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**INNOVATIVE APPROACHES TO BUSINESS MODELING AT AN ENTERPRISE**

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**Abstract**

The article is dedicated to the development of innovative approaches to business modeling at an enterprise. It has been established that the concept of forming a business model in the modern economic system is based on innovative dynamics and self-development. The practical importance of measures taken to elaborate the concept of a business model at an enterprise is related to the development of required and sufficient conditions for innovative self-development of regional systems, as well as the formulation of strategies for regional systems to adapt to features of economic and technologic realities.

**Keywords**

Business modeling – Innovation – Enterprisse – Efficiency – Technology

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## Introduction

Innovation is a part of a complicated process of technical and economic evolution, comprising changes not only in the technology of production and consumption of products but also those in economic relations, mechanisms and institutions. In these conditions, it is difficult to analyze this process primarily because many technological shifts, which are typical for the modern post-industrial economy, cannot be measured using conventional methods.

Conventional indicators of physical production volumes no longer adequately reflect economic development processes. At the same time, technological changes have become vague, being beyond the usual pace of scientific, production and technological cycles. The innovative sector's main functional role is to substantiate the achievement of scheduled economic and social changes, which are not always clearly expressed.

At the same time, at the level of enterprises, it is extremely difficult to solve problems related to the management of business model development, the optimization of a production cycle, as well as the reduction in abundant expenses driven by the poor organizational and technical level. Overall, all these factors limit the development of industries and the economy as a whole. The construction of managerial business models taking into account imbalanced processes in macro-, meso- and microeconomic systems and the elaboration of methods designed to study their evolution, including at a meso- and micro level using methods aimed to forecast innovative dynamics, are topical problems. Accordingly, the modeling of a development process at an enterprise should be based on innovative dynamics, which is reflected in the categories of the synergetic approach and forms non-linear interrelations of capital renewal processes, technological changes and socio-economic growth in open economic systems (business models) at macro- and mesoeconomic levels. In this context, the elaboration of theoretical and methodological aspects related to the formation and the development of business models at enterprises, the self-organization and dynamic stability of regional systems, as well as technical and economic optimization of enterprises, have become significant in the modern conditions.

The study of issues related to the development of innovative approaches to business modeling at an enterprise is reflected in the articles written by N. B. Akatov, D. Yu. Bryukhanov, A. A. Safonov<sup>1</sup>, A. A. Vlaskin, E. M. Lisin<sup>2</sup>, E. S. Kotova<sup>3</sup>, M. S. Oborin, L. N. Starikova<sup>4</sup>, S. A. Sokolova<sup>5</sup>, M. V. Chekadanova<sup>6</sup>. However, despite the theoretical

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<sup>1</sup> N. B. Akatov; D. Yu. Bryukhanov and A. A. Safonov, "Razvitie strategicheskikh kompetentsiy predpriyatia na osnove sistematizirovannykh modelei biznesa", Social and humanitarian knowledge num 2-3 (2016): 159-170.

<sup>2</sup> A. A. Vlaskin and E. M. Lisin, "Razrabotka modeli otsenki effektivnosti innovatsionnogo predprinimatelstva na osnove printsipa shablonnogo biznes-modelirovaniya", International Research Journal num 6-7 (2015): 23-27.

<sup>3</sup> E. S. Kotova, "Aktualnye problemy upravleniya innovatsiyami na promyshlennom predpriyatii", Economic environment num 1 Vol: 19 (2017): 144-148.

<sup>4</sup> M. S. Oborin and L. N. Starikova, "Povyshenie effektivnosti deiatelnosti predpriyatiy roznichnoy trgovli na osnove modelirovaniya biznes-protsessov", Services in Russia and abroad Vol: 11 num 7 (2017):145-158.

<sup>5</sup> S. A. Sokolova, "Issledovanie sovremennykh biznes-modelei predpriyatiy vysokotekhnologichnykh sektorov natsionalnoy ekonomiki", Bulletin of the Russian Academy of National Sciences num 2 (2014): 100-105.

substantiation of the processes related to the formation of business models, the content of relations pertaining to their interaction at regional and sectorial levels is still insufficiently examined and there are no concepts of business model development in spatial terms. As a result, additional research is required and important.

## Methods

The study theoretical and methodological basis includes the abstract logical method and techniques of induction, deduction, analysis, synthesis and systematization used to substantiate approaches to the formation of business models at an enterprise. Statistical, economic and graphic methods are used to study the level and trends of changes in development parameters of business models at the regional level.

The information base of the research includes statistical data from public authorities, legislative and statutory documents regulating economic aspects of an enterprise's development, assessments of efficiency of the operation of business models in the competitive environment and research results N. I. Demkina, P. A. Kostikov, K. A. Lebedev<sup>7</sup>, E. Yu. Nikolskaya, N. I. Kovaleva, M. E. Uspenskaya, N. I. Makshakova, E. N. Lysoivanenko, K. A. Lebedev<sup>8</sup>, N. A. Zavalko, V. O. Kozhina, A. G. Zhakevich, O. E. Matyunina, O. Ye. Lebedeva<sup>9</sup>.

In the course of the study, we plan to systematize economic aspects related to the formation of business models based on innovative dynamics, to develop measures aimed to coordinate activities among main components of business models and to substantiate economic provisions pertaining to the management of an enterprise in the modern conditions.

## Results

Research shows that every point on the trajectory of the economic and technological development of an enterprise's business model is determined by the entire background of changes and the technological selection of the system's elements, which operate in the modern economic space. The complexity and the lack of stability in the behavior of the system's components, as well as uncertainty in a number of an enterprise's technological possibilities, are directly taken into consideration.

At the same time, we regard economic policy and technological solutions not simply as a rational choice from a multitude of technological possibilities but as a variable, which is defined by the said multitude and conditions of the economic environment. The

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<sup>6</sup> M. V. Chekadanova, "Klyuchevye resursy i deistvia v innovatsionnom klasterne", Innovation num 7 Vol: 237 (2018): 74-82.

<sup>7</sup> N. I. Demkina; P. A. Kostikov and K. A. Lebedev, "Formation of professional competence of future specialists in the field of information environment", Espacios Vol: 40 num 23 (2019).

<sup>8</sup> E. Yu. Nikolskaya; N. I. Kovaleva; M. E. Uspenskaya; N. I. Makshakova; E. N. Lysoivanenko and K. A. Lebedev, "Innovative quality improvements in hotel services", European Research Studies Journal Vol: 21 num 2 (2018): 489-498.

<sup>9</sup> N. A. Zavalko; V. O. Kozhina; A. G. Zhakevich; O. E. Matyunina and O. Ye. Lebedeva, "Methodical approaches to rating the quality of financial control at the enterprise", Quality - Access to Success num num 18 Vol: 161 (2017): 69-72.

adaptive mechanism is a source of growth for a variety of elements and forms of organization and, consequently, constant economic and technological development of a business structure as a whole.

However, a key moment in the theoretical understanding of a business model is the fixation of its structural, resource, spatial and temporal characteristics. Differentiating a technology and products from the general concept of the production system's forms, applying economic relations to them and determining their interrelation with the institutional environment, we see the subject field of the concept "business model of an enterprise".

For this reason, an enterprise's business model can be construed as an aggregate of elements characterizing the difference in principle from competitors and logic of its operation by using key competences for the maximum efficient separation of strategic resources in the system of business processes in order to create a product that meets consumers' demands in tough economic conditions (Figure 1).

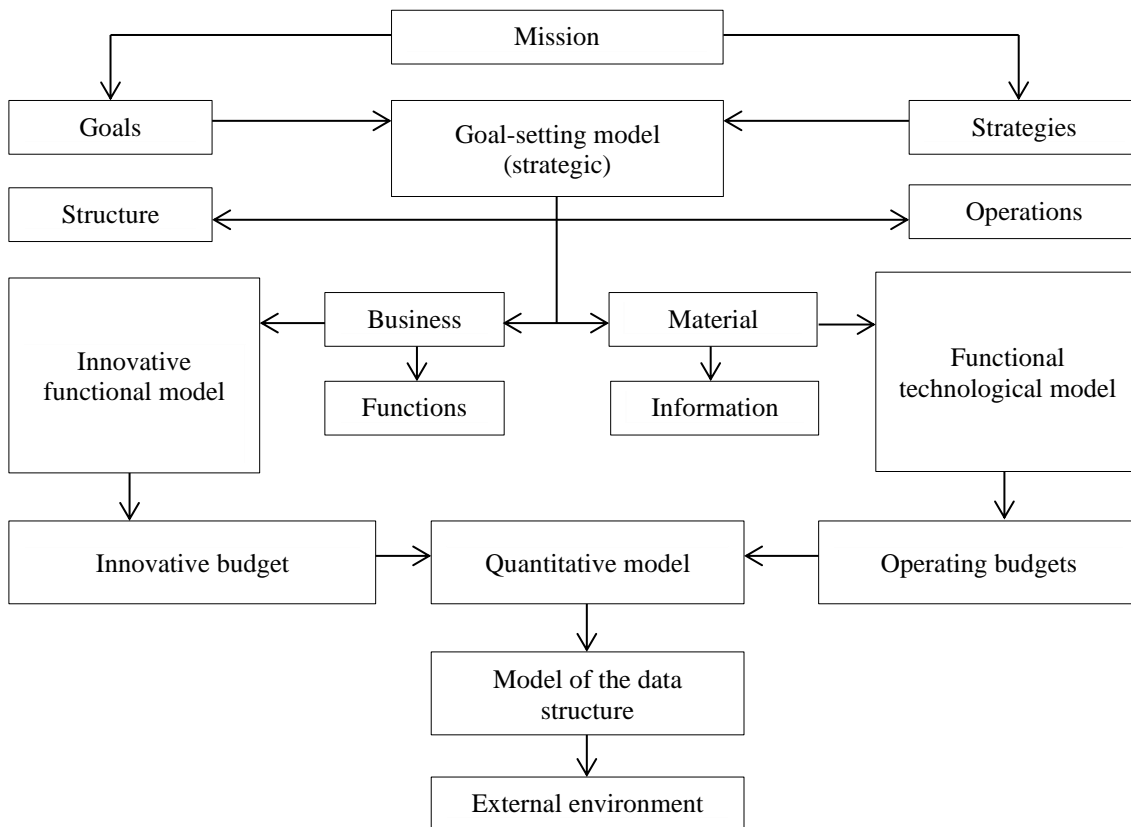


Figure 1  
Business model of an enterprise in the conditions of innovative dynamics

The essence of an enterprise's business model can be disclosed deeper through its functions: the determination of a mission, the strategic vision and development prospects in the current and promising markets; the analysis of consumers' future priorities; measures to provide the optimum distribution of an enterprise's current strategic resources and a focus on the mobilization of new strategic resources; the organization of an efficient system of business processes, the formation, use and development of the enterprise's intellectual capital; the identification and realization of key competences; the

attraction of investor capital; measures to increase the enterprise's market value and profitability; and measures to make the enterprise more competitive in the market.

In modern conditions, the role of the business modeling concept requires substantial additions and improvements. Separate provisions of the concept can be possibly revised as follows: to conduct more detailed analysis of components of an enterprise's business model due to differences in principle in various types of entrepreneurial activities (production, commercial, etc.); to abandon the concept "key competence" because it cannot be reviewed in the role of a universal component for the operation of a business model; to necessitate the application of the process approach to characterize structural elements of an enterprise's business model in accordance with the generally accepted managerial approaches; to elaborate a module structure of the business model with a mandatory separation of subsystems for adaptation, development, diagnostics, balanced growth and adjustment to the structure of an enterprise's business model.

At the same time, issues related to the formation and development of an enterprise's business model should be considered in the context of evolution. The theory of self-organization of non-linear systems is the most promising formal way of describing evolutionary processes through their imbalance and continuity. In this connection, the goal of quantitative and qualitative formalization of a business model of economic systems is to develop, within the synergetic approach, principles and quantitative models for the development of economic systems on the basis of the mathematical description of non-linear innovative dynamics, as well as to set objectives aimed to create conditions for the self-organization of economic systems and to achieve stable equilibrium by means of an innovative phase transition.

The interdisciplinary analysis of economic and technological development of economic systems requires the formulation of specific characteristics of dynamics and the creation of necessary conditions for the formation and development of an enterprise's business models. This formed the basis of two main provisions of the concept of business modeling of innovative dynamics and self-development of production systems.

However, the quantitative essence of the evolution of an enterprise's business model is innovative dynamics, which is understood in the categories of the synergetic approach. Innovative dynamics constitute the formalized non-linear description of changes in business models displayed through the imbalance of capital renewal processes, technological changes and higher production in open economic systems. Thus, the industrial system's stationary conditions make changes in the parameters of investment and innovative areas, while the transition itself to the new class of equilibrium is viewed as a phase transition.

A qualitative feature of the evolution of an enterprise's business model can be innovative self-development of economic systems, which constitutes a strategically stable ability of the economic system in the conditions of scientific and technological progress and innovative cycles to provide synergetic growth of capitalization of innovation potential through self-financing of innovation costs and the coherent behavior of innovative participants in order to provide competitiveness and growth of socio-economic welfare.

As business models are complicated and multivariable, features of their formation and development should be considered at different levels (macro, meso and micro levels). The consideration of business models over time is based on the separation and study of their evolutionary stages. The use of the interdisciplinary approach allowed us to substantiate two main stages (divergent and convergent), which are based on distinctive and similar features of technologies and on their adaptive possibilities.

The practice shows that a technology, which is based on the use of a new resource, appears at the divergent stage. The principle of divergence leads to the simultaneous emergence of multiple basic innovations, which are of different quality, and form a new type of industrial technology. It is evident that only some of them can perfectly blend with the structure of reproduction. Meanwhile, it is important that pure technological features of every separate innovation specify characteristics of its individual life cycle, including its duration.

Changes in demand for new technology are mainly determined by subsequent positive feedback: the emergence of technological innovation results in demand for industrial technology, while innovation needs create the basis for further improvements of technology, thus leading to the technological selection. As a result, a new technological mode is formed. At the convergent stage, signs of modern technologies are introduced, showing the limited nature of a resource that emerged at the divergent stage. Convergence means not only mutual impact but also mutual penetration of technologies when the bounds among separate technologies vanish and many interesting results are seen just within inter-disciplinary work at the turn of industries.

Studies show that at the beginning of the convergent stage the potential effect from an industrial technology remains indefinite. The non-recognition of technology can be eliminated once experience related to the introduction and use of innovation is amassed. However, a lower degree of uncertainty and risks associated with the application of a new technology exhausts the potential of its market penetration and its efficiency drops. While comparing these stages with the conventional life cycle of a technological mode, we can highlight two divergent and two convergent stages on the time period because there can be the effect of application in technological development and there is no consistent switch in technological modes.

For this reason, the aggregate of time and spatial aspects can be implemented through an original model showing the impact of business model evolution on the Center-Region system, with a classification of territories in terms of changes in business models. The evolution of an enterprise's business model, in a structural and technical sense, can be the basis for the comparison of economic dynamics and possibilities of regional development.

It follows that the separation of two main stages – divergent and convergent – in the evolution of business models substantially impacts the Center-Region system, diversifying forces of attraction and development. However, it can be said that definite types of regions in the course of the business process evolution play different roles and their ability to adapt to scientific and technical progress varies. Even though the generation and application of innovation are closely interrelated, they are differentiated in the regions due to the lack of proportionality seen in their structure of stable phases.

Enterprises from various industries have been adapting to their roles in the market at a faster pace. They develop intricate business systems in line with a permanently rising number of highly specialized business partners and advanced consumers who replace conventional consumers in the fundament of business processes, adding value to an enterprise. Enterprises, therefore, constitute an intricate social system, which should be viewed as a complicated mechanism with numerous dimensions and components (consumers, producers and suppliers that are united into a single whole for the creation of a business network).

However, changes at an enterprise are accompanied by laws, like those relating to the management of any structure: negation of the negation and the transformation of quantitative changes into qualitative ones in accordance with the principle “thesis – antithesis – synthesis”. For this reason, the architecture is a practical conductor towards an enterprise’s radical transformation, providing a dynamic description of profound but smooth structural changes at an enterprise that strives to be efficient and competitive.

When studying methodological foundations of business process modeling as a component of their re-engineering into economic activities of business units, it is necessary to note that once the idea about a new architecture, which takes into accounts instability of economic systems, emerges, the current approaches to the formation of the architectural model of business processes and management systems soon show their inconsistency to flexibility and efficient management in complicated business systems.

## Discussion

The reliability of the presented approaches is confirmed by the fact that the modern economic system, which is presented by any enterprise, has a number of specific features stipulating features of business model management O. A. Blokhina, O. N. Beketova, E. E. Kuzmina, O. Ye. Lebedeva, M. I. Podzorova<sup>10</sup>, K. A. Lebedev, O. S. Reznikova, S. D. Dimitrieva, E. I. Ametova,<sup>11</sup> L. K. Shaimardanova, T. A. Saadulaeva, L. V. Gorshkova, G. V. Pinkovskaya, O. Ye. Lebedeva<sup>12</sup>. An enterprise is characterized by instability; if there is instability, the role of external factors changes. Under certain circumstances, a moderate impact on an enterprise can cause substantial and unpredictable consequences.

An enterprise is also exposed to matching effects that arise when its components correlate and match their behavior. As a result, coordinated interaction leads to the normalization of processes, with some structures emerging from the chaos. The bigger is the deviation from equilibrium, the wider is the scope of interrelations and the higher is coordination of processes ongoing at an enterprise. Moreover, there is a likelihood of a stationary condition in an open system.

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<sup>10</sup> O. A. Blokhina; O. N. Beketova; E. E. Kuzmina; O. Ye. Lebedeva and M. I. Podzorova, “Improving the technology of innovation systems management at an enterprise”, *International Journal of Civil Engineering and Technology* num 9 Vol: 13 (2018): 137-143.

<sup>11</sup> K. A. Lebedev; O. S. Reznikova; S. D. Dimitrieva and E. I. Ametova, “Methodological approaches to assessing the efficiency of personnel management in companies”, *Journal of Advanced Research in Law and Economics* Vol: 9 num 4 (2018): 1331-1336.

<sup>12</sup> L. K. Shaimardanova; T. A. Saadulaeva; L. V. Gorshkova; G. V. Pinkovskaya and O. Ye. Lebedeva, “Improvement of the approaches to quality evaluation of transaction cost management”, *International Journal of Recent Technology and Engineering* Vol: 8 num 1 (2019): 129-132.



The practice shows that modeling makes it possible to automate the management of an enterprise, which means faster transmission of information and better control. This, in turn, helps executives to at least conduct their managerial duties. Moreover, a specified system is self-adjusting, i.e. an organizational model is initially formed through the combination of functional and structural models.

At the next stage, every function is assigned to incoming and outgoing parameters, as a result of which, functions turn into business processes that are later displayed in the form of interdependent chains; this is already a model of processes. Alongside this, a structural model is transformed into a role model (the delegation of authority and the determination of responsibility). The possibility of automation arises at the stage of building a process-role model. The automation results in faster transmission of information and better control, allowing enterprises to easily start quantitative modeling.

## Conclusion

To sum up, we can note that the concept of a business model formation in the modern economic system is based on innovative dynamics and self-development. At the same time, the practical importance of elaborating the concept of an enterprise's business model is associated with the development of necessary and sufficient conditions for innovative self-development of regional systems, the formulation of strategies for regional systems to adapt to features of economic and technological conditions, as well as the elaboration of main provisions of a technological development strategy and variants of the forecast for structural technological shifts for the regional system's economy.

The study of methodological foundations of business process modeling is quite important from the position of forming a set of methods designed to model business processes at an enterprise. Moreover, the rational use of methodological support for business process modeling can substantially improve economic efficiency of enterprises. As regards prospects of scientific works, further research requires some development in the subsystems of business process modeling and improvements in their stages.

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