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Updating the Parameters of the Development of Effective Economic Thought to Motivate Society to Finance Innovative Activities

Abstract: The article considers the intermediate research results on determining the parameters of effective economic thought development to motivate society to finance the innovative activities of researchers in various fields of science. Historical, comparative, inductive, and deductive methods were used to solve the problems set in the study. The research uses the works of well-known scientists in the field of studying the development of society and innovative thought, for example, J.A. Schumpeter, Henry W. Chesbrough, Lars Schweizer, R. Rothwell, and others. It is concluded that at the present stage of the society's evolution from industrial to informational, economic thought should form a fundamentally new financial approach to innovation, more complex and complex. It is necessary to develop a three-dimensional approach model to innovation. The study results can be used by specialists and researchers in the field of innovative economy, economic history and social economics.

Keywords: economic thought, innovation, innovation economy, economic efficiency.

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Aktualizace parametrů vývoje efektivního ekonomického myšlení s cílem motivovat společnost k financování inovativních aktivit

Anotace: V článku jsou průběžné výsledky studie o stanovení parametrů rozvoj efektivního ekonomického myšlení s cílem motivace veřejnosti k financování inovací výzkumných pracovníků v různých oblastech vědy. Historické, srovnávací, induktivní a deduktivní metody byly použity k řešení úkolů uvedených ve studii. V průběhu výzkumu jsou používány práce významných vědců v oblasti zkoumání vývoje společnosti a inovativní myšlenky, například, J. A. Schumpeter, Henry Podávají Chesbrough, Lars Schweizer, R. Rothwell a další. Ze zjištění vyplývá, že v dnešní fázi vývoje společnosti z industriálního na informační ekonomické myšlení by měl vzniknout zásadně nový finanční přístup k inovacím, složitější a komplexnější. Je zapotřebí vyvinout trojrozměrný model přístupu k inovacím. Výsledky studie mohou být použity odborníky a výzkumníky v oblasti inovativních úspor, ekonomické historie a sociální ekonomiky.

Klíčová slova: ekonomické myšlení, inovace, inovativní ekonomika, ekonomická efektivita.

Introduction

Economic thought develops in parallel with the social development of society, competing with it in the priority of being a social locomotive. Philosophy still finds it difficult to determine which sphere of human activity is primary and only secondary. Historically, discoveries and inventions are based on human ideas about the nature that surrounds us. However, they are impossible without social changes that provoke or motivate individuals to solve complex technical or scientific issues that are not standard for this time.

The economic thought is inseparable from social processes. It defines such human needs as self-development, improvement, and well-being. The desire of the individual and society for development and prosperity encourages to consider capabilities in the economic dimension in parallel with intellectual capabilities. In this regard, throughout mankind history, two parallel mutually exclusive processes are observed.

One of them is that society is interested in financing its economic development. Thus, researchers (scientists) receive financial support in various forms—grants, awards, administrative resources. This motivates you to get a unique result. An example of such scientific "leaps" is the rapid development of genetic engineering in 2020 and 2021, which led to the emergence of many vaccines against the Covid-19 virus almost simultaneously in the United States, Europe, Russia and China.

The second process is to underestimate or ignore innovation. The consequence of this is the refusal to finance many technological or other scientific projects under the pretext of "an effective approach to financing scientific progress". In this case, society is faced with the dilemma of determining the relevance of the innovation or its verification. Most often, the economic justification depends on the opinion of the "scientific community", which is represented by individual scientists in a separate research institute or a conglomerate of institutes. Consequently, society opinion is replaced by representation in the role of a particular scientific community opinion or its leaders. This leads to the loss of first the effectiveness of scientific development and then the increase in economic well-being. An example of this approach is the financing blocking by developed countries of innovative development in the energy sector. This is because financing the search for alternative energy requires tens and hundreds of billions of dollars (euros), which can afford to include in the country's budget only particularly rich states that have at the same time a great scientific potential to solve problems of such complexity, e.g., the United States, Great Britain, and the EU. American capital is built to use mineral resources maximizing. It is directly interested in the extremely gradual development of alternative energy sources during oil, natural gas, and coal provide an opportunity to enrich themselves in the future for at least a hundred years.

Consequently, the economic development of society not only remains relevant but also fundamentally affects scientific and technological progress. In this regard, the development of economic thought, which can solve many fundamental problems of society, becomes particularly relevant:

- motivate a rethinking of the importance of scientific innovations in various spheres of society's activity;

- change the system of priorities in the categorization of innovative thought, focusing on the understanding of the prospects and fundamental nature of discoveries;
- promote the development of productive forces that generate areas of profitability and profitability;
- contribute to the development of social forces, levelling the resulting skew of funding in the field of high technologies, which fundamentally distorts public relations.

Thus, the development of economic thought is one of the main engines of modern society in other areas, since the financing of innovative and promising projects in the social sciences and humanities is just as important as in the technical areas and natural sciences.

The study subject is the economics of innovation, the long-term development of all aspects of society.

The study purpose is to determine the parameters of the development of effective economic thought to motivate society to finance researchers' innovative activities in all science.

Based on the study purpose, the following tasks were set:

- analyze the leading hypotheses of the innovation process research methodology;
- determine the economic features of the society's attitude to Push and Pull models;
- justify a methodological approach to determining the development parameters of the effective economic thought to motivate society to finance the researchers' innovative activities in all science.

Historical, comparative, inductive, and deductive methods were used to solve the problems set in the study. The historical method is used to determine the main historical factors and events that can be a confirmation of theoretical postulates. The comparative method is used to determine the positive and negative characteristics of the hypotheses of the research of innovative processes. Inductive and deductive methods are used to generate logical conclusions based on the materials obtained during the application of historical and comparative methods.

The study uses the works of well-known scientists in the field of studying the development of society and innovative thought, for example, J.A. Schumpeter, Henry W. Chesbrough, Lars Schweizer, R. Rothwell, and others.

Methods and Materials

The modern methodology of innovative processes research is based on three hypotheses:

- the hypothesis of "technological push", i.e., from science to the market;
- the hypothesis of "market demand pressure", i.e., from market needs to science;
- the "interactive model" hypothesis, i.e., a model combining the two previous approaches.

For the economic justification of innovation, it is necessary to analyze in more detail the main provisions of the 'technological push' hypothesis, which are as follows:

- the development of scientific thought is relatively independent of practice (market) and is expressed in an objectively predetermined change in scientific paradigms;
- the feedback between the economic environment (market needs) and scientific and technological development is not significant.

A retrospective analysis of science development allows us to state that four scientific revolutions took place in the world community. In the technological development of industrial

countries, five technical structures have successively changed. Each scientific revolution is characterized by a pronounced tendency to increase the number of discoveries compared to the previous one. Thus, the development of science is objective, independent of the market.

Within the framework of this hypothesis, the innovation process is considered as a consistent transformation of an idea into a commercial product through the stages of fundamental, applied research, experimental design and technological development, marketing, production and sales.

Such a strict sequence of stages of the scientific idea implementation is described by a linear Push-model of the innovation process. According to this model, the developed fundamental idea is embodied in applied research, which serves as the basis for innovation and subsequent commercialization. This model establishes a direct linear relationship: the more basic research, the more applied research, therefore, the more innovations and more advanced technologies are "introduced". Leading institutions and enterprises primarily focus on scientific breakthroughs: "The more investment in R&D, newer products will appear." This strategy has been dubbed the "strategy of hope", i.e., "Hire the best people, provide them with the best possible resources, and leave them alone."

In science and new technologies, therefore, they see a potential opportunity to solve social problems. This approach is reflected in government support for the supply side, i.e., the promotion of scientific research in universities and state laboratories, as well as the continuous supply of skilled labour and government support for key R&D programs in companies.

The practice of developed countries shows that such an 'evolution' from basic research to the commercialization of results has low efficiency. However, this model is typical for developing countries, especially states with strong central management and insignificant regional power units, e.g., the Soviet Union and at the present stage-Russia, Belarus, Kazakhstan. This symptom of the economic dependence on innovative development is also evident in the European Union, especially in the countries of the second and third economic levels-Spain, Portugal, the Czech Republic, Slovakia, Bulgaria, Romania, Hungary, Greece, Estonia, Latvia, Lithuania in the last 20 years.

The inconsistency of the linear model is that it does not consider the impact of the market on the development of events related to research and works, and it is not able to reflect the complexity of the relationship between science and production. Also, within the framework of such a model, the consumer and his requests are ignored, since innovation does not always occur as a result of fundamental research and scientific discoveries.

Economically, the needs of the market develop in a different way when it is the impetus for innovation. At the present stage, the sources of innovation are financially distributed as follows:

- 60% come from the market;
- 25% comes from technology;
- 15% comes from corporations.

This determines the significance of the second hypothesis that explains the causality of the innovation process-the model of the innovation process in the spirit of "market demand pressure" (market pull model). This hypothesis links the growth of the innovative potential of the economy with the requirements of the market. The priority is the presence of certain market needs related to the trends in the economic development of the national and global economy.

These trends may include the need to diversify production, the increasing level of competition, as a result, there are the "battle for market shares", greater attention to marketing, the need to reduce the time to bring a new product to market.

Thus, innovations are actively attracted to production only when an increase in demand requires a sharp rise in production, i.e., the primary reason for the innovative activities' implementation, according to the second hypothesis, is economic conditions and, first of all, market factors. In this case, the economic effect is extracted, most often, by an economic entity that does not necessarily create innovation but applies it or has the right to own it. Gradually, the company comes to understand that the strategies of technology shocks and market pressure are two extreme examples of a more general process of interaction, on the one hand, technological capabilities and, on the other hand, market needs. The interactive model of the innovation process assumes that the innovation process is becoming more complex, nonlinear, showing that the equivalent sources of the innovation idea are both the logic of technological development and the potential market. This means that the creation of innovations is possible directly, bypassing the stage of scientific research.

When an idea arises, the concept is worked out. Then the immediate development follows. Basic and applied research is addressed as difficulties appear on the main path. First, the results of applied research are analyzed. If they do not provide a solution to the problem, then the main study is conducted. Besides, new ideas can arise and be developed at any stage of the innovation process, and the design, development, production and marketing stages can be realized simultaneously. At the same time, researchers actively interact with the broad scientific community and the market.

During the analysis, it was necessary to determine the differences between the interactive model and the linear one. The analysis identified the following differences:

- New ideas arise and are developed at all stages of the innovation process; i.e., fundamental research is not considered as the only initiating force. Therefore, funding is required throughout the entire process.
- Interactive models imply that there are qualitatively new types of connections connecting its elements between the stages of the innovation process. Their task lies in the inadmissibility of dividing innovation processes into independent ones. Therefore, the funding becomes targeted and well verifiable with the result.
- Study results are used in various forms at all stages of the innovation process, i.e., the commercialization of technologies is possible at all stages of the innovation process. Therefore, financial efficiency is determined quite quickly in the coming years.
- The managed interactive model considers the role of innovation process managers and consumers of innovative products. The innovation manager deals with various stages of the innovation process and builds his management activities with this in mind. Therefore, the company entrusts them with financial activities within the funding framework and constant monitoring of the implementation and compliance with the financial efficiency of innovative development.

Thus, in modern conditions, the emphasis is on system integration and the creation of complex organic networks to guarantee flexibility and speed of development. Business processes

are transformed into a virtual form through the use of information management systems. In the external environment, the focus is on business ecosystems. Advanced strategic partnerships are being created for the joint conduct of market research and R&D.

Results

At the present stage of the world community development, the first two models—Push and Pull—are practically not suitable for economically developed countries. The effect of the development of either hardware thinking in the innovation economy on the example of Russia and European countries of the second and third economic levels or excessive commercialization of innovation processes on the example of the United States and Japan is observed.

At the same time, there is a clear symptom of the emergence of pseudo-innovation for the sake of financial support for activities. This is evident in the example of the British system. There researchers and scientists are forced to create projects that are extremely far from innovative. They can be categorized as leading science to stagnation. Elements of the British system of creating a scientific array are becoming more apparent in European countries including also the countries of Eastern Europe.

Therefore, it is necessary to create a new (fourth) model, which will radically change the systematic approach to innovative thought financing. The scientific criterion should be actualization instead of the citation index. The criterion of financial prospects should be determined by the social aspect, since any innovation is intended for social development, and not only for financial support. The criterion of financial efficiency should be differentiated by scientific areas, i.e., it is impossible to determine the same financial indicators for social and humanitarian innovations as for technical and natural areas. For social and humanitarian innovations, it is necessary to determine the significance of the results for the development of a particular society or global community.

Thus, at the present stage of society's evolution from industrial to informational, economic thought should form a fundamentally new financial approach to innovation, more complex and complex. It is not enough to use the principles of a flexible economy in financing promising areas. It is necessary to develop a three-dimensional model of the approach to innovation: the vector of relevance for society in the near future, the vector of social prospects in the distant future, and the vector of mobility, that is, the associated solution of a complex of other problems and tasks within the framework of an innovation project.

Discussion

Within the framework of this study of the problem of the economic approach to the implementation of innovative ideas in various fields of science, it is necessary to continue the discussion on the following issues:

- What economic parameters should be introduced to determine the vector of prospects for an innovative project?
- What economic indicators will be universal for determining the mobility vector of an innovation project?
- What methods can be applied to the calculation of social motivation to finance innovative projects?

Consideration of these issues will help to get closer to achieving the main study purpose, i.e., to determine the parameters of the development of effective economic thought to motivate society to finance researchers' innovative activities in science.

Conclusion

Thus, the study analyzes the leading hypotheses of the methodology for the study of innovative processes, which are designed to explain the historical aspects of the social reaction development to innovation thought, and identifies the economic features of society's attitude to Push and Pull models. It is concluded that at the present stage of the social evolution from industrial to informational, economic thought should form a fundamentally new financial approach to innovation, more complex and complex. It is necessary to develop a three-dimensional model of the approach to innovation:

- the vector of relevance for the society of the near future,
- the vector of prospects for the society of the distant future,
- the vector of mobility, e.g., the associated solution of a set of other problems and tasks within the framework of an innovative project.

To achieve the main goal of the research, during the study, the analysis of the leading hypotheses of the methodology for the study of innovation processes that are designed to explain the historical aspects of the development of social reaction to innovation thought is carried out and the economic features of the society's attitude to Push and Pull models are determined.

The study results can be used by specialists and researchers in innovative economy, economic history and social economics.

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