Development of comprehensive program for the implementation of strategy to increase competitiveness in the global satellite communications market for Russian company

N V Komarova and S I Slav

Moscow Aviation Institute (National Research University), Volokolamskoe highway 4, 125993, Moscow, Russia

E-mail: komarova_mai@mail.ru

Abstract. The study is devoted to the development and control of a plan for the implementation of strategic measures to increase competitiveness in the global satellite communications market for a Russian company owning an orbital constellation in geosynchronous orbit. Previous work of the authors was devoted to the development of this strategy. The methodologic al basis of the study was formed by the concepts and views of Russian and foreign experts in the field of communications and scientific workers. Improving the quality of strategic management was ensured using the Industry 4.0 tools, network project management and experiment. In the course of the study, the stages of strategy implementation were worked out. The system of strategic changes related to the implementation of the strategy is presented. The forecast values of the allocation of financial resources for the development of the enterprise positioning strategy in the global satellite communications market are given and data on the need for additional staff to implement the positioning strategy in the directions are given, the strategic control technology is developed. The practical significance of the study is determined and confirmed by the fact that the findings of this study can serve as a guide for all enterprises in the satellite communications market facing the problem of competitiveness in the telecommunications market.

1. Introduction

The volume of the global market for satellite communications through geosynchronous orbit GSO from 2015 to 2020 decreased in volume from 11.8 billion US dollars to 10.8 billion US dollars, i.e. there is an average annual decline of -1.8% per year. The satellite communications market is a part of the telecommunications market. There is a tough competition between all sectors of it. The volume of the world telecommunications market has also decreased in volume from 1710 billion US dollars to 1633 billion US dollars (average annual decline is -0.75%), and is currently slowly recovering. With all of this, the total number of subscribers and the volume of traffic did not stop growing, and average revenue per user indicator decreased.

Today some problems are solved partially by satellite operators. Telecom operators need to look for new directions for the development of satellite communications and find new partners in this field.

Recently, another problem has been added: the lack of a frequency resource for terrestrial wireless communication lines, and at the moment it is very relevant for Russia (and not only for Russia). The frequency resource required for fifth generation (5G) networks is currently used by satellite communications (1200 MHz-3200 MHz).

The same problem is the distribution of the standing points for spacecraft (SC) and the frequency resource between countries and companies. Indeed, even if there is 0.1° between the vehicles (according
to international coordination, the deviation is -/+ 0.05° west-east), a maximum of 3600 vehicles can be launched into GSO. Today it is impossible to arrange SC with such a density, due to the wide service areas and limited frequency resource. With other types of orbits, it is still more deplorable, since the degree of debris is very high. The situation will change with the massive use of narrow service areas and the allocation of a separate sub-band for wide areas.

The development of satellite communications in Russia is negatively influenced by legislative acts and regulations. Too many permits are needed to organize a satellite communication channel. There is also the problem of frequency spectrum conversion. To date, the military is assigned the priority of most of the frequency resource. And this is a source of problems with laws and regulations.

It is important not only to develop a strategy for increasing competitiveness, it is also necessary to have a mechanism for its implementation and control, therefore, work on the formation of a comprehensive program for the implementation of a strategy for increasing competitiveness in the global satellite communications market of Russian company is very urgent.

As a scientific hypothesis of the study, it was accepted that the implementation of a strategy developed on the basis of an analysis of the telecommunications market in order to identify the demand for certain satellite communication services will allow Russian Satellite Communications Company to reduce its costs and increase work efficiency, which will increase its competitiveness in the world market.

The degree of elaboration of the problem is the following: the main problems of strategic development and increasing the competitiveness of satellite communications have been considered by a large number of researchers. In this article, we draw the attention to the work of the General Director of AltegroSky company, PhD in Technical Sciences, Pekhterev Sergey Valerievich. This researcher is a supporter of the massive development of satellite broadband networks (SBN) and believes that Ka-band is currently the best for this. The main problem on the way to the development of SBN is growing prevalence of fiber-optic communication lines and the economic crisis due to which the population's ability to pay is falling.

The object of the research is the competitiveness of Russian operator in the global satellite communications market.

The subject of the research is the process of implementation and control of a strategic plan for increasing the competitiveness of Russian operator in the global satellite communications market.

The purpose of the study is the development of a plan for the implementation of a strategy for increasing the company's competitiveness in the field of satellite communications, taking into account risks and monitoring the implementation of the strategy using a balanced scorecard.

2. Methodology

For state-owned Russian enterprises and the culture of developing a competitiveness strategy is extremely low [1, 2]. The development of a strategy for increasing competitiveness gives an enterprise many obvious advantages:

- makes think about the prospects of the enterprise;
- reduce "blur" in goals and subgoals;
- allows more adequately assessing the process of achieving goals;
- allows more quickly adapting to changes in the external environment to use opportunities and escape/mitigate the consequences of emerging threats.

Planning to improve competitiveness is an integral part of strategic planning and covers the planning of functions such as: logistics, product creation, finance, staff, etc. In strategic planning, it is necessary to maintain a balance between the goals and capabilities of the company and to carry out such events promptly.

On the basis of strategic competitive and portfolio analyzes, an enterprise development strategy was developed. When developing the strategy, the theory of strategic management was used [3].

In accordance with the theory set forth in earlier works [4, 5], a personnel management strategy was developed, within which it is possible to use network working groups.
The stage of strategy implementation and strategic control are of great importance in the strategic management of an enterprise. There are three stages of strategy implementation: preparation for implementation, implementation and control itself, and the third stage - assessing the effectiveness of the strategy implementation. The stage of preparing the implementation of the strategy includes: developing a program for implementing the strategy, within the framework of which those responsible for all stages of implementing the strategy are determined, motivational mechanism for preparing staff for changes and mechanism for delegating authority, system for managing the implementation of the strategy and strategic control and working groups are formed. To optimize the implementation of this stage, modern methods were used to improve the quality of management at all stages of the service and product life cycle. These include techniques such as applying Industry 4.0 tools and creating networked project teams. The application of these methods is described in detail in the previous works [6].

The development of the strategy implementation management system should be carried out by the creative specialists of the organization. Delegation of authority between all who will be involved in the project will increase the possibilities of the motivational mechanism for implementing the strategy. Much attention should be paid to the formation of network working groups to solve emerging problems in the implementation of the strategy. Changing the organizational structure to match the new strategy can be met with fierce resistance. To level them, it is necessary to strengthen the departments responsible for the implementation of the company's services, or create a support department with them. It is necessary to pay attention to the organizational culture (training and professional development of staff, development of training and self-training, dissemination and transfer of knowledge, updating the systems of motivation and incentives for staff). A large burden falls on the departments responsible for marketing and promotion of services. The development of a strategy implementation plan should be carried out both in the medium-term and in the short-term with a schedule of implementation stages for the predicted results. An obligatory attribute is the creation of temporary network models describing the distribution of functions of power and responsibility among specific individuals who are affected by the change. In this work, an experiment was carried out using the theory of experiment planning and a power-law response function was obtained that relates the time of making changes to the level of qualifications and motivation of members of network project groups.

At the stage of the very implementation of the strategy and control, all communications between the employees involved must be worked out using integration systems and modeling of Industry 4.0. For this purpose, IT technologies and company's database will help.

Evaluation of the results of strategy implementation is carried out in each period. In case of rejection, it is necessary to timely determine the reasons and measures for the possibility of adjusting the strategy. The effectiveness of the implementation of the strategy depends on control over the processes over the entire time period.

All types of control are required:

- administrative (for the implementation of management decisions and regulations, compliance with legal norms and legislation, staff, implementation of plans and tasks, interaction of the organization with the environment);
- financial (accounting and analysis of financial resources);
- budget (for the budgets of departments and company as a whole);
- effectiveness of incentive and staff motivation systems;
- marketing (providing information about market situation);
- quality (quality and compliance with quality standards).

Table 1 gives the elements of control of the positioning strategy in the enterprise, which indicates the goals, control criteria and means of tracking the implementation of the positioning strategy.

Next, we talk about all necessary changes related to the implementation of the strategy, which are presented in the figure 1. It is necessary to strengthen the departments responsible for the implementation of services, that is, those responsible for marketing. It is necessary to organize courses for sales managers to learn the basics of satellite communications so that they can communicate more effectively with the customer. We need to create a customer support department. This department must deal with complex issues, including offering comprehensive services or more profitable solutions. The
analytical department needs to be expanded. This is a rather weak point in the company. The amount of
data they collect is insufficient. Today it is not enough to know the percentage of utilization of each
trunk, in which zone and who. It is necessary to know the used antenna diameters of earth stations,
equipment on them, preferred combined speed indicators and much more, which will help to improve
forecasts and launch SC with the required parameters and which will be more efficiently operated.

It is necessary to clearly delegate authority between objects of company. This will help to reduce
tension and increase the efficiency of departments [7].

Table 2 shows the predicted values of the allocation of financial resources available for the
development of the enterprise positioning strategy [8].

Table 3 shows data on the need for additional staff to develop a positioning strategy [9] in areas.

| To increase data collection and analysis in business development service department (3-5 persons) | To introduce new directions of satellite communications development service (10-12 persons) | To create marketing department in business development service (4-6 persons) |
|---|---|---|
| To create customer technical support department in business development service (3-4 persons) | To create programmer department in IT service (4-6 persons) |

**Figure 1.** Organizational changes during strategy implementation.

| Goal | Control criteria | Control facilities |
|---|---|---|
| To increase market share by more than 20% by early 2034 | Quarterly reports on sales and market share | Actual market sales |
| To transfer clients to new services in order to prevent churn | Monthly reports on SC utilization and infrastructure | Data on the end of launch escape system devices and information on the transfer of their downloads to other devices, Ground infrastructure utilization data |
| To encourage resellers to offer the entire product range | End-user sales (B2B or B2G) | Data on the scope of services of one or another intermediary |

**Table 2.** Functional financing strategy to develop positioning strategy.

| Capabilities | Financial resources |
|---|---|
| Improving the company's image | 10% of income |
| Application of advanced technologies | 20% of income |
| Improving the quality of service | 10% of income |

**Table 3.** Functional HR strategy to develop positioning strategy.

| Directions | Recruitment |
|---|---|
| Management | No. Redundant. Need a restructuring |
| Research and development | Allocation of 4-6 people due to other structures |
| Production | Need to launch new SC. No additional human resource needed |
| Sales | Market research is needed for customer needs: 5-8 people |
| Marketing | Increase in the composition by 5-7 people due to other structures |
The stage for evaluating the effectiveness includes the following elements: evaluating the effectiveness of the strategy implementation in each period, possible deviations, their causes and measures to eliminate them and forecasting the development of strategic processes.

3. Results
The conducted studies have shown the need for Russian satellite communications company to develop a strategy to increase competitiveness in the world market. It was proved that in strategic management it is necessary to maintain balance between the goals and capabilities of the company, while organizing the implementation of strategic activities through a system of medium-term and operational planning.

The paper describes the stages of strategy implementation, the effectiveness of which is increased through the use of Industry 4.0 tools, network modeling and use of the motivational mechanism of network project teams.

The paper proposes continuous monitoring of the implementation of the strategy and forecast of the development of strategic processes outside and inside the organization.

There are main changes related to the implementation of the strategy. It was proved that the organizational structure needs changes that will reduce the risks of strategic development of the enterprise.

The forecast values of the allocation of financial resources for the development of the positioning strategy of the enterprise in the implementation of innovative strategies and the data on the need for additional staff for the development of the positioning strategy in the directions are given.

4. Conclusion
Economic calculations have shown that for growth while keeping prices for services down, it is necessary to increase the volume of the surrendered resource over 15 years at least 2 times. At the same time, the share of additional services should be increased to 85-90%. The average annual growth of profit from sales, while it is expected at the level of 4.5% and average profitability of around 33.6%.

For a greater increase in profit growth, it is necessary to increase the volume of the sold frequency resource more than 2 times in 15 years.

References
[1] Dmitriev O N and Novikov S V 2019 Optimizing the economic information transparency level of high-tech enterprises in the post-industrial globalized economy Int. Journ. of Ec. and Bus. Adm. 7(3) 25-56
[2] Dmitriev O N and Novikov S V 2020 A Priori Assessment of Customer Costs in Designing the Life Cycle of Complex Products Russ. Eng. Res. 40(2) 143-5
[3] Novikov S V 2018 Strategic Analysis of the Development of High-Technology Manufacturing Facilities Russ. Eng. Res. 38(3) 198-200
[4] Komarova N V, Zamkovoi A A and Novikov S V 2019 The Fourth Industrial Revolution and Staff Development Strategy in Manufacturing Russ. Eng. Res. 39(4) 330-3
[5] Novikov S, Komarova N and Dadyan K 2020 Selection of the optimal stage of the group's life cycle for its transformation into a network structure based on the plasticity coefficient Journ. of Phys.: Conf. Ser. 1679 1-7
[6] Ageeva N G, Kanaschenkov A I and Minaev E S 2012 Methods and models of strategic management (Moscow: Publishing house "Dobroe slovo")
[7] Tikhonov G V, Lavrova L A, Kolosova V V, Zemlyanskaya N B and Kazakova N V 2020 Marketing as an Effective Control of Progressive Innovation TEM Journ. 9(3) 1094-9
[8] Mikhailova L 2020 Operational Management of Flexible Production of Machine-Building Enterprises Using the Analytical Method for Optimizing Work Order Planning Services Res. in World Ec. 11(5) 308-20
[9] Dmitriev O N and Novikov S V 2019 Unification and convergence of hierarchic structures such as organizational separations and product projects at creation of recommending decision support systems Int. Journ. of Ec. and Bus. Adm. 7(1) 240-68