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Value Formation of Innovative Product: A Way to Commercialization

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Abstract:

Purpose: The issues of studying the value formation process of an innovative product, from the idea to the prototype to the commercialization of the output from the production line, depending on the type of innovations, are the aims of this article.

Design/Methodology/Approach: The conceptual framework of "value" and "innovations" is explored and the theoretical basis of the value approach is revealed at the beginning of the article. The definition of an innovative product is given and the development process and the mechanism of its value formation at each development phase are revealed.

Findings: The value-added elements are specified, from the idea generation to the commercialization of the innovative product. The expenses for the calculation items and the development phases of the innovative product are estimated.

Practical Implications: Categories of the innovation-based economy development, as "innovation", "innovative product", and "value" are not sufficiently studied. Intensive discussions are taking place in the scientific community regarding what an innovative product is and how its value is formed. A specific result of intellectual activity, at the initial stage of its formation represents an idea that is difficult to be estimated.

Originality/Value: The problematics for further research of value formation of innovative products depending on their specific nature is put.

Keywords: Innovative product, Value, Innovation, Expenses, Innovative production

JEL code: M41, M29.

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1. Introduction

Technological development and digital technologies play a significant role in the innovative economy against the background of a competitive environment, the actions of the sanctions policy and external challenges. Domestic business entities form an innovative pathway of their activities, modernize the production and invest in the development of innovative products to enhance an entrepreneurial activity, expand market positions, and conquer new markets. In modern market conditions of economic globalization it is insufficient to just develop an innovative product, it is necessary to provide a well-established mechanism for its commercialization, updating the product value to market environment.

The analysis of the current activity of innovative enterprises allows us to talk about the problems of the value formation of an innovative product, measurement and analysis of its elements. The methodological analysis toolkit and value estimation of an innovative product are separately put into practice, not related to current analytical activities, which often leads to an increase in the cost of the analysis process, excessive use of the potential resources, untimely data acquisition and so on.

The mechanism for the value formation of an innovative product is partially examined in the works of foreign and domestic authors but a comprehensive model of value formation and its accounting and analytical support is not presented in the studies. This has contributed to the selection of this subject of research. The main goal of this article is to develop theoretical foundations, elaborate conceptual provisions and create a mechanism for the value formation of an innovative product. Traditional methods of scientific research and specific techniques were used in this article: structural-logical analysis, comparative-economic analysis, system-historical analysis, graphic scientific classification, modeling, and decomposition.

The article suggests a specific mechanism for creating an innovative product and a model for the value formation at each stage of its creation: from idea to commercialization.

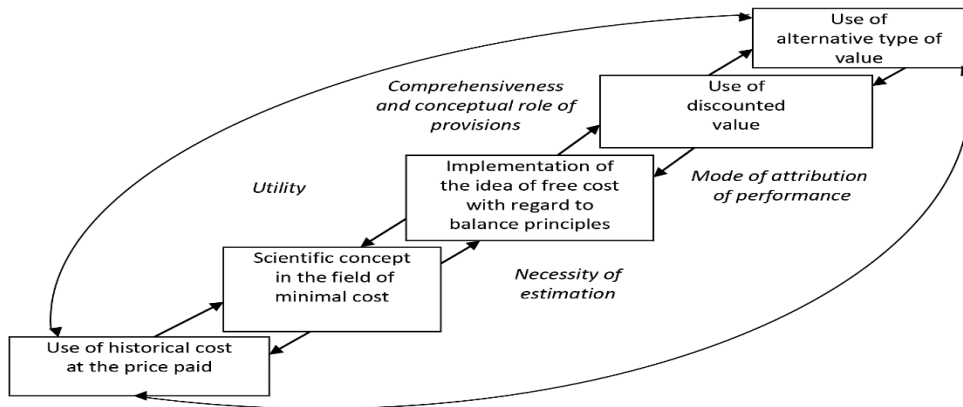
2. Literature Review

The activity of an innovative enterprise, starting from the idea generation of a specific product development, and ending with the market launch, promotion and sale, faces external challenges, risks and administrative barriers. The category of “value” plays a dominant role for the effective functioning of the entire information sequence of the innovative product promotion. Its accounting, analysis, estimation and control are of great importance for various areas of human activity, including the innovative activity of industrial enterprises.

The formation of the scientific economic concept of value began many centuries ago, but this issue still proves its relevance. Thus, according to the labour theory of A. Smith and D. Ricardo (Smith, 1993), the concept of "value" means that the human labour is the creator of value.

K. Marx (Marx, 1985) continued the research of A. Smith within the framework of the labour theory of value and suggested that surplus value can be created only by means of labour. Therewith, K. Marx identifies the cost of labour with the value created in the process of its consumption, speaking about the difference that exists between them due to the process of use. Russian and foreign authors currently continue dealing with a categorical framework regarding value. Figure 1 represents a scheme of interaction of scientific outlooks on the concept definition of "value".

Figure 1: Scheme of interaction of scientific outlooks on the concept definition of "value"



B.G. Maslov considers the concept of "value" in the framework of such categories as cost price and price, while accounting includes such concepts as "manufacturing cost", "cost of sales" and "sales value" (selling price), etc., (Maslov, 2009). E.L. Malkina defines value as an indicator used to calculate explicit costs and that is dependent on many economic factors (Malkina, 2016; Polyakova *et al.*, 2019). A. Vecherovskaya considers value as an economic category which represents manufacturing expenses for the production and sale of goods expressed in monetary terms (Brayley and Myers, 2004).

According to the theoretical analysis, the category of "value" can be represented as a multi-component category, expressing the industrial relationships arising from internal and external continuous interaction of cost elements.

3. Cost movement system

At enterprises of different economic sectors the movement of resources leads to the gradual value creation as a result of the transformation of raw materials and

materials of one value into a finished product, work or service more valuable to the client. The newly created value will be increased unevenly. The process of value formation is accompanied by the process of worth generation, which can be understood as a product or a service. Formed value passes the stage of distribution, that is, a specific phase of social reproduction, combining production and consumption into a single system. The distribution of value passes through two interrelated stages. At the first stage, the financial resources available to the enterprise are distributed and the tax part of the budget is formed.

At the subsequent stage, the value created at the first stage is redistributed, resulting in a profit tax and non-tax revenues reaching the state budget. In this case distribution is the starting point where the process of financial relations begins, and as a result, the value breaks up into separate elements and passes through a circle of transformations.

After the value distribution the stage of its consumption begins, that is, the use of the produced product (works, services) in order to meet the needs. Consumption ends at the stage of a new value formation. At the same time, the consumption of value is realised either in the form of final consumption of value or in the form of production consumption, when the value again falls into production, but already in its new "commodity" quality, in the form of a resource. Regardless of how the process of consuming value is carried out, new products are continuously created in the production process, which can act as analogous to previously produced goods (works, services), or they can be a new, more advanced product. In a modern high-tech economy, innovations play a huge role in ensuring the competitiveness of enterprises.

The concept of innovation is related to universal categories - extremely broad and structurally complex, with many approaches to disclosing its content. In the literature there are a significant number of definitions of "innovation". The concept of "innovation" first appeared in scientific studies of the XIX century. The Theory of Economic Development by the Austrian economist J. Schumpeter (Schumpeter, 1989) put new life into the concept of "innovation" in the early twentieth century. J.Schumpeter considered innovation (clumps of reality, in which new combinations changes in development are carried out) as a change, conceiving that the main function of innovative activity is the function of change management (Ilyenkov, 1997). Innovation as a product is considered, as a rule, in the narrower sense of the word, within the subject, segmented areas. Analysis of domestic and foreign literature shows that in practice the term "innovation" is often used in relation to any sphere of human activity.

Drucker (2003), Porter (2011) and other scientists have proved the role of innovations in securing the economic growth and the progressive development of the economy. They have formed the conceptual and categorical framework of the theory of innovations and have described the mechanism for the formation of innovations.

In the modern Russian economy innovation (novelty) is seen as the final outcome of innovative activity, which has been implemented as a new or improved product on the market, or a new or improved technological process used in practice. Kleiner (1986), Kharin (2009) and Fatkhutdinov (2008) have made a significant contribution to the study of innovation, innovation systems and innovative activity, as well as factors that directly affect the effectiveness of innovative development.

Maslova (2017), Popova (2014), Vasilyeva and Korostelkina (2017), Sorokina (2013) and others have paid considerable attention to the issues of accounting, estimation and analysis of value, value elements of the innovative activity and the performance evaluation of production and implementation of an innovative product.

For the purposes of this study the value of an innovative product is viewed as a complex accounting and economic category that has an assessment characteristic and combines production processes occurring in the society between the subjects of value relationships in the context of the required labour costs for the production and sale of an innovative product, the components of which do not exist independently, but constantly interact with each other through the market.

4. Research methodology and results

Creation and implementation of an innovative product includes research, scientific and technical, organizational, financial, investment, production and marketing activities. The most important component of the introduction of innovation into the real economy is to bridge the gap from a fundamental scientific idea to a commercially attractive product. An important role in solving this problem is played by the well-formed feasibility for the development and manufacturing application of an innovative product, the key part of which is the determination of the economic targets of the project and the calculation of the cost of its production. The innovative process accumulates expenses from the time of the generation of a new idea until the time of its commercialization. It is important to properly assess and systematize the expenses for innovative activity, which will enable to manage them and take into account the factors of their minimization (Drucker, 2003).

The value formation of an innovative product is characterized by its specific features due to the fact that innovative products are new; they are often science-intensive, technically complex, involving significant material, time and intellectual expenses. The formation of expenses for calculation items is carried out at different stages of the innovative product development. At the stage of the pre-project analysis, general business expenses and other manufacturing expenses are formed.

Stages of the innovative product development include the following cost items: material resources; recyclable waste; purchased products; semi-finished products; productive services of third-party organizations; fuel and energy for technological purposes; wages of production workers; insurance premiums; production start-up

and development costs; maintenance and equipment operation costs; general business expenses; general production costs; waste losses; other production costs.

The stage of an innovative product launch includes expenses for material resources, general business expenses, other production costs and commercial expenses.

The results of innovation activity can be broadly divided into two parts. The first part includes the material results of innovation activity, which can be expressed in the form of movable and immovable property, improved products having a concrete material form, created, mastered, modernized or modified machines, equipment, devices, machinery, tools, instruments, etc. All material components of innovation activity have a concrete reflection in business accounting; standard methods of valuation and accounting, which do not cause much controversy and questions, have been developed for them (Nazarova and Elokhova, 2013).

The second, but not less significant part of the results of innovation activity is represented by intangible outcomes. They mean exclusively intangible assets of the enterprise. Innovative products are new or substantially improved, which complicates the procedure of pricing due to the absence of similar (identical) goods (works, services) on the market. Demand orientation in setting the price of an innovative product is also impossible, since the demand has not yet been formed. In this regard, when forming the market value of an innovative product, it is necessary to determine the optimal value taking into account the expected market value and price expectations of the consumer. Thus, for the value formation of an innovative product, it is advisable to use a methodology based on the calculation of total costs with an orientation to the expected demand.

Effective management of innovative activity requires that decision-makers have a clear understanding of the process of value formation of an innovative product unit, which can be obtained through analysis and evaluation of accounting data on the formation of expenses for its development. An efficient analysis of the value of an innovative product is based on reliable accounting information. The production of an innovative product provides for a wide range of different processes and accounting operations, which requires the formation of an optimal accounting and analysis space within each innovation project.

The development of an innovative product is recommended to be carried out within the framework of an innovative project that provides a list of activities to achieve the set goals through the implementation of the resource potential in the relevant activity, with the necessary information and analytical support for effective implementation of the investment process.

The information system of the innovation project is based on information that is formed within the framework of such concepts as "evaluation", "accounting", "analysis", "control".

Herewith, analysis and accounting are organised under the action of accounting and analytical provision, and control over them is carried out within the framework of accounting and control provision. The advantage of this information system is its structuredness. Within the framework of accounting and analytical provision, information on each element of an innovative product is formed on the basis of information on the innovative product contained in primary documents, accounting registers, as well as on the basis of all types of reporting, which allows to evaluate the process of formation of each cost element. Thus, accounting is an information base for the analysis of an innovative product and allows to identify areas of greatest risk, bottlenecks in the activities of innovative enterprises.

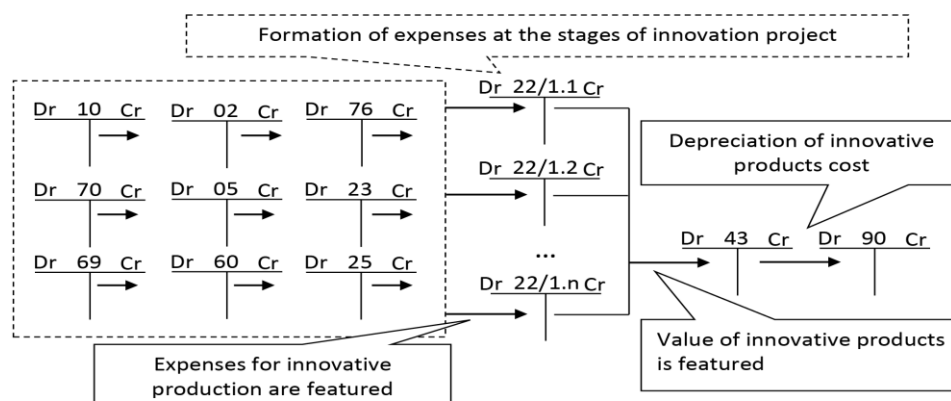
The interaction between accounting and control forms accounting and control provision, in which information about the innovative product is carefully checked, compared with the planned indicators, etc. Evaluation and control of the innovative product ensure the transparency and complexity of the operation of the enterprise. The management and control process of the innovative product formation is necessary in the conditions of ensuring the effective movement of the material resources of the economic entity. In these conditions, the process of planning expenditure items of financial resources for reimbursement of expenses, as well as organization of a process for attracting additional sources of funding and a control receipt of money compensation for the products sold to the participants of the information process, are particularly important.

When analyzing the value of innovative products, for the assessment of the effectiveness of spending it is necessary to preliminarily specify an indicator for each goal - the result of the work - which will determine whether the goal was achieved or not. Thus, the accounting and analytical system of the enterprise will allow to quickly track the intra-project dependence of the level of costs on the results achieved, as well as to track the process of product value formation at each stage of the innovation project.

The implementation of the target principle of cost accounting for the innovative product development is possible through the introduction of a separate production cost account, for example, account 22, "Innovation Production," which assumes all costs of innovation production (Figure 2).

In this case it is advisable to open sub-accounts separately for each type of innovative products, the development and production of which is carried out within the framework of a separate innovation project. Analytical accounting is proposed to be carried out at separate stages of the innovative product development, starting with a pre-project survey, which is necessary to analyze the feasibility of the innovative product development, then taking into account all the expenses at the stages of the innovative product development, and ending with the stage of launching the innovative product to the market. Within each of the stages, it is necessary to keep records on individual cost items.

Figure 2: Value formation of innovative products at the stages of innovation project



Such model of accounting will allow to quickly and efficiently analyse the value formation of the product at each stage of its development and timely assess the efficiency of the production process and the rational use of resources.

In the conditions of the rapid development of the economy and the unceasing pace of innovative development, innovation-oriented enterprises are required to constantly maintain the efficiency of their activity through an accounting and analytical system. To monitor the value formation of an innovative product it is advisable to carry out cost accounting and analysis for each stage of the innovation project. In this regard, further work is required on creating an integrated mechanism for accounting, analysis and control of the value elements at each stage of the innovative product development that includes modern management technologies and analytical tools, allowing to evaluate the cost of the innovative product both in terms of producer's interests (cost analysis) and from the point of view of consumer interests (analysis of utility and functionality).

Thus, the development of an innovative product, the process of its value formation from the idea generation to commercialization in an accounting and analytical system will allow us to quickly evaluate the cost of each stage in the total cost of an innovative project and determine the correlation of the value and the significance of each stage. The analysis and control of the cost of the innovative product value will allow us to identify unnecessary expenses, find ways to minimize costs, improve production and management processes, adequately determine the resource potential, thereby reducing the value of the innovative product.

5. Conclusions

The article presents the authors' vision of the categorical framework, in particular, the concepts of "value", "innovation", "innovative product value". Innovative

product is an accounting unit for the purposes of accounting and analysis. The value of an innovative product is defined as an integral category for assessing the performance of an innovative enterprise in the framework of an accounting and analytical system. A mechanism for the value formation of an innovative product is presented, reflecting its structural elements and helping to determine the motion vector of value flows within the framework of innovation production activities. The necessity of the development of an integrated mechanism for accounting, analysis and control of the value elements of an innovative product, which is necessary for the development and adoption of tactical and strategic managerial decisions concerning the production and implementation of innovative products through the stages of the innovation life cycle, is grounded for future research.

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