

6. References

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