



Business Modeling as an Innovative Mechanism for Economic Systems Transformation

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Abstract

The article reveals the problems of the formation of innovative mechanisms in the conditions of economic systems transformation. There is revealed the question of needing to introduce elements of business modeling in the activities of companies. It is noted the current level and prospects for the formation of a market for innovative solutions. The study revealed the relationship between private innovation mechanisms in the system of building a company's business model. There is a present algorithm for building a business model by an economic entity.

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1 Introduction

The gradual transition to a post-industrial economy made it possible to form innovative development trends that ensure the introduction of information technologies, innovative solutions, and information as the major forms of creating product value. Today, many theorists and practitioners of our time are interested in the issue of innovative development of economic systems. This situation is connected, first of all, with the understanding of the importance of developing and implementing innovations in the business structures of economic activity in the field of entrepreneurship, government development and the public sector as a whole.

The direction to increase the quantity and quality of innovations has become an integral part of the implementation of economic development strategies in the countries of the world. The annual calculation of the global Innovation Index according to the methodology of the

International Business School INSEAD allows us to consider and analyze the position of 132 states in relation to their innovative potential. The rating of countries by the level of innovation consists of an assessment of such indicators as resources and conditions for the implementation of innovations (institutions, personnel, infrastructure, domestic market and business), as well as the results of innovation implementation (technology and the knowledge economy, the results of creative activity) Let's single out the top 25 countries with the highest index score (Figure 1) (GII, 2021).

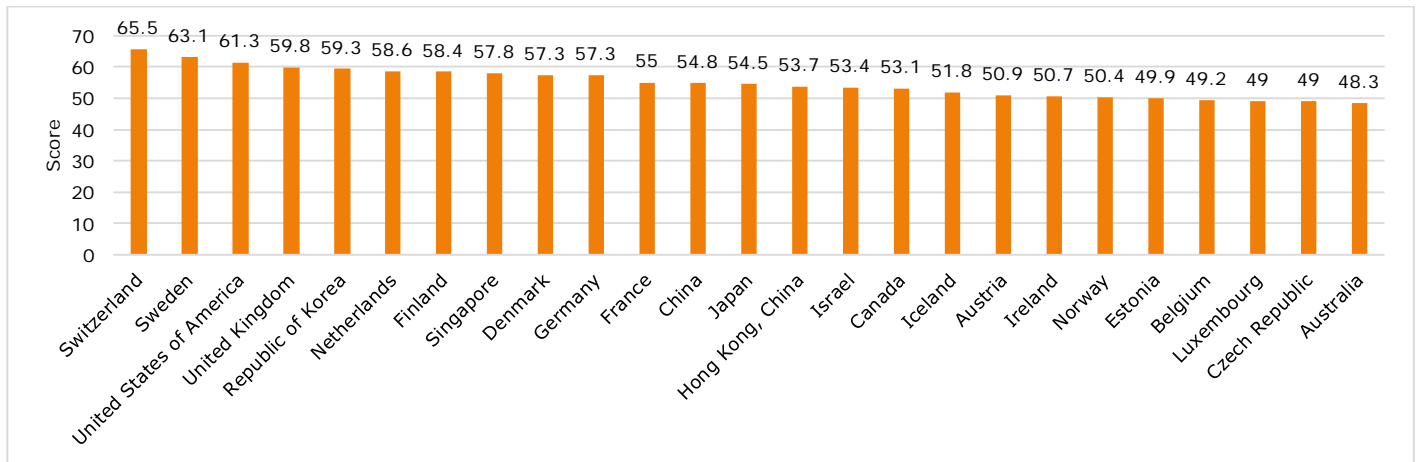


Figure 1: Top 25 countries with the highest score on the Global Innovation Index

According to the report, Switzerland, Sweden and the United States of America have the highest innovation index with scores of 65.5, 63.1 and 61.3, respectively. African countries have the lowest values (Niger - 17.8, Guinea - 16.7, Angola - 15.0). At the same time, there is a strong gap between the highest and lowest values of the indicators. For example, the difference between Switzerland and Angola is 50 points. It should be noted that the Russian Federation in 2021 was in 45th place out of 132 with a score of 36.6 while ranking 29th in Europe and 6th among countries with above-average growth rates.

A comparative analysis of the reports of the Global Innovation Index in dynamics over a number of years showed that a significant number of countries are growing at their level or remain at a consistently high level. All the more significant is the relevance of the analysis of the innovative transformation of business processes in economic systems, as well as the formation of new methods and approaches to the history and implementation of solutions in the digital economy.

The interaction of business entities aimed at rational management provides for the implementation of the transformation mechanism in order to form patterns of sustainable economic development (Bychkova, 2010). Changes and additions to the essence and approaches to traditional concepts and processes of the economy are part of the process of transformation. The innovation mechanism, according to V.A. Kolokolov, is an “organizational and economic form of innovation and promotion of its implementation, search for innovative solutions, as well as a lever for stimulating and regulating this activity” (Kolokolov, 2010). As a result, the concept of an

economic mechanism can also be considered within the framework of the implementation of individual stages of innovation activity. In the context of a changing understanding of economic entities, the structure of the innovation mechanism is dynamic. The emergence of new mechanisms and the transformation of existing ones determine the natural development of economic systems and the innovative business processes that determine them.

2 Method

In the course of the study, the works of foreign and Russian scientists, and practitioners in the field of innovation theory, innovation activity, organization of business processes and their modeling, as well as the digital transformation of the economy as a whole, were used. The research work of modern scientists is of great value in the scientific field, since the issue of innovative development affects all areas of economic activity in the "producer-consumer" system. Thus, according to American scientists, innovations should be considered within the framework of two approaches. The first approach involves one-sided innovations created in producer-producer or consumer-consumer systems. The second one considers the producer-consumer exchange system through bilateral innovations (Raad, Sharma, Nicolau, 2022). Many scientists foresee the creation of value in a company through the process of transition from the current state to a concept involving the introduction of digital technologies (Pata, Silva, 2022), which is directly related to the business modeling of companies. At the same time, an approach based on combining components, rather than separating them, explains the rationality of compiling a business model (Pata, Silva, 2022). Thus, scientists came to the conclusion that the process of creating value at the present stage of the development of economic systems is based on a combination of the contribution of the actors of economic systems to digitalization and global innovation (Mesquita, Simoes, Teles, 2022).

The empirical basis of the study was legislative and regulatory acts regulating entrepreneurial, innovative scientific and technical activities in the Russian Federation, published results of the work of research institutions, rating agencies and independent analytical organizations, and information presented in business and scientific periodicals, including resources of the global information network Internet, in the materials of international organizations, the author's own applied research.

The surveys and reports of Russian statistical institutions (Rosstat, 2022), as well as open access materials from analytical companies (GII, 2021) were used as the information basis for the study.

The basis of the study is the application of a systematic approach to the study of innovative mechanisms for transforming the activities of economic entities. In the process of studying business models in the context of using innovative mechanisms, general scientific methods of theoretical knowledge were used: comparisons, deductions and generalizations, expert methods, methods of statistical, economic and logical analysis and synthesis, and graphic modeling technologies. Each of the methods was used according to its functional features, which made it

possible to create conditions for the validity and authenticity of the obtained generalizations, conclusions, and statements.

3 Result and Discussion

The concept of a mechanism in economics was formed in the middle of the 20th century. This term is associated, first of all, with the name A. Kuhlman, who explained the economic mechanism in a generalized sense as "a necessary relationship that naturally arises between various economic phenomena." A deeper study of the relevant issues led to the understanding that the mechanism is an intellectual system of successive phenomena, as well as the process between them and the result of their interaction (Kulman, 1988).

Table 1: The organizations' innovative activity level of the Russian Federation by economic activity type, in %

Economic activity type	Year				Deviation 2021 from 2018 (+,-)
	2018	2019	2020	2021	
Agriculture	4,7	3,9	5,9	8,1	+3,4
industrial production	15,6	15,1	16,2	17,4	+1,8
Construction	3,8	3,6	3,9	4,5	+0,7
Transport and storage	3,1	2,8	4,0	3,9	+0,8
Publishing activities	2,1	2,5	3,8	5,1	+3,0
Activities in the field of telecommunications	12,4	12,6	13,1	12,7	+0,3
Computer software development, consulting services in this area and other related services	10,1	11,1	13,2	15,1	+5,0
Activities in the field of information technology	5,0	5,5	10,2	8,0	+3,0
Activities in the field of law and accounting	2,8	1,9	4,2	3,7	+0,9
Activities of head offices; management consulting	4,0	3,6	5,2	4,4	+0,4
Activities in the field of architecture and engineering design; technical testing, research and analysis	12,4	9,7	10,7	10,9	-1,5
Scientific research and development	61,4	51,3	51,1	47,5	-13,9
Total	12,8	9,1	10,8	11,9	-1,0

This concept became the basis for further research. As a result, in the conditions of an innovative economy, the concept of "economic mechanism" has been transformed into a narrowly focused term "innovation mechanism", where the relationship is considered not only between classical economic phenomena, but also innovative methods, structures, approaches, the innovative nature of the process, etc.

The development of concepts in this direction is facilitated, first of all, by the formation of a single innovation-oriented space within each country, which is confirmed by statistical data on the level of innovative activity of organizations in the Russian Federation (Table 1) (Rosstat, 2022)

Table 1 presents data on the innovative component of the business for certain types of activities. The above materials indicate that stable growth characterizes the level of innovative activity of organizations in the Russian Federation in 2018-2021, despite the fact that the events associated with the global pandemic reduced the overall indicator of innovative activity in 2021 compared to 2018, respectively. from 10.8% to 9.1%. At the same time, in the field of research and development, there is a high level of innovative activity, namely, more than 51%. In 2021, compared to 2020, 2.2%, industry - note an increase in innovative activity in agriculture 1.2%, construction - 0.6%, publishing - 1.3%, software development - 1.9 % and engineering and

technical activities - 0.2%. As a result, we can conclude that the country is actively working to introduce innovative mechanisms for business transformation.

It should be noted that at the state level, innovation mechanisms are understood as measures of influence on socio-economic systems, expressed in various legal acts. Financing research, creating favorable conditions for innovation, developing forms of support and efficient use of resources, expanding the interaction of subjects from the state innovation policy (Bannykh, Zapariy, 2021). Under these conditions, the innovative mechanisms of the state level are:

1. Strategy for scientific and technological development of the country. The Decree of the President of the Russian Federation enshrined the provisions of the integrity of the scientific and technological development of Russia, the relevance of mastering new knowledge and creating innovative products, the priority of innovative development and the transition to digital technologies (Decree of the President of the Russian Federation, 2016). At the same time, sectoral strategies for innovative development are important in the country today (for example, "Transport Strategy of the Russian Federation until 2030 with a forecast for the period until 2035", "Strategy for the Development of the Agro-Industrial and Fishery Complexes of the Russian Federation for the Period until 2030" and etc.), which highlight development priorities aimed at creating a system for the sustainable implementation and use of technical innovations. Also, the presidential decree established goals and strategic objectives for the development of the Russian Federation for the period up to 2024, taking into account the guidelines for national scientific, technological and socio-economic development (Decree of the President of the Russian Federation, 2018);

2. Programs for the development of a certain subject and/or object of innovative activity. To date, a significant number of various projects are being implemented in the country: the "National Technology Initiative" involves the financing and implementation of activities (road maps) in various promising markets; Priority 2030 is aimed at expanding the contribution of Russian universities to the development of scientific innovative research; The national program "Digital Economy of the Russian Federation" is focused on the implementation of projects in the field of artificial intelligence, digitalization of the economy, technology, public administration, training and advanced training in the field of digital interaction.

In the context of public administration, these regulatory documents implement private innovative mechanisms used in the management of organizations.

The mechanism for organizing and implementing innovative activities involves the development of a system for the interaction of innovative processes through the creation, absorption, merger, or separation of companies. It is through this mechanism that the activities of a particular company are implemented in the conditions of the innovation-oriented development of the relevant industry and the current economic development of the country (Kolokolov, 2001). The mechanism involves a direct process of innovation and includes tools for searching, developing, implementing and implementing innovative business ideas.

In the digital economy, the mechanism for the development and implementation of innovations is associated with intellectual property issues, in which the idea is the object of intellectual property, and innovation becomes the result of intellectual activity. At the same time, a monetized intellectual property object is considered a profitable innovation (Deryzemlya, Ter-Grigoryants, 2021). This mechanism is directly related to new technologies and methods of state support for scientific and technological initiatives.

Private companies are interested in innovative products developed at the state level. Under these conditions, one of the most important innovation mechanisms is the process of technology transfer, which allows the creation of a generally favorable innovation climate within the country. This mechanism has become the most popular in the Russian Federation, characterized by the mobility of technologies between government agencies and companies, as well as their active grant support, which, in turn, acts as a tool to stimulate innovation in general.

In general, the mechanism for financing and stimulating innovation processes is based on lending, taxation and the optimal use of own funds and plays a major role in the development of innovation processes in the country and individual companies in particular. Tax cuts, VAT abolition, venture financing, etc. are means of achieving a favorable innovation climate for an economic entity.

Under the current conditions, the definition of a mechanism as a “model of interaction between the components of an organization” becomes relevant (Latfullin, Raichenko, 2004). This formulation reflects the relationship between external and internal phenomena through some intellectual model of building the business processes of an economic entity. Analysis of the company's interaction with the external environment, the processes of creating and obtaining values through the transformation of resources necessary for the implementation of innovative processes, is a business model, expressed in a schematic description of the key elements of the activity of an economic entity.

According to the studies of A. Osterwalder and I. Pigne, a business model is a visualized assessment of nine blocks-components of the business process. Scientists have suggested using the characteristics of economic activity to fill in the canvas of business process analysis (Osterwalder, Pigneur, 2010). At the same time, building a business model allows you to structure the work of the company and should be applied periodically. In the context of the transition to innovative and intelligent forms of doing business, as well as the relevance of modeling and visualization of business processes, it is the business model that is an innovative mechanism for transforming economic systems. At the same time, in order to ensure the effectiveness of business modeling, it is important to take into account the relationship of private innovation mechanisms with elements of business processes according to A. Osterwalder and I. Pigne (Table 2).

It is worth noting that some blocks of the business model are analyzed using several innovative mechanisms. So, for example, the cost structure is influenced not only by financing and incentive mechanisms but also by the technology transfer mechanism, in which new technologies

reduce the company's costs. The analysis of key activities affects the innovative mechanisms of the organization, the search and implementation of innovative ideas, as well as technological mechanisms in connection with the active implementation of innovative solutions in the operational work of companies, which, in turn, affect the increase in their competitiveness.

Table 2: The private innovation mechanisms' relationship in the system of building a company's business model

Innovative Mechanisms		Business Model Blocks	Characteristic
Organization mechanisms		Consumer segment	The analysis of the consumer market system, its forms of organization is carried out. Allocate mass, niche, segmented, diversified markets. The target audience for the value proposition is determined, as well as their significance in the conditions of management in a particular consumer market
		Key counterparties	Analysis of partnerships, and their resources. An innovative association mechanism allows the development of a system of cooperation in order to optimize activities, reduce risks and/or increase resource potential
		Primary Activity	Analysis of the company's operating activities. Innovative mechanisms act as a basis for creating digital lines of activity (production, services and/or service). The issue of organizing a business using ready-made digital technologies (online platforms), as well as the creation and implementation of innovative schemes for doing business is touched upon.
Development and Implementation Mechanisms	Technology transfer mechanisms	Value propositions	A direct mechanism for the search, creation, and implementation of an innovative product. In the context of the development of the modern economy, value propositions are expressed through the use of technological solutions
		Sales channels	Search for innovative sales lines using technology. Innovative mechanisms are involved in the entire marketing process. Development of e-commerce and platform sales model
		Relationships with clients	Classical representations of the relationship system are integrated with digital technologies. It is a dynamic structure, at the present stage, new forms of relationship with consumers are being formed. Developed marketing research system
Funding and Incentive Mechanisms		Costs	New forms of savings through the use of technological solutions. Innovations in the taxation mechanism based on the reduction of taxes on innovative developments
		Income	Innovative mechanisms transform income streams. The emergence of new forms (subscription, rent, commission, etc.) Development of the grant support system
Intellectual Property Mechanism		Resources	The company's assets (finance, non-current assets, personnel) are supplemented by the results of intellectual activity. ownership on the Internet becomes an object of intellectual property

Flexibility and agility of business models is the main modern sign of success (Deryzemlya, Ter-Grigoryants, 2021). The formation of the components of the business model is carried out with a certain sequence established by A. Osterwalder and I. Pigne. As a result, the algorithm for forming a business model of a commercial structure can be represented as follows (Figure 2).

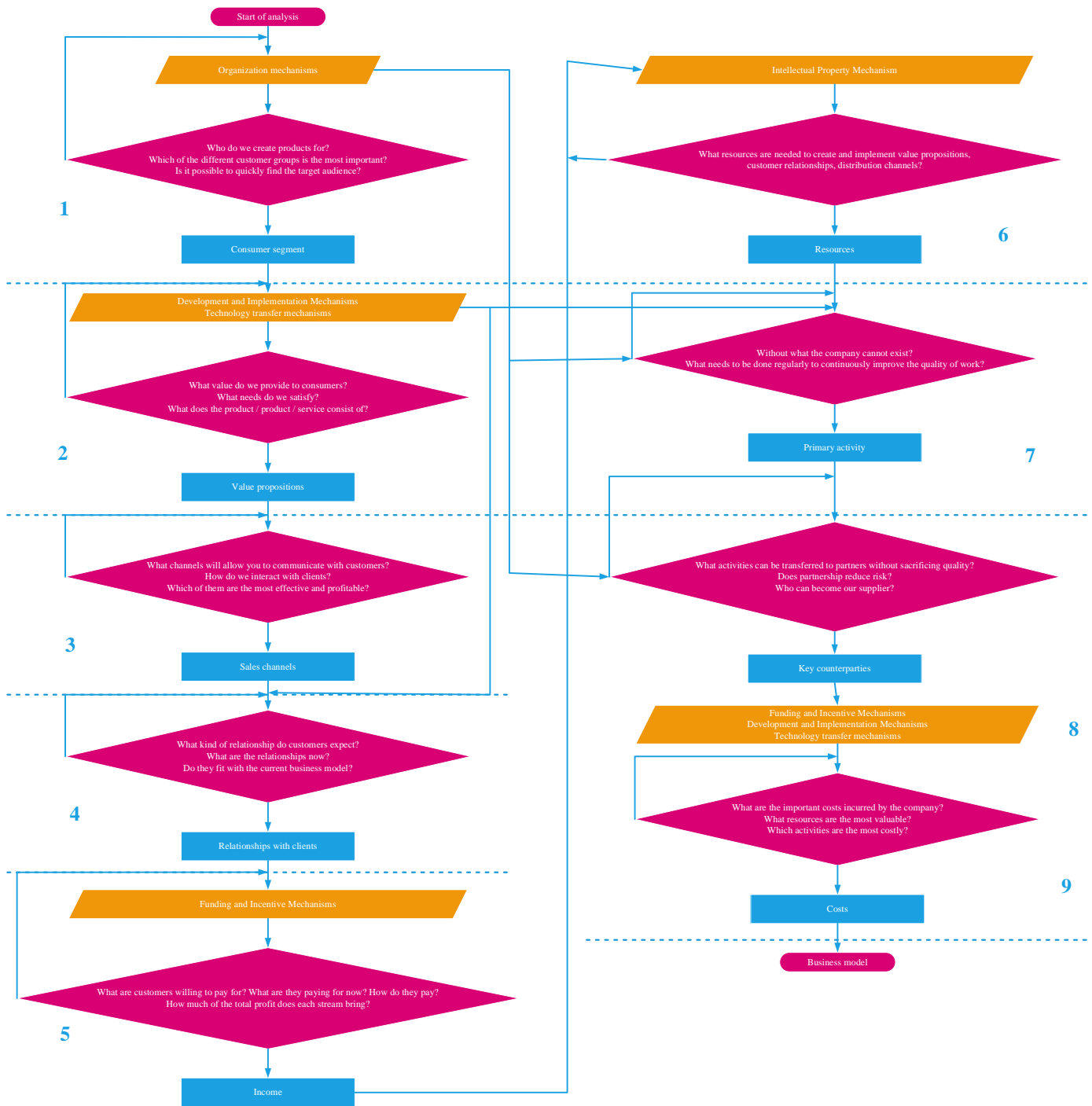


Figure 2: Algorithm for creating a company's business model

Thus, the algorithm for creating a company's business model is determined in response to profile questions. As shown in Figure 2, in the conditions of the impossibility of a response, the algorithm assumes a return to the previous stage, which may indicate the failure of the project or company. Under ideal conditions, each process and condition is performed sequentially in accordance with the instructions of the methodology.

4 Conclusion

The totality of private innovative mechanisms forms an innovative system of doing business. In the process of analyzing the business processes of a particular company, their relationships with each other and with the external environment, in the conditions of using innovative mechanisms, a business model of the company is formed. This tool is one of the main attributes of innovation,

representing a simplified scheme of the company's work through the visualization of the business system. Such a business model is an innovative mechanism for the transformation of economic systems. The interconnection of particular innovative mechanisms with the canvas blocks of A. Osterwalder and I. Pignet, revealed in the work, allows us to conclude that the implementation of tools and methods of innovative activity is dynamic.

The proposed algorithm for creating a company's business model allows you to form an idea of the company's innovative activities through the consideration of individual blocks of its business processes, the systematic nature of profit-making and value creation in the market using the inductive method in the context of using innovative transformation mechanisms.

5 Availability of Data and Material

Data can be made available by contacting the corresponding authors.

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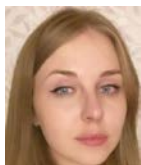
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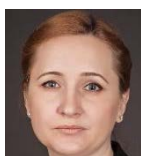
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