

Marketing support to commercialize innovations in Russian universities

Apoyo de marketing para comercializar innovaciones en las universidades Rusas

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Abstract

Modern trends in the changing role of universities in the country's economic development set new challenges for higher education. The article discusses the main directions of marketing support for universities' innovative activities and ways to improve the mechanisms for marketing tools formation to commercialize innovations. In order to achieve this, it is necessary to institutionalize the transfer of knowledge by creating an appropriate innovation infrastructure in universities and

scientific organizations to commercialize the results of scientific and technical activities. Departments should become an important element of the university's innovation infrastructure engaged in innovation marketing – activities for the commercialization of innovations based on marketing approaches. The article, based on SWOT analysis and SPACE matrix of strategic position and action assessment identifies the main problems of innovations commercialization in Russian universities and justifies prospective directions of using marketing approaches, methods and tools for promoting new products on the market. It is concluded that the main thing in determining promising areas of scientific research and technical and technological work is to study and forecast the needs of the market to determine the degree of its usefulness for the buyer and the consumer. The adoption of technology by the market and the consumer is the main result of innovations commercialization.

Keywords; marketing, commercialization, innovation, university, infrastructure.

Resumen

Las tendencias modernas en el papel cambiante de las universidades en el desarrollo económico de Rusia plantean nuevos desafíos para la educación superior. El artículo discute las principales direcciones de apoyo de marketing para las actividades de innovación de las universidades y las formas de mejorar los mecanismos de formación de herramientas de marketing para comercializar innovaciones. Esto requiere la institucionalización de la transferencia de conocimientos mediante la creación de una infraestructura de innovación adecuada en las universidades y las organizaciones científicas para la comercialización de los resultados de las actividades científicas y técnicas. Un elemento importante de la infraestructura de innovación de la universidad deberían ser los departamentos dedicados a la comercialización de la innovación, la comercialización de las innovaciones basada en enfoques de comercialización. Con base en el análisis DAFO y la matriz ESPACIAL de la posición estratégica y la evaluación de las acciones, el artículo identifica los principales problemas de comercialización de innovaciones en las universidades rusas y justifica las direcciones prospectivas de uso de enfoques, métodos y herramientas de marketing para promover nuevos productos en el mercado. Se concluye que lo principal para determinar áreas prometedoras de investigación científica y trabajo técnico y tecnológico es estudiar y pronosticar las necesidades del mercado para determinar el grado de su utilidad para el comprador y el consumidor. La adopción de la tecnología por el mercado y el consumidor es el principal resultado de la comercialización de innovaciones.

Palabras Claves; marketing, comercialización, innovación, universidad, infraestructura.

Introduction

The current establishment of the knowledge-based economy, the driving force of which is innovation, is an important prerequisite for the economic, scientific, and technological leadership of the leading countries of the world, which is possible only based on ensuring optimal interaction of science, education and entrepreneurship. Transformation of the world economy because of technical and technological development affects all spheres of human activity, including the higher education system, which is becoming an important subject of innovation. This is manifested in the running of state programs of innovative development by universities, the implementation of grants on the priorities of technical and technological development, extensive cooperation with other parts of the innovation infrastructure: techno parks, industrial parks, technology platforms, business incubators, collective use centers, etc. At present, scientific and research developments and the quality of higher education are of real importance as a means of gaining competitive advantages and generating economic profit. In modern conditions, the priority is given to the commercialization of innovations¹. Commercialization of innovations means practical application of the results of research activities in market goods or services and their implementation on the market with the maximum commercial effect². The main result of universities' activity is intellectual activity, implemented in innovations. In Russia, this is one of the weakest points of innovation activity, which is manifested in an extremely low level of commercialization of inventions and utility models – only about 7 %³. and the branches of the economy are the main consumer of the results of intellectual activity, i.e. is becoming an integral part of the innovative development of the world economy

The ongoing formation of the knowledge-based economy, the driving force behind the development of which is innovation, is an important prerequisite for the economic, scientific and technological leadership of the world leading countries. It is possible only because of ensuring the optimal interaction of science, education and entrepreneurship. The transformation of the world economy because of technical and technological development affects all spheres of human activity, including the system of higher education, which is becoming an important subject of innovation.

The trends and challenges of recent decades make it necessary to realize the innovative potential of Russian higher education as an important part of the national economy. Among these trends, we should note the technical and

¹ Vdovin S. M., Okunev D. V., Golovushkin I. A. "Integratsiya protsessov generatsii novykh znaniy i kommertsializatsii rezul'tatov nauchno-issledovatel'skoy deyatel'nosti v natsional'nom issledovatel'skom universitete". Integratsiya obrazovaniya num 3 (2011): 2 - 9.

² Matkovskaya YA. S. "Kommertsializatsiya rynochnykh innovatsiy – paradigma innovatsionnogo marketinga". Marketing num 4(113). 2010): 39 - 46.

³ Baburin V. L., Zemtsov S. P. Innovative potential of Russian regions. Moscow: "KDU". 2017.

technological modernization and diversification of knowledge-intensive industries; competition in the global and national markets of knowledge and technology; increasing the role of universities as not only research and educational centers, but also as important components of innovation, etc. This is complicated by the lack of a systematic approach to researching innovation potential, which is due to the low demand in the real sector of the economy for product and process innovations created at universities. The most poorly developed direction of the commercialization of university innovations is insufficient use of marketing methods and mechanisms of market development of new goods and services⁴.

The purpose of the research is to determine the main directions of marketing support for universities innovation activities and to justify the improvement of innovative marketing mechanisms as a tool for innovations commercialization. The object of the study is the Ogarev Mordovian State University, which fully demonstrates all the problems associated with the commercialization of innovations in Russian universities.

Materials and methods

The main direction of implementing the scientific and technical-technological potential of Russian universities is the development and verification of marketing strategy for innovations commercialization, which is an important means of competitiveness of innovative products and services created at the university. Currently, most Russian universities lack effective mechanisms and means of innovations commercializing, which is largely due to the insufficient use of marketing tools. This is due both to the insufficient level of innovative marketing in universities in the process of innovations commercialization, and to the low level of demand and use of scientific and technical developments in various sectors of the economy.

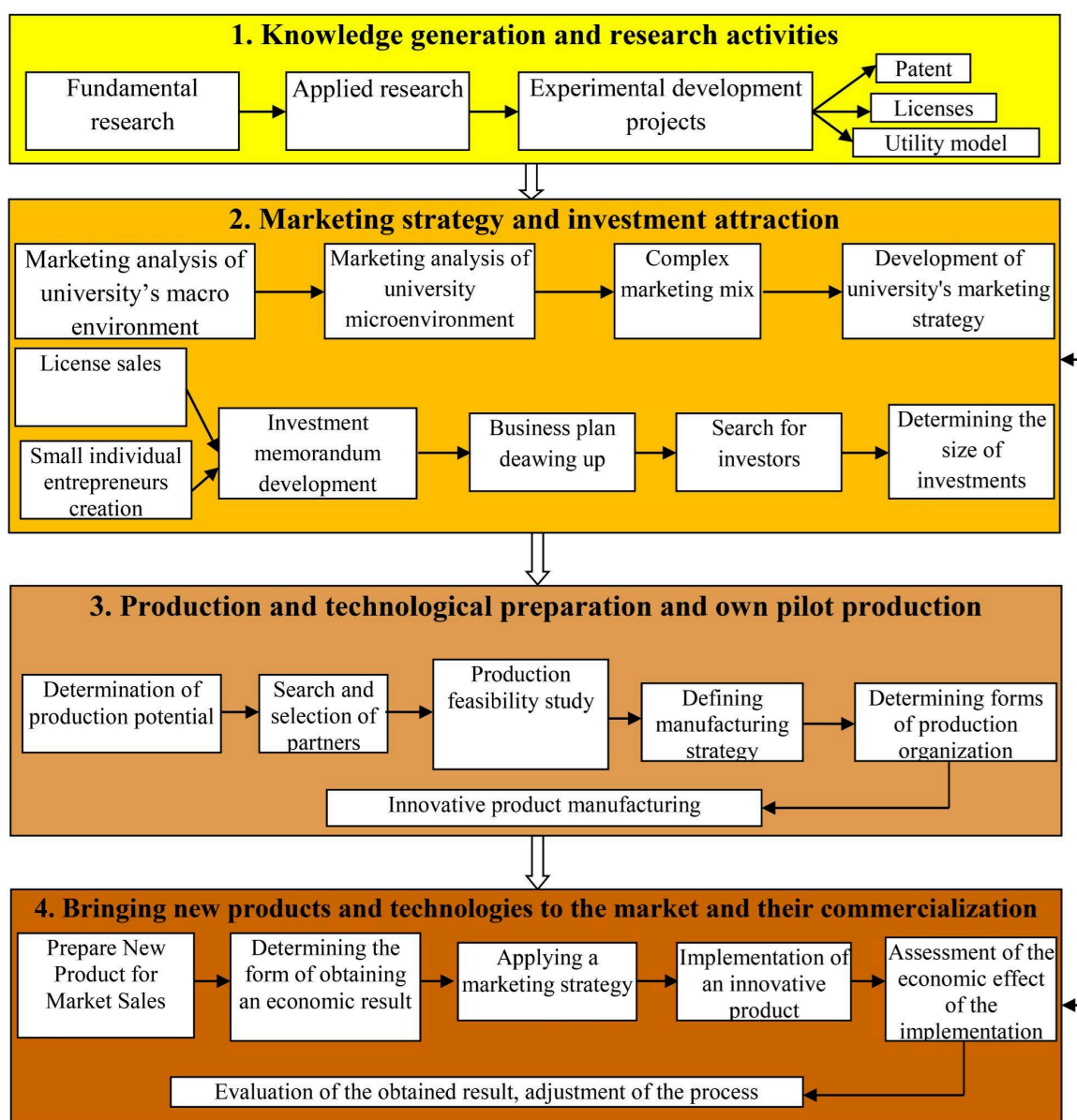
The commercialization of innovations includes a sequence of interrelated stages of making profit from the introduction of new goods and services based on effective interaction mechanism between participants in innovation activities, including intellectual property rights protection by the university and registration of relevant patents for inventions, utility models and software products (Figure 1)⁵. Innovations preparation for economic use includes an assessment of their economic value effectiveness and the possibility of successful sales in the market using marketing tools.

The implementation of Russian universities innovative potential is based on

⁴ Antonets V. A. Nechayeva N. V., Khomkin K. A., Shvedova V. V. Innovatsionnyy biznes: formirovaniye modeley kommertsializatsii perspektivnykh razrabotok. M.: Izdatel'stvo "Delo" ANKH, 2009.

⁵ Vdovin S. M. "Natsional'nyy issledovatel'skiy universitet kak tsentr innovatsionnogo razvitiya". Nanotekhnologii. Ekologiya. Proizvodstvo num 5(12) (2011): 2.

the development of mechanisms to commercialize innovations effectively as a means of ensuring competitive advantages by establishing sustainable business relationships, an increase in income from innovations implementation and improvement of educational, scientific, social, material-and-technical, reputation and image position of the university, which will further contribute to the promotion of innovative products⁶.



⁶ Vdovin S. M., Okunev D. V., Golovushkin I. A. "Integratsiya protsessov generatsii novykh znaniy i kommertsializatsii rezul'tatov nauchno-issledovatel'skoy deyatel'nosti v natsional'nom issledovatel'skom universitete". Integratsiya obrazovaniya num 3 (2011): 2 - 9.

Figure 1
The process of university innovations commercialization

In the process of commercialization of university innovations, there is a purposeful transformation of scientific knowledge into a specific product, technology or service. At the present moment, universities cannot independently supply science-intensive products to the market. This is possible only within the framework of federal targeted programs and through interaction with enterprises in the real sector of economy, for example, providing information services to large domestic corporations. For the successful implementation of university's innovative projects, it is necessary to develop a program for an organization's innovative development. It should formulate the purpose, focus, objectives, methods and tools, organization and commercialization of innovation at the university. At the first stage of the process of innovations commercialization, the analysis of university R & D is carried out to assess the possibility of transforming them into innovations. At the next stage, the main directions and mechanisms for achieving specific results are formulated. At the final stage – justification of the best ways to achieve the goal and objectives; mechanisms, activities of University's Innovation Development Program, in which an important subprogram is the marketing of innovations.

The difficulty of implementing high-tech competitive products by universities is due to the discrepancy between the opportunities and the degree of commercialization of new goods, technologies and services to the universities innovative potential. This is due to the following disadvantages of innovation in higher education:

- the imperfection of the institutional framework, the lack of interaction between the state, business and universities to commercialize the results of R & D of higher education;
- insufficient use of the results of innovative research obtained in Master's, PhD and Doctoral research works for innovations commercialization;
- low level of technological infrastructure at universities;
- low transfer of knowledge to engineering, technology and services;
- weak marketing tools for innovation and organizational-managerial challenges.

The innovative potential of Russian universities is realized primarily in the process of commercializing the innovations created. For this process to succeed, universities must have the necessary infrastructure to transfer knowledge and

technology to the real economy as a result of increasing the number of commercialized inventions patents and attracting private capital in the implementation of innovative projects in higher education.

The most effective means of supporting research and development and its subsequent commercialization is through new organizational structures such as strategic alliances aimed at stimulating research, diversification of technical and technological infrastructure and promotion of new products created in universities to the market.

The most common approach to the marketing of innovation is to prioritize the promotion of new products, technologies and services to the market. However, it does not adequately address the challenges of innovative marketing. This is due to the need to create special marketing tools that meet the needs of a modern innovation economy. A technical approach based on the scientific and technological capabilities of universities, with absolute disregard for the needs of the market, now prevails in the marketing of innovation. This is due to the complete identification of improvements and innovation. In this respect, G. Albrechtskirshinger, P. Doyle rightly point out that innovations are new products, technologies or services, and that innovations are the realization of benefits for consumers⁷. In addition, a large part of inventions does not become a marketable good because of consumer inactivity⁸.

One of the mechanisms for the effective commercialization of the results of intellectual activity of higher education institutions is the development and implementation of a marketing strategy for the commercialization of innovations. This strategy is part of University's Innovation Development Program. An important factor in the commercialization of university innovations is to establish the interaction of small innovative enterprises of the university with consumers of new products based on monitoring the requirements of buyers for the quality of goods and services offered. This is because innovation is the provision of advantageous offers to consumers. The main reason for the failure of innovative products to enter the market, therefore, is a focus on new knowledge rather than on the needs of consumers who acquire the product based on the new benefits they need⁹. Addressing this challenge requires the search for consumer-oriented innovation tools with a focus on consumer motives, as well as training specialists in this area.

With the formation of entrepreneurial universities in Russia, there is a growing need for training specialists in the field of innovative marketing. Currently, the training of students in this specialty is based mainly on the consideration of

⁷ Dojl P., Shtern F. Marketing-menedzhment i strategii. SPb.: Piter, 2007.

⁸ Baburin V. L., Zemtsov S. P. Innovative potential of Russian regions. Moscow: "KDU". 2017.

⁹ International Conference on Monopolies, Merges and Restrictive Practices. London : H.M.S.O. 1971.

innovative marketing as a means of promoting innovation to the market¹⁰. However, such a one-sided approach is not sufficient. This is due to the fact that the innovative economy requires the formation of new marketing approaches and the application of special methods to the organization of innovative activities. The currently dominant technical approach is based only on the capabilities of the organization or enterprise, without taking into account the needs of the market, which in most cases leads to failures in the promotion of new products and services¹¹.

In order to realize the commercialization of innovations, the market approach is most justified as a new kind of innovative marketing, which involves promoting innovation in those segments of the market that have not hitherto been attractive to business¹². A market-based approach to the commercialization of innovation is more promising, both scientifically and applied.

As a result of the commercialization of innovation, the established market structure is being transformed significantly into a fundamentally new one¹³. There are a large number of publications in the domestic and foreign scientific literature devoted to research into the transformation of markets as a result of the commercialization of innovation¹⁴. J. Moore believes that the process of bringing innovation to the market involves the initial conquest of a small segment of the market by a small number of «innovators» and «early followers» and the gradual inclusion of «late followers» and even «laggards»¹⁵. According to K. Christensen¹⁶, the process of commercialization of innovations transforms the market as a result of «overabundance» of quality, «commodification», «detovariation» with the leading role of «subversive» innovation. P. Drucker identifies four commercialization models in the proposed «ecological niche» and «creative imitation concept»¹⁷.

The commercialization process as a means of transforming existing markets

¹⁰ Maykova S. E., Golovushkin I. A. "Kommertsializatsiya rezul'tatov nauchno-issledovatel'skoy deyatel'nosti kak osnovnoy faktor innovatsionnogo razvitiya natsional'nogo issledovatel'skogo universiteta". Izvestiya vysshikh uchebnykh zavedeniy. Povolzhskiy region. Obshchestvennyye nauki. num 4 (24) (2011): 110 -118.

¹¹ Matkovskaya YA. S. "Kommertsializatsiya rynochnykh innovatsiy – paradigma innovatsionnogo marketinga". Marketing num 4(113). 2010): 39 - 46.

¹² Hiks Dzh. Teoriya ekonomicheskoy istorii. M.: NP "Zhurnal Voprosy ekonomiki". 2003.

¹³ Moore G. A. Crossing the Chasm: Marketing and Selling High-Tech Products to Mainstream Customers or simply Crossing the Chasm. New York: Harper Business Essentials. 2014.

¹⁴ Christensen C. M.; Ojomo E., Dillon K. The Prosperity Paradox: How Innovation Can Lift Nations out of Poverty, New York, HarperBusiness. 2019.

¹⁵ Moore G. A. Crossing the Chasm: Marketing and Selling High-Tech Products to Mainstream Customers or simply Crossing the Chasm. New York: Harper Business Essentials.2014.

¹⁶ Christensen C. M.; Ojomo E., Dillon K. The Prosperity Paradox: How Innovation Can Lift Nations out of Poverty, New York, HarperBusiness. 2019.

¹⁷ Drucker P. F. Innovation and entrepreneurship. London: Routledge. 2014.

takes place in several stages¹⁸. Initially, the existing market is stable and represented by traditional segments. The introduction of innovative products in the market leads to a redistribution of consumers between established segments in favour of new products. At this stage, the market becomes destabilized. At this stage, only innovators are on the market, and other categories of consumers are joining¹⁹. At the same time, individual consumers remain in the original market, but the formation of innovative segments is already taking place (market destructuring). The market thus transformed will stabilize again until a new innovation is introduced. This process is then repeated in cycles.

An important part of innovative marketing is the definition of its structure²⁰. The following sequence of operations is currently used in traditional marketing studies:

- the essence and content of marketing;
- management of the marketing process;
- general marketing analysis;
- market segmentation research;
- various marketing systems (4P, 5P, etc.);
- ways of organizing marketing services.

The modern market is based on the conformity of the offer of an enterprise or organization to the needs of customers, which imposes new requirements for organizing ways to sell products, taking into account its innovative segments. The first step in the marketing of an innovative product is its positioning to determine competitive advantages²¹. The positioning of a product by a company is a means of forming the idea of the whole product²², and from the point of view of the consumer and the public – "a place in the head" of a potential buyer²³.

An important aspect in considering the commercialization of innovation in universities is the justification of effective marketing methods and tools for their implementation. Marketing support for the commercialization of innovations in universities is aimed at creating favourable conditions for the generation and

¹⁸ Christensen C. M., Baumann H., Ruggles R., Sadtler, T. M., "Disruptive innovation for social change", Harvard Business Review num 84(12) (2006): 94 - 101.

¹⁹ Rogers E. M. Diffusion of innovations (5th ed.). New York: Free Press. 2003.

²⁰ Drucker P. F. Management challenges for the 21st century. London: Routledge. 2007.

²¹ Maslennikova N. P., Mishin V. M., Barancheyev V. P. Upravleniye innovatsiyami. M.: Yurayt, Vysshye obrazovaniye. 2009.

²² Levitt T. Marketing Myopia. Harvard: A Harvard Business Review. 2008.

²³ Ries A., Trout J. Positioning: The battle for your mind. New York: McGraw Hill. 2001.

implementation of new ideas, inventions, techniques, technologies, software products²⁴.

The process of commercialization of innovations in universities and their marketing support is presented in Fig. 2²⁵.

At the initial stage of innovation commercialization, optimization models for the creation and dissemination of new knowledge are being developed and built, and market research for new products and technologies is being conducted. The main task of innovative marketing at this stage is to take stock of existing innovation developments and to compare the university's promising research with the actual requirements of the innovation market and to develop a mechanism for interaction between the University's innovative structures with public, private and non-profit organizations as potential contributors to the University's innovative projects²⁶.

²⁴ Chizhova Ye. N., Vladyka M. V., Pogarskaya O. S. "Razrabotka protsedurnykh metodov otsenki potentsiala kommersializatsii nauchno-tehnicheskikh razrabotok". Nauchnyy rezul'tat. Ekonomicheskiye issledovaniya. num 3 Tom 3 (2017): 72-81.

²⁵ Vdovin S. M., Okunev D. V., Golovushkin I. A. "Integratsiya protsessov generatsii novykh znaniy i kommersializatsii rezul'tatov nauchno-issledovatel'skoy deyatel'nosti v natsional'nom issledovatel'skom universitete". Integratsiya obrazovaniya num 3 (2011): 2 - 9.

²⁶ Barancheyev V. P. "Sistema kommersializatsii tekhnologiy". Menedzhment segodnya. num 1 (2006): 14 - 28.

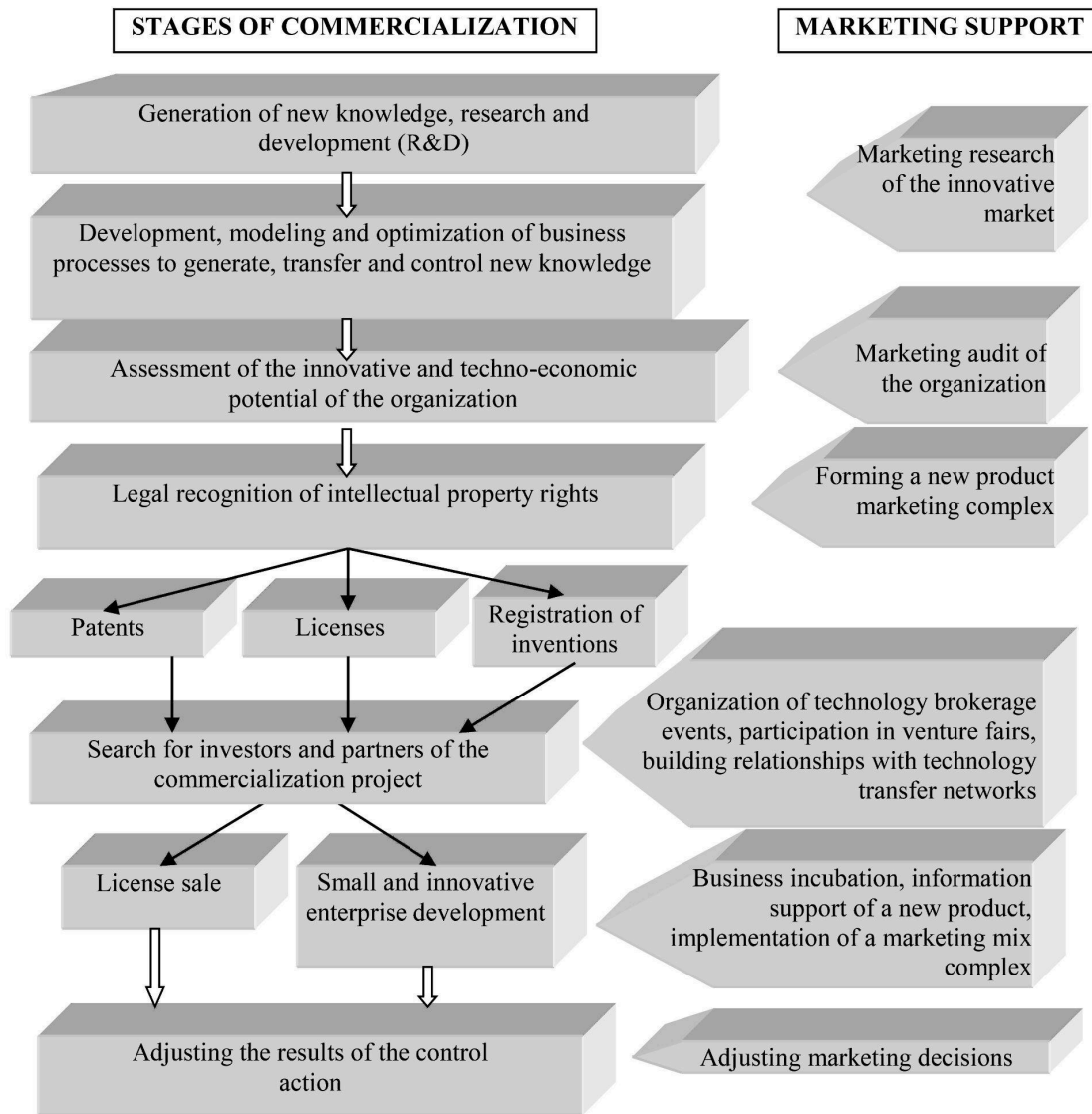


Figure 2
Stages of commercialization and marketing support of university innovations

At the next stage, the scientific-and-technical and economic potential of university innovations is evaluated and a strategy for their commercialization is developed based on a systematic and multidisciplinary study of current and prospective opportunities for commercialization of intellectual activity results.

The final stage deals with commercial issues - drawing up a business plan for each project of commercialization and introduction of the results of the university's innovative activities to the market. The business plan for the commercialization of an innovative project provides a rationale for the specific means of marketing new products, as well as a conclusion on the financial results and cost-effectiveness of the project. When preparing a business plan for an innovative commercialization project, a system of marketing activities is established that determine the pricing policy and the sequence of promoting a new product to the market. The end result of the innovations commercialization is the sale of patents, licensing agreements, useful models and prototypes.

When introducing a new product into the market, the main problems are efficient use of all marketing tools, information and advertising support for an innovative product, the necessary staffing, coordination of all marketing activities and making operational management decisions in case of problems in the promotion of a new product²⁷. When implementing a system of marketing measures, the efficiency of realization of a new product on the market is monitored. All the planned marketing activities are aimed at achieving the maximum economic impact from the market implementation of innovative developments of the university.

The introduction of a new product into the market requires continuous research and monitoring of changes in potential market demand and the identification of similar products and alternative products, technologies and services in this field. The control of the promotion of a new product is based on the identification of the compliance of the achieved tasks with the planned and adjusting the marketing procedures accordingly. In case of negative marketing problems, the university's innovations are returned to the earlier stages of the commercialization process.

Thus, applying innovative marketing to the commercialization of innovation at the university achieves the following objectives²⁸:

- development of theoretical and methodological bases, modelling, forecasting, improvement of processes of generation, dissemination, control of knowledge in the field of innovative entrepreneurship;
- increasing the number of participants and investments in the commercialization of university innovation projects;

²⁷ Lamben Zh.-Zh. Menedzhment, oriyentirovanny na rynek. SPb.: Piter. 2004.

²⁸ Maykova S. E., Golovushkin I. A. "Kommertsializatsiya rezul'tatov nauchno-issledovatel'skoy deyatel'nosti kak osnovnoy faktor innovatsionnogo razvitiya natsional'nogo issledovatel'skogo universiteta". Izvestiya vysshikh uchebnykh zavedeniy. Povolzhskiy region. Obshchestvennyye nauki. num 4 (24) (2011): 110 -118.

- search for your own competitive position in the market of innovative products;
- development of consumer-friendly qualities in new products;
- identification and analysis of potential consumers of innovative products;
- achieving the greatest commercial impact of new products, technologies and services by improving the marketing mechanisms for promoting university innovations.

Discussion and results

In order to analyze the marketing strategy of commercialization of innovations in universities, it is effective to use SWOT analysis - a traditional method of analyzing the strategy of development of socio-economic objects that allows you to evaluate the conditions, processes and factors that have a decisive impact on the development of an organization, including universities as centers of innovation. The development strategy of any organization includes the following aspects: S (strengths), W (weaknesses), O (opportunities) and T (threats). This method is based on the target function of the researched organization and involves identifying not only internal and external factors contributing to the desired innovation development objective, but it also involves the development of measures to eliminate weaknesses and take advantage of strengths. At the same time, positive and negative aspects are regulated factors that are characteristic of the object under study, and opportunities and threats are characteristics of the external environment of the organization that cannot be regulated²⁹. The internal factors in the development of universities as innovators include such parameters as research on the factors of consumers' segmentation and the relationships with them. The external environmental factors include structural and functional features of the market for innovative goods and services (volume and size, dynamics, trends, sectoral patterns of competition, etc.) and external factors influencing the market (socio-economic policies of the authorities, impact of information and communication technologies, etc.).

Based on the SWOT analysis, the main directions of realization of innovative potential of universities are defined (table 1). They are composed of four components: the implementation of the organization's strengths to make effective use of market opportunities (competitive advantages); addressing organizational weaknesses to prevent external and internal threats (competitive threats); identifying and minimizing challenges to the effective functioning of innovation

²⁹ Matkovskaya YA. S. "Kommertsializatsiya rynochnykh innovatsiy – paradigma innovatsionnogo marketinga". Marketing num 4(113). 2010): 39 - 46.

capabilities (bottlenecks); taking advantage of the organization to detect and prevent threats (safety and security).

	STRENGTHS	WEAKNESSES
	ADVANTAGES "S" – STRENGTH	DISADVANTAGES "W" – WEAKNESS
IN T E R N A L E N V I R O N M E N T	<p>1. Developed Strategy for Innovative University Development.</p> <p>2. High scientific-and-technical potential and the level of qualification of scientists and technical personnel.</p> <p>3. Extensive experience in research and technical and technological activities.</p> <p>4. Existence of a significant number of patents on inventions, useful models and software.</p> <p>5. Leading positions in selected sectors of innovation (energy-saving lighting, electronic instrumentation, nanotechnology and composite materials, etc.).</p> <p>6. Fully developed diversified university innovation structure</p> <p>7. Establishment and functioning of small innovative enterprises</p> <p>8. Various forms of cooperation in the field of scientific, technical and technological cooperation with leading domestic and foreign universities, technological parks, small and medium-sized innovative enterprises.</p> <p>9. High level of innovation infrastructure development and availability of high-technology scientific equipment and devices.</p>	<p>1. Insufficient marketing strategy for innovation promotion and lack of implementation mechanisms.</p> <p>2. Insufficient involvement of small businesses in innovative projects</p> <p>3. Predominance of public funding for R&D.</p> <p>4. Lack of monitoring of the internal and external innovation market.</p> <p>5. Weak use of marketing tools to promote innovation, insufficient information base on the needs of innovation consumers</p> <p>6. Lack of experience in commercializing market innovations.</p> <p>7. Poor distribution of innovative goods and services, and policies to promote them.</p> <p>8. Low level of sales of innovative products developed at the university.</p> <p>9. Low material and non-material motivation of scientists to perform R&D,</p> <p>10. Lack of aftermarket service for innovative products.</p> <p>11. Few additional services for the maintenance of innovative products.</p>
	"O" – OPPORTUNITIES	"T" – THREATS

E X T E R N A L E N V I R O N M E N T	<ol style="list-style-type: none"> 1. The prevalence of state support for innovative developments in the development of innovations with a low participation of private companies. 2. Availability of a detailed federal and regional science and technology policies. 3. Existence and partial implementation of public-private partnerships to attract capital to implement innovative projects. 4. Global trends of increasing demand for innovative goods and services. 5. New information opportunities for advertising to promote innovations. 6. Effective operation of the university's small innovation enterprises. 7. Possibility of creating a unique product offer. 8. Good public relations. 9. Use of modern commodity and price policy instruments. 	<ol style="list-style-type: none"> 1. Low level of innovation market development and dominance of foreign products. 2. Low demand for innovations and technologies. 3. Low competitiveness of domestic innovative products on the world market, including because of insufficient use of marketing methods. 4. Small share of innovations brought to market. 5. Quantitative and qualitative deterioration of the university's scientific and technological capabilities. 6. Insufficient state funding of research and development in total funding of science. 7. Increasing country's technological gap, especially in the area of breakthrough technologies. 8. Sale of the most promising domestic innovative technologies abroad and the outflow of qualified personnel. 9. Low interest of enterprises in the real economy in the use of innovation.
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Table 1

SWOT analysis of the marketing strategy for the commercialization of innovation at Ogarev Mordovia State University

Ogarev Mordovia State University presents all stages of the process of innovations commercialization. The university is the most powerful in knowledge generation and R&D. For the period from 2016 to 2020 the university became the patent holder of 208 patents on inventions and utility models in the fields of mechanical engineering, electrical engineering, energy, construction technologies and materials, biotechnology, medicine, etc. In the same period, the university received 89 certificates of State registration of software products, including those based on artificial intelligence technologies. In the next stages, however, the efficiency of the commercialization process is significantly reduced. This is due to the lack of marketing support for innovation, particularly at the stage of introducing a new product into the market and generating revenue from its commercialization.

In general, Ogarev Mordovia State University has problems with the commercialization of university innovation products, which are all-Russian:

1. Imperfect institutional framework for innovation: there is no mechanism for establishing «spin-off» small innovative enterprises of universities; there is no procedure for transferring new products created, technology and services from universities to industry and other companies.

2. Lack of financing of universities' innovation infrastructure of at the stage of its formation.

3. A limited number of specialized educational programmes to train specialists in the commercialization of market innovations. The most successful technology companies are not run by scientists and technical developers, but by sales and market specialists.

4. Lack of experience in commercializing research, development and information products. This is largely due to the lack of a marketing strategy for the commercialization of university innovation.

5. Weak interaction with innovation customers: state and non-state funds and programs, venture funds and «business angels», large and medium-sized firms, etc.

6. Insufficient economic incentives for enterprises in the real economy to introduce innovative goods, technologies and services.

The strategic positioning and action assessment (SPACE) matrix was used to validate the university's effective strategic positioning in the innovation market. The SPACE matrix also defines the market's need for certain types of innovative products, the university's ability to compete in this market, etc.

The SPACE matrix includes four types of evaluation (FS, CA, ES, IS). FS (financial strength) - evaluates the financial stability of the organization, CA (competitive advantage) - discovers the competitive assets of the university in the innovative market, ES (environmental stability) - indicates the level of sustainability of the external environment, and IS (industry strength) - defines the advantages of the university in the innovative market. The FS and CA parameters define the internal strategic position (ISP), while ES and IS define the external strategic position (ESP).

The SPACE-matrix is necessary to justify a successful strategy of the organization, to identify the most attractive business directions, to assess market competitiveness. The business activities of an organization should serve the interests of all stakeholders in the process. In determining mechanisms to

safeguard commercial interests and minimize threats, it is necessary to balance them with the internal and external situation of the organization.

As a result of the survey of experts in the field of innovation of Ogarev Mordovia State University, it was found that it is currently characterized by a competitive state of its strategic position in the market (Table 2, Figure 3). This is indicative of the potentially attractive position of the university as an innovator.

Internal strategic positioning factors	Poi nts	Determinants of the external strategic situation	Poi nts
<i>FS (financial status of the university)</i>		<i>ES (degree of stability of the external environment of the university)</i>	
Profit from innovative investments	3		-5
Financial dependence on government funding	4	Technological developments at the federal and regional levels	
Fast asset turnover	3	Inflationary expectations and price increases in response to market volatility	-5
Available material and technical resources	5	Dynamic demand for different innovative products	-5
Cash flows in innovative projects	5	Price competitiveness of innovative products	-6
The simplicity of mechanisms for leaving the market	2	Difficulty of access to the global innovation market	-2
University risks associated with innovation activities	5	Competitive actions	-5
		Price volatility of supply and demand for innovative products	-5
Average	3,9	Average	-4,7
<i>CA (competitive advantages of the university)</i>		<i>IS (attractiveness of the university)</i>	
Share of the innovation market	-5	Prospects for university development	6
Quality of innovation generated	-3	Profit potential	3
Life cycle stages of an innovative product and service	-3	Financial sustainability	6
Availability of permanent buyers	-2	Level of technological development	3
Extent to which innovative infrastructure capacities are used	-2	Availability of technological infrastructure resources and equipment	2
Level of innovative products, technologies and services created	-2	Good access to the innovation market	2
Promotion of horizontal and vertical integration	-3		3
	-2	Level of utilization of regional	

Average	-2,9	technology infrastructure and the workload of production facilities	3,6
		Average	

Table 2

SPACE-matrix of innovation commercialization at Ogarev Mordovia State University

The main factor that is critical for the competitive development of the innovative potential of the university is the financial condition. Therefore, all mechanisms should be used to increase the financial autonomy of financing: finding both public and private sources of financing; developing marketing networks for innovative products; and working more closely with enterprises in the real economy; improving marketing support for the commercialization of innovations.

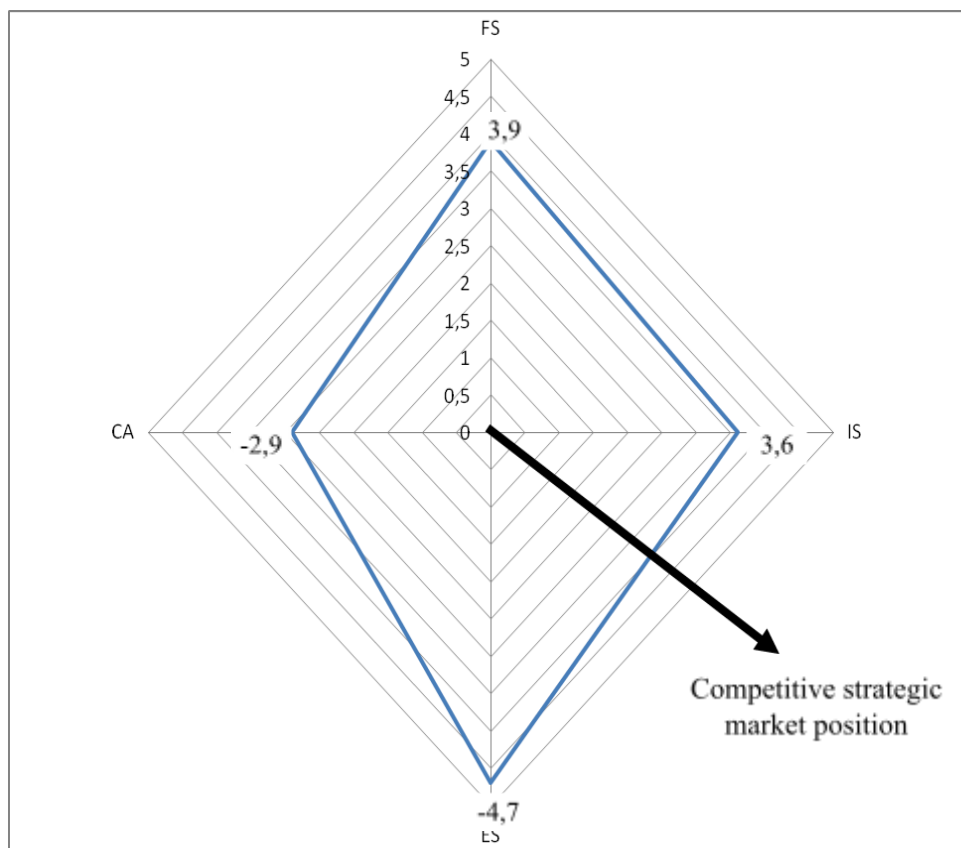


Figure 3

Graphical display of the SPACE matrix for the commercialization of innovations by Ogarev Mordovia State University.

In order to operate in a competitive environment, a university needs to develop basic strategies aimed at achieving a competitive advantage in the

innovation market. The development of a competitive strategy requires the following tasks³⁰:

1. Striving to minimize the cost of innovation. This can be achieved initially by selling standard products or services without added value to form own distribution channels.

2. Specialization of innovation activities in the production of specific and important products for most customers. This can be expressed in the uniqueness of the product itself, in the improvement of delivery methods, in the application of new marketing tools etc.

3. Focus on a narrow segment of the innovation market that the university can master more efficiently than competing companies.

At present, almost all R & D activities are financed by the state budget funds, the volume of which is insignificant. In the future, it is necessary to attract private investment for these purposes. The growth potential of small innovative enterprises is also high.

Conclusion

Improving the innovation management system at universities through the introduction of a marketing approach in research and innovation, will fully implement the modern mission of the university (training of qualified personnel, research, knowledge transfer and assistance to regional economic development) and increase the role of the university in the implementation of state innovation policies and economic development of the region.

Universities, while maintaining their teaching and research functions, should actively develop entrepreneurship mechanisms that contribute to additional material and financial resources for the effective functioning of the organization and expanding cooperation with the business community, where university research developments are being implemented. This poses new challenges for universities, the main one being the commercialization of research results obtained in various parts of universities. This includes documenting the conformity of innovative goods, technologies and services with international standards (international patents, patents certificates and licenses) as well as the activities of small innovative enterprises. In order to ensure the commercialization of innovation at universities, it is necessary to establish a continuous process from education and research to the creation of small innovative enterprises and the commercialization of innovative

³⁰ Vdovin S. M. "Natsional'nyy issledovatel'skiy universitet kak tsentr innovatsionnogo razvitiya". Nanotekhnologii. Ekologiya. Proizvodstvo num 5(12) (2011): 2.

products, which should be accompanied by the training of specialists necessary at each stage of this process. The ultimate goal of these processes is to transform universities into full-fledged economic agents of the knowledge economy.

The main challenge in commercializing innovative products and technologies in most universities is the misprioritization. The focus is on the scientific, technical and technological stages of innovation, with a secondary focus on marketing and promoting the commercialization of R&D results. This does not take into account that commercialization is a means of delivering results to clients, i.e. to users of a new technology, product or process.

In the absence of dedicated units, inventors, scientists and technicians with no experience of market promotion of a new product or technology do not consider market mechanisms and cannot determine the preferences of potential consumers. This largely determines the low level of commercialization of university innovation, as market analysis is an important factor in the process of bringing new products to the consumer. Research and forecasting of market needs are needed to determine the extent to which it is useful to the buyer and the consumer.

This should be a key factor in determining future directions for research and technology work, since the main objective of commercializing innovation is the acceptance of technology by the market and the consumer. Thus, innovation must be driven by market needs rather than by the technical and technological characteristics of the product, which, while perfect, may not be in demand by consumers. For innovative products to be successful, it is necessary to focus on creating marketable characteristics.

Therefore, before developing a new product or technology, the identification of potential users of the product should be investigated; research on market requirements, taking into account such motivational factors as modern problems of innovations commercialization, competitiveness, efficiency, social and economic policies and ways of regulating the market for innovation; accounting, creating and marketing new products in accordance with the needs and specific requirements of the market.

The implementation of a marketing approach based on market requirements is an important prerequisite for defining the necessary technical and technological parameters of the new products being developed. For this, it is necessary that scientists and technicians have information about current development trends and the needs of the innovation market in a particular product. This information should be provided by specialized marketing services that research the market needs for innovative products and identify requirements for specific technological and consumer characteristics of new goods and service.

The main function of these units is to establish an optimal knowledge

management system, formulate priority research and technology tasks in accordance with consumers' needs and improve methods, tools and mechanisms for commercializing innovation in response to market demand.

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**REVISTA
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